The Development and Initial Validation of a Sport-Specific Psychological Strengths Questionnaire

by

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Abstract

There is little research in sport that assesses a strengths-based approach, despite research in mainstream psychology showing multiple benefits of such an approach. A strengths-based approach refers to identifying and using an individual's existing strengths to improve their overall functioning. In mainstream psychology, research and interventions adopting such an approach only occurred after a common language, and increased conceptual clarity, was established as a result of the development of strengths-based questionnaires that allowed the identification of strengths. Existing questionnaires are, however, mostly general scales and do not capture the complexity of strengths required in specific contexts. These have, therefore, been criticised as not being applicable to sport, and thus the lack of research into strengths-based approaches in sport may stem from a lack of a common language, and assessment method, for sport-specific strengths. As a result, this thesis aimed to investigate sport-relevant psychological strengths that provided the basis for the development, and initial validation, of a sport-specific psychological strengths questionnaire. To do this, four studies were conducted.

Study 1 utilised a systematic review to identify the positive qualities, traits, or characteristics that could potentially be classed as psychological strengths within the current sport psychology literature. After a pre-defined search strategy was used, 78 full-text articles were analysed, and 115 terms were extracted and synthesized into 13 overarching psychological strengths. The overarching strengths identified suggested new strengths that were not part of previous questionnaires, thus potential psychological strengths specific to the sporting domain.

Study 2 aimed to further investigate the qualities identified in Study 1 and to specifically examine the positive qualities, traits, and characteristics of athletes through the lens of a strengths-based approach. An expert panel took part in a three-round Delphi method that generated qualities that were considered relevant psychological strengths, rated the relevance of these qualities along with those from Study 1, and then agreed upon a set of sport-relevant psychological strengths. As a result of this process, a consensus was reached on 29 qualities as being relevant psychological strengths within sport. This provided a set of sport-relevant psychological strengths that was developed by specifically examining positive qualities of athletes in sport through the lens of a strengths-based approach, in conjunction with rating the qualities identified in Study 1.

Based on the findings from Studies 1 and 2, Study 3 then developed a questionnaire to assess sport-specific psychological strengths in athletes and explored the underpinning structure of this tool. This study developed an online questionnaire comprised of 90 items. Data from 411 participants was subjected to principal component analysis which identified a seven-component structure that retained 41 of the initial items. In line with questionnaire development recommendations, further work was required to confirm the underpinning structure. This occurred in Study 4, which conducted confirmatory factor analysis on a new sample of 348 participants. The proposed seven-factor model was confirmed, with a 25-item questionnaire showing acceptable fit. The seven factors were interpreted to relate to psychological strengths relevant in the context of sport, and were named as Commitment, Emotional Control, Competitiveness, Coachability, Embrace New Experiences, Passion, and Personal Responsibility. Each sub-scale assessing the individual strengths were also found to have acceptable levels of internal reliability. Study 4 therefore supported the underpinning structure and psychometric properties of the questionnaire – known as the Sport-Specific Psychological Strengths Questionnaire (SSPSQ) – and demonstrated initial validity and reliability.

Through a robust evidence-based process this thesis has identified relevant psychological strengths within the sporting context and provided initial validity and reliability for a sport-specific psychological strengths questionnaire – something that has been lacking within the sports literature. This thesis has therefore made a significant and original contribution to the literature as it has addressed a gap within this area, providing research into an approach which has previously received limited attention. Findings have identified psychological strengths specific to the context of sport and highlight the importance of examining psychological strengths within specific contexts. The findings from this thesis have theoretical, applied, and methodological implications and provide a questionnaire that can form the basis of further research and intervention work in this area. It is hoped that, whilst adding to the current literature, this thesis can provide the foundations on which further work can build to establish a strong evidence base for a strengths-based approach within sport.

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Chapter 1: Introduction

The following chapter aims to set the focus for this thesis. It provides a brief overview of the research context and contribution to knowledge of the thesis, before concluding by providing an outline of the overall thesis structure. It is important to note that this is intended to be a brief overview to set the scene for the reader, with further detail regarding the research context and relevant background research presented in Chapter 2.

1.1 Research Context and Contribution to Knowledge

Traditionally, modern psychology has been based upon a medical model and has focused on reducing deficits within individuals (Joseph & Linley, 2006). More recently, however, there has been the emergence of positive psychology which focuses on increasing positive functioning, and is defined as the study of what works well, and is right, within individuals (Linley & Joseph, 2004; Maddux, 2008; Sheldon & King, 2001). Positive psychology states that optimal functioning and wellness are not simply an absence of illness or lack of deficits, but the presence of positive-health and positive characteristics (Maddux, 2008). This is a fast-growing area in the literature, with 2,300 journal articles relating to positive psychology published in 2011 alone – approximately 4% of all articles published that year (Rusk & Waters, 2013). A key principle of positive psychology is the promotion of human potential by developing what is already good in an individual, and the positive qualities they already have (Hodges & Clifton, 2004). Such an approach is known as a strengths-based approach and focuses on using an individual's strengths to improve their overall functioning, rather than solely addressing weaknesses (Simmons & Lehmann, 2013). This approach is, therefore, not a model, or theory, but a perspective or lens from which to view human development (Simmons & Lehmann, 2013).

To facilitate the increased use of strengths first requires the identification of an individual's own strengths (Hodges & Clifton, 2004; Peterson & Seligman, 2004; Simmons & Lehmann, 2013). Early work in this area, therefore, focused on conceptualising and defining strengths, alongside developing assessment tools that allowed individuals to identify their top strengths (Simmons & Lehmann, 2013). Within early research into strengths-based approaches, Peterson & Park (2004) stated that there was a need for a shared vocabulary, or strengths-based language, in order to ensure a common understanding of what was being discussed. It was stated that failing to identify the specifics being discussed when referring to

strengths could lead to confusion between researchers and clients (Peterson & Park, 2004). This led Peterson and Seligman (2004) to develop the Values in Action Inventory of Strengths (VIA-IS) which defined strengths in relation to good character with an underlying moral component – known as character strengths. This assessment tool allows individuals to determine their top character strengths from a set of strengths that were identified as being discussed both cross-culturally and historically (Peterson & Seligman, 2004). The Clifton StrengthsFinder (CSF) is an alternative tool for assessing strengths that was developed specifically for the workplace domain, assessing individuals on their workplace themes of talent (Asplund, Lopez, Hodges, & Harter, 2007). The CSF defined themes of talent as an innate pattern of thoughts, feelings, and behaviours (Hodges & Clifton, 2004), that in combination with specific skills and knowledge allow an individual to develop their strengths – defined as an almost perfect level of performance in a specific task (Asplund et al., 2007). Both the VIA-IS and the CSF provided a common language relating to character strengths and workplace strengths, respectively (Hodges & Clifton, 2004). This provided a foundation within the area, facilitating intervention work and an increase in research (Gillum, 2005; Hodges & Clifton, 2004; Louis, 2008, 2011; Peterson & Seligman, 2004). Consequently, more is now known about the impact of strengths-based approaches, with additional definitions and conceptualisations also now present in the literature (Wright, Quick, Hannah, & Hargrove, 2017).

The increase in research has highlighted the benefits of adopting a strengths-based approach, both in general and in specific contexts such as education or workplace settings (Hodges & Clifton, 2004; Quinlan, Swain, & Vella-Brodrick, 2012; Williamson, 2002). It has been found that increased strengths awareness and use are associated with increased subjective and psychological wellbeing (Govindji & Linley, 2007; Proctor, Maltby, & Linley, 2009; Quinlan et al. 2012), happiness (Seligman, Steen, Park, & Peterson, 2005), life satisfaction, hope, and vitality (Duan, Ho, Tang, Li, & Zhang, 2013; Harzer & Ruch, 2016; Hodges & Clifton, 2004; Wood, Linley, Maltby, Kashdan, & Hurling 2011). It has also been found that strengths use and awareness are positively related to decreased levels of stress, anxiety, and depression (Schutte & Malouff, 2018; Seligman et al., 2005; Wood et al., 2011), and positively related to increased self-esteem, self-efficacy, and confidence (Govindji & Linley, 2007; Hodges & Clifton, 2004; Peila-Shuster, 2012; Proctor et al., 2009; Wood et al., 2011). Furthermore, research has found strengths use to be positively linked to increased productivity and engagement (Asplund et al., 2007; Connelly, 2002; Harter, Schmidt, &

Hayes, 2002), as well as goal progress and goal attainment (Linley, Nielsen, Wood, Gillett, & Biswas-Diener, 2010).

Research into strengths-based approaches has, therefore, found multiple benefits of adopting this approach. When considering such benefits, there is an overlap with areas identified and researched within the sport psychology literature – areas such as self-confidence and self-efficacy (Cox, Shannon, McGuire, & McBride, 2010), wellbeing (Low, 2017; Podlog, Lochbaum, & Stevens, 2010; Sandardos & Chambers, 2019), stress and anxiety (Neil, Wilson, Mellalieu, Hanton, & Taylor, 2012; Schinke et al., 2012), and goal progress and attainment (Smith, Ntoumanis, & Duda, 2007). Based on the multiple benefits identified in other contexts, it has been argued that there is, therefore, a case to research and adopt such an approach within a sporting context (Gordon, 2012).

The benefits of focusing on strengths have been alluded to within the current sports literature. Research has suggested that awareness of strengths was an important outcome of a psychological skills training programme (Gucciardi, Gordon, & Dimmock, 2009), that there is a need to balance work on weaknesses with understanding strengths (Gucciardi, Gordon, Dimmock, & Mallett, 2009), and that focusing on strengths can help develop and maintain robust sports confidence (Beaumont, Maynard, & Butt, 2015). Such findings, however, emerged naturally within these studies and the research did not set out to specifically investigate strengths-based approaches. Indeed, as with other areas of psychology, sport psychology has traditionally focused on fixing problems rather than developing strengths (Enright, Hill, Sandford, & Gard, 2014; Gordon, 2012; Ludlham, Butt, Bawden, Lindsay, & Maynard, 2016), and there is limited research specifically examining strengths-based approaches within the context of sport (Gordon, 2012; Gordon & Gucciardi, 2011; Ludlham et al., 2016).

One study that has specifically looked at a strengths-based approach within sport adopted such an approach to the development of mental toughness in elite cricketers (Gordon & Gucciardi, 2011). It was found that the cricketers felt such an approach was beneficial and enhanced their overall development. This study, however, only reported one quote regarding the outcomes, and no additional empirical data on the benefits of the approach. An additional case study also reported the use of a strengths-based approach in international cricket, but similarly reported no empirical data as to the impact of the intervention (Gordon, 2012). Research has, however, found individual and team strengths use to be related to positive outcomes within student athletes (Stander, Rothmann, & Botha, 2017). Additionally, a more recent case study found a strengths-based intervention significantly increased targeted aspects

of mental toughness from pre- to post-season in an elite cricketer (Gordon, Anthony, & Gucciardi, 2017). This was in contrast to two control participants where no significant changes in mental toughness scores were found. A follow up interview with the intervention participant highlighted that such an approach had been a novel experience for them, and contributed to improved self-talk, attentional control, and confidence.

Research by Ludlham et al. (2016) found further benefits of adopting a strengths-based approach in sport, investigating a specific strengths-based approach known as super-strengths. Elite athletes reported this approach had a positive impact on their performance (Ludlham, Bawden, Butt, Lindsay, & Maynard, 2017). Multiple benefits of such an approach were outlined, including increases in self-belief, team confidence, motivation, and the ability to cope under pressure, along with clarity of focus for training and goal-direction (Ludlham et al., 2017). Additionally, a potential barrier to such an approach being successful was identified, with athletes suggesting individuals may struggle to articulate their strengths due to discomfort and unfamiliarity with focusing on these (Ludlham et al., 2017). When taken in conjunction with previous findings that adopting a strengths-based approach was a novel experience (Gordon et al., 2017), this suggests such an approach is not yet commonplace within sport.

From the research looking specifically at strengths-based approaches in sport so far, there is, therefore, emerging evidence that such approaches provide benefits in this context (Gordon, 2012; Gordon et al., 2017; Gordon & Gucciardi, 2011; Ludlham et al., 2017; Stander et al., 2017). Despite this, however, there is still a lack of research examining such approaches (Gordon, 2012; Gordon & Gucciardi, 2011; Ludlham et al., 2016), with calls for further research to provide an evidence-based nature to strengths-based approaches within sport, along with increased conceptual clarity (Wagstaff & Leach, 2015). A narrative review by Wagstaff and Leach (2015) identified six potential strengths-based concepts that were present in the current literature, and thus already had an evidence-base. Whilst this review has the potential to help increase conceptual clarity around strengths-based concepts relevant to sport, further research examining such approaches specifically in this context is required (Wagstaff & Leach, 2015). Such research is needed to build on the findings, increase conceptual clarity, and develop a robust evidence base for strengths-based approaches in the sporting domain (Wagstaff & Leach, 2015).

When considering the lack of empirical research into strengths-based approaches within sport against the historical development of research within this area of mainstream psychology, it is possible to draw parallels. As reported previously, it was stated there was a

need for the development of a common strengths-based language, and conceptual clarity, as a foundation for further research and interventions (Peterson & Park, 2004). This common language and clarity occurred with the development of strengths-based assessment tools, which formed the basis of further research and interventions (Hodges & Clifton, 2004; Peterson & Seligman, 2004). Such assessment tools are, however, general scales and thus do not capture the complexity of strengths required in different contexts (Peterson & Seligman, 2004), with only the CSF being context specific (Hodges & Clifton, 2004). A common criticism of the literature is the lack of a common language specific to different contexts (White, 2016), with current assessment methods criticised for not being specific to the strengths relevant within the context of sport (Ludlham et al., 2016, 2017). The lack of research into strengths-based approaches in sport may, therefore, stem for a lack of a common language, and subsequent assessment method, for sport-specific strengths. Such a gap in the literature highlights an opportunity for the development of a commonality of understanding as to the qualities that constitute sport-specific strengths, and subsequently an assessment tool to identify these. The identification of these, and development of such an assessment method, may then help to facilitate further research within this area.

The central aim of this thesis is, therefore, to identify sport-specific strengths and to then develop, and provide initial validation for, a sport-specific strengths assessment tool that assesses these. Through an exploratory process, it aims to investigate, and get consensus upon, the qualities and attributes that may be classed as relevant strengths within a sporting context – a gap in the current literature. The strengths developed through this process will then form the basis of a sport-specific strengths assessment tool – a further gap in the current literature – and the initial structure, validity, and reliability of this tool will be examined (see Chapter 3 for the full aims and objectives of this thesis). It is aimed that this will provide a level of commonality within this area of the literature that can offer a platform for further theoretical development, and applied application, of strengths-based approaches in sport.

1.2 Thesis Structure

This thesis begins by providing an initial discussion in Chapter 2 of the relevant background literature in the fields of positive psychology and Sport. This chapter provides further detail to the research context, discussing strengths-based approaches in terms of assessment, research, and the application of these within sport psychology. The overall aims and objectives of the thesis, along with the aims and objectives of each specific study, are

then outlined in Chapter 3. Throughout this thesis decisions were made as to the appropriate methodology that would allow these aims and objectives to be achieved. The methodological considerations that were made at each stage of this thesis are, therefore, outlined in Chapter 4.

Once the methodological considerations have been discussed, the thesis moves on to present the research that has been conducted throughout this thesis and the main findings from each study. This begins with Chapter 5, which presents a systematic review of the sport psychology literature in order to identify potential strengths that exist within the current research. The findings from this study are then built upon in Chapter 6, which presents a Delphi method study aimed at getting consensus from an expert panel on strengths relevant within sport. Chapter 7 then presents the development of a questionnaire to measure these strengths. This chapter outlines item development along with exploratory analytical procedures. In order to confirm the underpinning structure identified, a confirmatory factor analysis was then run and is also reported in this chapter. This thesis then concludes in Chapter 8, which provides a general discussion of the entire thesis.

Chapter 2: Background Research – Positive Psychology, Strengths-Based Approaches and Sport

2.1 Chapter Introduction

The purpose of this chapter is to discuss relevant background literature from the fields of positive psychology and Sport. Initially, a brief history of positive psychology is provided as it gives context to the thesis. This is followed by research into strengths-based approaches, which is the key underpinning approach to this thesis. Within this, two key methods of assessment used within strengths-based research are also discussed. Literature looking at strengths-based approaches within the sport psychology domain is then assessed. As a systematic review of the sporting literature was conducted and is reported later on in the thesis (reported in Chapter 5) the information provided in this section is designed to provide a brief background, and context, for the reader. A more detailed assessment of relevant additional sporting literature is provided in the systematic review findings. The chapter concludes with the definition of strengths used within this thesis.

2.2 A Brief History of Positive Psychology

Positive psychology refers to the scientific study of optimal human functioning by looking at the positive traits, characteristics, virtues, and strengths that allow people to thrive (Seligman, 2002b). It has been defined as the study of what works well and what is right within individuals, with a focus on their strengths (Maddux, 2008; Sheldon & King, 2001). Broadly, research within this area has focused on three inter-related topics: positive subjective experience – studies related to pleasure, enjoyment, fulfilment, or happiness; positive individual traits – the study of positive personal qualities, strengths, and values; and positive institutions, communities, and societies – the study of institutions and communities that support the development of the first two topic areas (Seligman & Csikszentmihalyi, 2000). A key tenet that underpins positive psychology across all these areas is that wellness and optimal functioning are not merely the absence of illness or a lack of deficits, but the presence of positive-health and positive characteristics (Maddux, 2008). This contrasts the traditional medical model that has been adopted within most modern psychology, where there has been a focus on simply reducing deficits and illness within individuals (Jørgensen & Nafstad, 2004). It has been argued that adopting this traditional, problem-focused, approach

does not allow psychologists to understand normal and extraordinary functioning – something positive psychology has aimed to address (Strümpfer, 2005).

Often the emergence of positive psychology is attributed to Martin Seligman's (1998) inaugural American Psychology Association (APA) Presidential address. Here, Seligman stated that psychology needed to focus on enhancing wellbeing and flourishing rather than solely focusing on pathology and illness (Seligman, 1998). Whilst this may have been the catalyst for contemporary research, the underpinning ideas behind positive psychology are not new concepts. Historically, such ideas can be found in Philosophy, with Aristotle (B.C.E./ 2009) writing about concepts of the good person and virtues of character, along with Thomas Aquinas's work on virtue (cited in Simmons & Lehmann, 2013). They can also be identified in early 20th century psychology. Both Thorndike (1911) and Dewey (1922) highlighted the importance of studying character in psychology, and Jung (1933) discussed concepts relating to how people can achieve their potential and become fully functioning. More modern, humanistic, psychological theories have also focused on these ideas, with Rogers' (1963) idea of the fully functioning person and Maslow's (1968, 1970) concept of self-actualization both discussing how people can function optimally. Some applied psychological models and theories also focus on concepts related to positive psychology. Resource-based therapies aim to help individuals move forwards by focusing on using the personal and social resources they already possess rather than focusing on eliminating their deficits (Priebe, Omer, Giacco, & Slade, 2014). Therapies such as Solution-Focused Therapy work with individuals by, instead of focusing on problems, focusing on positive solutions that go beyond the absence of an issue (O'Connell, 2012). Such approaches are based upon the concept that individuals already have the tools and qualities that they need in order to positively progress – akin to positive psychology's focus on positive traits and strengths (Seligman & Csikszentmihalyi, 2000). These are all examples of previous individuals and therapies that have focused on concepts relating to positive human functioning – concepts that are now classed as part of positive psychology – and have historically rejected a pathological focus.

Despite there being evidence of different individuals and models that have historically discussed positive human functioning, these instances were mainly in isolation (Linley & Joseph, 2004). Seligman and Csikszentmihalyi (2000) suggest that modern psychology has focused too much on pathology, deficits, and dysfunctions within people, and that positive psychology aims to redress the balance. It is argued that the biggest contribution made by this modern positive psychology movement is that it has brought together researchers and practitioners who are interested in positive human functioning and provided them with a

common language and research area (Linley & Joseph, 2004). Historically, there has been a considerably larger research output focusing on pathological issues (Linley & Joseph, 2004), however, between 1999-2010 there were 17 special-issue journals, multiple conferences, journal publications, and research programmes set up focusing on positive psychology (Simmons & Lehmann, 2013), with 2,300 positive psychology journal articles published in 2011 alone (approximately 4% of all articles published that year; Rusk & Waters, 2013). This therefore suggests that providing a shared language and research "home" has energised the field and provided a basis for research in this area to grow.

The modern positive psychology movement has also resulted in new theories regarding the positive elements of human functioning. Initial theories focused on positive emotions and happiness, with one such theory being Fredrickson's (1998, 2001) Broaden and Build Theory of Positive Emotion. This proposed that positive emotions increase the range of thoughts and actions that can occur, which then build an individual's personal resources that are sustained beyond the initial positive emotions – for example a broadened desire to engage socially builds support networks (Fredrickson, 2001). The theory therefore focuses on the influence of positive emotions on optimal functioning (Fredrickson, 2001). Recent research has supported the theory, finding positive emotions can broaden individuals' thoughts and actions, and increase personal resources (Fredrickson & Joiner, 2018). The theory is, however, criticised for not including the benefits of negative emotions, as well as how it defines emotions as positive as this is context specific (Held, 2018; Wong, 2011a). The theory has increased knowledge of the role of positive emotions within optimal functioning, but as it fails to consider negative emotions is limited as a theory to positive emotions only.

A theory that considers further elements as well as positive emotions is the Authentic Happiness Theory proposed by Seligman (2002a). This is considered a foundational theory of modern positive psychology (Scorsolini-Comin, Fontaine, Koller, & dos Santos, 2013), and stated happiness could be broken down into three elements that are pursued for their own sake: positive emotion (feelings), engagement (being absorbed by an activity), and meaning (sense of purpose; Seligman, 2002a). Seligman (2002a) stated the goal of the theory was to increase happiness, as measured by life satisfaction. The theory therefore states people make choices based on how much happiness they will achieve to maximise their life satisfaction. Whilst the proponent of the theory, Seligman (2011) has subsequently criticised it. Seligman (2011) stated the concepts of engagement and meaning are not in line with general definitions of happiness as cheerfulness, and thus cannot be considered part of this construct. Also, life satisfaction measures are strongly linked with mood, so reports of this are impacted by the

levels of positive emotion present at the time and thus the theory is overly linked to mood – a variable situational measure (Seligman, 2011). Finally, Seligman (2011) criticised this theory as the elements do not offer an exhaustive list of things that people pursue for their own sake.

As a result of the criticisms of Authentic Happiness Theory, Seligman (2011) proposed a new theory – Well-Being Theory. This posits that well-being should be the focus of modern positive psychology, rather than happiness (Seligman, 2011). It states that well-being is a construct made from five measurable elements which include the three from Authentic Happiness Theory but also adds accomplishment (achievements are pursued for their own sake) and positive relationships (people pursue positive connections with others). These elements are referred to by the acronym PERMA (positive emotions, engagement, relationships, meaning, and accomplishment; Seligman, 2011). This theory demotes happiness and life satisfaction from the goal of the theory to an element of the theory, with no one element defining well-being but all contributing to it. It is stated by Seligman (2011) that the goal of the theory is therefore to increase optimal functioning through the five elements of well-being. Consequently, this theory provides a framework that can be used to enhance well-being (Coffey, Wray-Lake, Mashek, & Branand, 2016; Green & Palmer, 2019). It is not limited to happiness and is thus less reliant on self-report measures of life satisfaction, enabling more scientific examination (Green & Palmer, 2019). Indeed, research has found PERMA predicated markers of well-being and physical health (Coffey et al., 2016).

Well-being theory is, however, criticised for not including physical health which is seen by others as an element of well-being (Green & Palmer, 2019). It is also stated that the theory does not address the underlying mechanisms of well-being but simply provides a list of elements related to this that could be infinitely increased (Wong & Roy, 2018). Indeed, research has found other areas predicted additional variance to PERMA, and there are calls in the literature for further research into the theory (Donaldson, Heshmati, Lee, & Donaldson, 2020; Scorsolini-Comin et al., 2013). Moreover, existing theories of well-being like Ryff's (1989) Psychological Well-Being Theory[1] propose different elements to PERMA such as autonomy and self-acceptance. There is therefore a level of confusion within the literature as to the exact elements of well-being (Wong, 2011a). In fact, Goodman, Disabato, Kashdan, and Kauffman (2018) found PERMA was highly correlated to the concept of subjective well-being (SWB). Seligman (2018) argues this may simply show that the elements of PERMA are related to well-being and that SWB is a good overall indicator of this. Seligman (2018),

[1]It is noted that multiple other theories of well-being exist but discussing these is beyond the scope of this thesis.

however, acknowledges that PERMA is a work in progress, but states that it provides a good starting point, encouraging further research that enhances understanding of this theory.

Whilst theories within modern positive psychology therefore have limitations, they have also provided foundations for research to enhance knowledge of positive concepts. Theories have moved from an initial focus on positive emotion to include other elements. Regardless of the limitations, these highlight how positive psychology has developed theories specifically concerned with positive aspects of optimal functioning rather than focusing on deficits. Such theories therefore highlight a key contribution of modern positive psychology.

Unsurprisingly for an emerging field, however, positive psychology is not without its critics. The research methods currently used are argued to be insufficient and of poor quality (Coyne & Tennen, 2010; Coyne, Tennen, & Ranchor, 2010), with better and more diverse methods required (Lazarus, 2003). Miller (2008) stated that positive psychology offers a set solution for optimal functioning where none exists as this does not capture the differences of the individual. Critics also highlight that there are still conceptual issues and a lack of clarity within the field (Kristjansson, 2010). One such criticism is that positive psychology splits psychology into the positive and negative (Held, 2002; 2004; 2018). Such segregation is cited as unnecessary as these are both important aspects of human functioning that are not independent. Held (2018) highlights that there is research evidence showing the positive impact of negative emotions on optimal functioning, suggesting a positive worth to the negative which is ignored within positive psychology. Held (2018) also states that the qualities and strengths used within the field (a theme that will be developed further in section 2.3 on strengths-based approaches) were decided upon a priori rather than based on research evidence. Consequently, research into these simply reinforces the qualities as important and justifies the initial a priori decisions rather than providing evidence that informs the relevant qualities and strengths. Furthermore, positive psychology assumes that these general traits and characteristics are inherently positive, however, it is argued that traits cannot be inherently positive or negative but depend upon the context in which they operate (Lazarus, 2003; McNulty & Fincham, 2011). Such a criticism highlights the importance of looking at positive traits and qualities within specific contexts, which is particularly pertinent as positive psychology is often also criticised for lacking clarity and a common language that is context specific (White, 2016).

Whilst there is merit in some of the criticisms of positive psychology, lots of these focus on the initial phase of positive psychology research (Kristjansson, 2010). The area has progressed since then and, as it is an emerging field, developments will be needed and areas

will currently be missed (Kristjansson, 2010). Initially, research focused on positives at the expense of negatives but there has now been a shift to incorporate negatives into the research (Wong, 2011b). Many positive psychology researchers therefore refute the idea that it fails to understand the negative aspects of human functioning (Gable & Haidt, 2005; Wong, 2011b). In fact, the aim of positive psychology was to build on what is already known about growth and optimal functioning to provide a balanced approach that allowed what is already known about the negative experiences of human functioning to be integrated with the research into the positive (Gable & Haidt, 2005; Seligman & Csikszentmihalyi, 2000). Furthermore, if psychology cannot separate out the positive from the negative, and this is a criticism of positive psychology, then research on the positives is required either way to ensure there is knowledge about both strengths and weaknesses (Snyder & Lopez, 2002). Peterson (2006) called for positive psychology to provide as much of a focus on strengths as weaknesses rather than sole focus on either. Such criticism may therefore have missed the initial purpose of the movement which does not deny the importance of the negative and is interested in the entire human experience. It is, in fact, argued that there is actually little evidence for the a priori pathological and negative view of human functioning that has been the predominant focus within psychology and that a more balanced view is required – one that is provided by positive psychology (Gable & Haidt, 2005).

This thesis is, therefore, underpinned by a positive psychology philosophy. It adopts the approach that optimal functioning is not merely the absence of deficits, or the negative, but the presence of positive characteristics (Maddux, 2008), as this provides a clear way to understand normal and extraordinary functioning (Strümpfer, 2005). It is clear that the emergence of positive psychology has created conceptual issues and debate within the field, but it must be noted here that going into depth on these topics is beyond the scope of this thesis – the reader is therefore encouraged to look into more detail around these arguments should they wish to do so. The criticisms, and rebuttals, cited above, however, suggest a need to understand both human strengths and weaknesses regardless of one's perspective on positive psychology as a whole. The focus of this thesis is therefore on one of these areas – that of human strengths, rather than weaknesses. The thesis adopts a strengths-based approach to optimal functioning throughout, which is one of the key areas of positive psychology (Seligman & Csikszentmihalyi, 2000). It is this approach, along with research into it, that is outlined next.

2.3 A Strengths-Based Approach

As highlighted previously, research within positive psychology has focused on three key areas – positive subjective experience, positive individual traits, and positive institutions (Seligman & Csikszentmihalyi, 2000). It is the second of these areas – the study of positive personal qualities, strengths, and values – that underpins the focus of this thesis. Within this area of positive psychology, research has primarily looked into human strengths (Peterson & Seligman, 2004), adopting a strengths-based approach to optimal functioning. Such an approach refers to focusing on using an individual's strengths to improve their overall functioning rather than a focus solely on developing weaknesses (Simmons & Lehmann, 2013). This approach is therefore not a model or theory designed to explain a specific phenomenon, but is rather a perspective, or lens, from which to view human development (Simmons & Lehmann, 2013). Such a lens does not ignore the presence of weaknesses or deficits, but emphasises the positive qualities and resources possessed by an individual that allows them to function at their best and thrive (Simmons & Lehmann, 2013).

From a practical perspective, the process of focusing on an individual's strengths begins by identification of what these strengths are within an individual (Hodges & Clifton, 2004; Peterson & Seligman, 2004; Simmons & Lehmann, 2013). It is argued that measuring these constructs facilitates a better understanding of the qualities, and hence resources, that individuals possess that can allow them to increase their performance and reach their goals (Simmons & Lehmann, 2013). As with positive psychology in general, Peterson and Park (2004) stated there was therefore a need for a common strengths-based language, or vocabulary, to ensure a collective understanding of what is being discussed. They stated that failing to do this could cause confusion within the literature, and between researchers and clients (Peterson & Park, 2004). A large part of this area has, therefore, focused on the assessment process in order to identify, and define, an individual's strengths (Simmons & Lehmann, 2013). These have then been used as the basis for further research in the area. As, however, a strengths-based approach is a perspective rather than a specific model or theory, there have been different methods of assessment designed which have attempted to provide a common language (Hodges & Clifton, 2004; Peterson & Seligman, 2004). These assessment tools have been designed in various ways and for different contexts. Such tools provide a variety of definitions of what a strength is, as well as the qualities that constitute the specific strengths. In order to examine some of the different definitions, and approaches, taken, two of the main assessment tools are outlined next – the Values in Action Inventory of Strengths and

the Clifton StrengthsFinder. Additional tools are then briefly highlighted before the different approaches are compared.

2.3.1 The Values in Action Inventory of Strengths

The Values in Action Inventory of Strengths (VIA-IS) was developed by Peterson and Seligman (2004) as a way to assess the positive aspects of the human experience. The intention was to provide a positive psychology version of the Diagnostic and Statistical Manual of Mental Disorders (DSM; American Psychiatric Association, 2013). Peterson and Seligman (2004) argue that the DSM was successful as it provided researchers with a common language for psychological disorders by providing a scientific way to measure them. Taking a positive psychology approach rather than focusing on psychological disorders, however, Peterson and Seligman (2004) wanted to understand the aspects of good character that allowed individuals to thrive, believing strengths of character were critical to positive psychological functioning. Their aim was, therefore, to develop a classification that provided a common language for researchers, and practitioners, of measurable aspects of good character. This would allow individuals to discuss virtues and strengths of character (the positive aspects of the human experience), allow measurement of these concepts, and facilitate future research in the area (Peterson & Seligman, 2004).

In order for there to be a common language, and shared understanding, it is important to be clear on the terms being discussed (Kristjansson, 2010). To avoid ambiguity within the classification, Peterson and Seligman (2004) therefore specify and define the different aspects of what makes up good character, along with their overall approach to character as a concept. They define character as having three hierarchical levels, with these being virtues, character strengths, and situational themes. Virtues refer to overarching key characteristics that are universally valued by moral philosophers, appearing across culture and throughout history (Peterson & Seligman, 2004). Character strengths refer to positive traits that make up, and are in the service of, the virtues. These are more measurable constructs and allow individuals to display, and achieve, the overarching virtues (Peterson & Seligman, 2004). For example, love of learning or creativity would be character strengths that allowed an individual to display, and potentially achieve, the virtue of wisdom. When using these strengths, Peterson and Seligman (2004) suggest you would see an individual displaying a sense of energy, authenticity, and excitement. Finally, the third level of good character, situational themes, refers to the behaviours exhibited by people that allow them to display the character strengths

in specific situations. Situational themes are specific for individual contexts, and may differ across settings, cultures, genders, or social group – for example a theme of empathy may be present at home but not in a work context. These themes are neither good nor bad but used to help an individual to display the strengths, in turn leading to a display of the virtues. It is within situational themes that Peterson and Seligman (2004) acknowledge a level of individuation in how people behave – they accept that there are different ways to display the character strengths. Thus, there is a hierarchical approach adopted to good character, with universal virtues that are valued cross-culturally at the top, followed by character strengths, and with more specific situational themes at the bottom. Whilst not part of their definition of good character, Peterson and Seligman (2004) also define talents and abilities. They distinguish these concepts from character strengths, stating that talents and abilities are valued for the outcomes they bring (such as intelligence – a talent or ability – bringing a level of fame), whereas character strengths are inherently valued for their moral component.

Peterson and Seligman (2004) state that their overall approach to character is in line with trait theory. The positive aspects of character are viewed as individual differences that are somewhat stable yet influenced by a person's context and so have the capacity to change – they are stable but also malleable and can be developed. Character strengths are not discreet categories, therefore, but exist more on a continuum (Peterson & Seligman, 2004). They do, however, highlight the importance of putting character strengths in context, stating that positive qualities do not operate in isolation but interact with the setting in which the individual is in. Peterson and Seligman (2004) stress that context needs to be considered, therefore, as some situations allow for specific strengths to be developed or displayed, whereas others do not.

The approach taken to character outlined above, along with the definitions of what constitutes good character, therefore form the foundation of the VIA-IS. With a hierarchical view of character used, it is important to note that the VIA-IS classification aims to measure at the character strengths level – allowing individuals to identify their own character strengths. In order to generate the character strengths included within the classification, a thorough process was conducted. First, a group of researchers brainstormed potential character strengths. These terms were then combined with information gained from multiple literature reviews on the subject, resulting in an initial list of character strengths (Peterson & Seligman, 2004). This list was presented at numerous conferences, discussed with individuals outside the initial research team, and then refined. For positive characteristics to be included in the list, they had to match the definition of a character strength, rather than a talent or

ability, and be valued cross-culturally (Peterson & Seligman, 2004). To help reduce the list further, Peterson and Seligman (2004) generated a list of inclusion criteria that were based on commonalities between the strengths they had identified. It was highlighted that not all strengths included met all of these criteria. In fact, Peterson and Seligman (2004) state that these are not essential criteria, or necessary, for a positive quality to be a character strength but are used as a way to highlight similar elements among the terms they had identified. The criteria used are presented in Table 1. It is worth noting that any term that covered multiple characteristics, such as resilience, was considered an "umbrella term" and was excluded from the list (Peterson & Seligman, 2004).

A frequent question, or criticism, of the initial list of character strengths generated was whether there were truly character strengths and virtues that were valued across all cultures (Peterson & Seligman, 2004). To assess whether or not this was the case, Peterson and Seligman (2004) conducted a cross-cultural, historical, literature review to see if there was a level of consensus on what constitutes good character, alongside their work on developing a list of character strengths. This covered cross-cultural religion, politics, and philosophy (Peterson & Seligman, 2004), and was conducted across the three primary historical cultures of China, South Asia (India), and the West (Smart, 1999). This process identified numerous virtues that were discussed both cross-culturally and historically. These qualities were then grouped together and themed into overarching core virtues – that of courage, justice, humanity, temperance, transcendence, and wisdom – that were stated to be universally valued. These core virtues were then used to group the list of character strengths that had been identified in the previous stage (Peterson & Seligman, 2004). This entire process resulted in a list of 24 character strengths which were grouped into six different overarching virtues, which make up the VIA-IS (see Table 2). Peterson and Seligman (2004) stated, however, that they expected this initial version of the VIA-IS to evolve as further research in the area was conducted. They suggested strengths may be added, removed, or combined, based on the development of research over time.

As a result of the detailed review process, the VIA-IS measures an individual's character strengths – also referred to as signature strengths (Peterson & Seligman, 2004). Once complete, the classification provides an individual with feedback on their top character strengths and not on those they score lowest on (Peterson & Seligman, 2004). The items within the questionnaire were mainly developed by the lead authors, with some input from research students (Peterson & Seligman, 2004). An initial version of the VIA-IS was pilot tested, and items with alpha levels below .7 were removed. This process was repeated until

Table 1.

Peterson and Seligman's (2004) Criteria for a Character Strength.

Criteria for a Character Strength
1. The strength helps to fulfil the individual, and others, and contribute to a good life. A strength will pass the "deathbed test," by being a quality an individual potentially wished they had spent more time displaying.
2. The strength is intrinsically morally valued, regardless of clear desirable outcomes – it produces more than the outcome or reward.
3. Displaying the strength does not do harm to others.
4. The opposite of the strength should not be able to be phrased in a desirable way.
5. The strength is trait like in its stability across time and across most situations. It is demonstrated through thoughts, feelings, and behaviours so that it can be measured.
6. The strength is distinct from others and does not collapse into them.
7. The strength is viewed, and role modelled, in society as positive.
8. There are prodigies who display this strength early on – this cannot necessarily be applied to all strengths (Peterson and Seligman, 2004).
9. There are some individuals who would display the complete absence of the strength.
10. Society provides both institutions and opportunities for the strength and virtue to be cultivated and sustained.

all scales reported alpha levels greater than .7. (Peterson & Seligman, 2004). This resulted in the original version of the VIA-IS, an online self-report questionnaire for adults that uses a 5-point Likert scale and consists of 240 items – 10 items per strength. All scales within the VIA-IS report satisfactory alpha levels (>.7), along with test-retest reliability (>.7).

A key strength of the VIA-IS is, therefore, that it was developed through a detailed review process that brought in different perspectives and viewpoints in establishing the virtues and strengths it measures (Peterson & Seligman, 2004). Through this process, a

Table 2.

The VIA-IS Core Virtues, Associated Character Strengths, and Definitions.

Overarching Core Virtue	Associated Character Strengths	Character Strength Definition
Wisdom and Knowledge (cognitive strengths that entail the acquisition and use of knowledge)	Creativity	Thinking of novel and productive ways to conceptualise and do things; includes artistic achievement but is not limited to it.
	Curiosity	Taking an interest in ongoing experience for its own sake; finding subjects and topics fascinating; exploring and discovering.
	Open-mindedness	Thinking things through and examining them from all sides; not jumping to conclusions; being able to change one's mind in the light of evidence; weighing all evidence fairly.
	Love of learning	Mastering new skills, topics, bodies of knowledge, whether on one's own or formally; obviously related to the strength of curiosity but goes beyond it to describe the tendency to add systematically to what one knows.
	Perspective	Being able to provide wise counsel to others; having ways of looking at the world that make sense to oneself and to other people.
Courage	Bravery (valour)	Not shrinking from threat, challenge, difficulty, or pain;

Overarching Core Virtue	Associated Character Strengths	Character Strength Definition
(emotional strengths that involve the exercise of will to accomplish goals in the face of opposition, external or internal)		speaking up for what is right even if there is opposition; acting on convictions even if unpopular; includes physical bravery but is not limited to it.
	Persistence (perseverance, industriousness)	Finishing what one starts; persisting in a course of action in spite of obstacles; taking pleasure in completing tasks.
	Integrity (authenticity, honesty)	Speaking the truth but more broadly presenting oneself in a genuine way and acting in a sincere way; being without pretence; taking responsibility for one's feelings and actions.
	Vitality (zest, enthusiasm, vigour, energy)	Approaching life with excitement and energy; not doing things halfway or half-heartedly; living life as an adventure; feeling alive and activated.
Humanity (interpersonal strengths that involve tending and befriending others)	Love	Valuing close relations with others, in particular those in which sharing and caring are reciprocated; being close to people.
	Kindness (generosity, nurturance, care, compassion, altruistic love, "nice-ness")	Doing favours and good deeds for others; helping them; taking care of them.
	Social Intelligence (emotional intelligence, personal intelligence)	Being aware of the motives and feelings of other people and oneself; knowing what to do to fit

Overarching Core Virtue	Associated Character Strengths	Character Strength Definition
		into different social situations; knowing what makes other people tick.
Justice (civic strengths that underlie healthy community life)	Citizenship (social responsibility, loyalty, teamwork)	Working well as a member of a group or team; being loyal to the group; doing one's share.
	Fairness	Treating all people the same according to notions of fairness and justice; not letting personal feelings bias decisions about others; giving everyone a fair chance.
	Leadership	Encouraging a group of which one is a member to get things done and at the same time maintain good relations within the group; organising group activities and seeing that they happen.
Temperance (strengths that protect against excess)	Forgiveness and mercy	Forgiving those who have done wrong; accepting the shortcomings of others; giving people a second chance; not being vengeful.
	Humility/ modesty	Letting one's accomplishments speak for themselves; not seeking the spotlight; not regarding oneself as more special than one is.
	Prudence	Being careful about one's choices; not taking undue risks; not saying or doing things that might later be regretted.

Overarching Core Virtue	Associated Character Strengths	Character Strength Definition
	Self-regulation (self-control)	Regulating what one feels and does; being disciplined; controlling one's appetites and emotions.
Transcendence (strengths that forge connections to the larger universe and provide meaning)	Appreciation of beauty and excellence (awe, wonder, elevation)	Noticing and appreciating beauty, excellence, and/or skilled performance in various domains of life, from nature to art to mathematics to science to everyday experience.
	Gratitude	Being aware of, and thankful, for the good things that happen; taking time to express thanks.
	Hope (optimism, future-mindedness, future orientation)	Expecting the best in the future and working to achieve it; believing that a good future is something that can be brought about.
	Humour (playfulness)	Liking to laugh and tease; bringing smiles to other people; seeing the light side; making (not necessarily telling) jokes.
	Spirituality (religiousness, faith, purpose)	Having coherent beliefs about the higher purpose and meaning of the universe; knowing where one fits within the larger scheme; having beliefs about the meaning of life that shape conduct and provide comfort.

Note. Adapted from *Character Strengths and Virtues: A handbook and classification (p. 29),* by C. Peterson & M. Seligman (Eds), 2004, Washington, D.C: APA Press and Oxford University Press. Copyright (2004) by Values in Action Institute.

classification was developed that aimed to include universal strengths that were valued cross-culturally, and have been valued historically (Peterson & Seligman, 2004), thus making it applicable to individuals from multiple backgrounds. As a result of this, there has been increased research in the area (see section 2.4 for more details), in line with the initial intention of the classification (Peterson & Seligman, 2004). Peterson and Seligman (2004) highlighted a future aim of developing a shorter version of the VIA-IS by highlighting unnecessary strengths through factor analysis, resulting in the collapsing of scales together rather than merely the reduction of items. They do, however, state that the original VIA-IS framework and classification provided a common language to the area by drawing together concepts that have previously been researched individually. Indeed, at the time of writing the VIA-IS had been taken by over 8 million people (VIA Institute on Character, 2019). Peterson and Seligman (2004) assert that for the area of good character to grow and develop, both a common language and a way to assess the constituent parts of this concept were required – something that they state their original classification did for the area of character strengths.

It is important to note, however, that the VIA-IS has been criticised for deciding upon the strengths and virtues included a priori rather than based on research evidence (Held, 2018). Indeed, research has shown more evidence of a five-factor, rather than the proposed six-factor (the virtues), solution (see section 2.4 for more details). Thus, there is a level of support to this potential limitation of the VIA-IS (Held, 2018). It must also be noted that Peterson and Seligman (2004) highlight that context is important and needs to be considered, as some strengths are relevant, and therefore some are not relevant, to different contexts. The VIA-IS is, however, a general scale, and so does not capture the complexity of the strengths required in different contexts (Peterson & Seligman, 2004). This limitation must therefore be noted, as more context-specific strengths assessments may be required when looking at strengths within specific domains.

2.3.2 The Clifton StrengthsFinder

The Clifton StrengthsFinder (CSF) was developed by Donald Clifton and The Gallup Organisation as an online strengths-based assessment specific for the workplace domain (Asplund, Lopez, Hodges, & Harter, 2007). They adopted an approach towards strengths-based psychology that defined a strength as an ability to deliver an almost perfect level of performance, consistently, in a specific activity (Hodges & Clifton, 2004). To develop this ability, the approach states the need for an individual to identify their own personal themes of

talent, with talent defined as an innate pattern of thoughts, feelings, and behaviours (Hodges & Clifton, 2004). Talents are argued to be inherent within individuals, similar to personality traits (Asplund et al., 2007; Hodges & Clifton, 2004). When being utilised, talents can often be seen through unprompted actions (such as an individual naturally stepping in to make decisions when they are required), a desire to act in line with that talent, accelerated learning through the use of the talent, and a deep level of enjoyment, energy, and satisfaction from activities that allow the talent to be displayed (Hodges & Clifton, 2004). It is through identifying and using an individual's talents, and then combining these with relevant, specific, skills and knowledge that allows an individual to develop a strength – this almost perfect level of performance (Asplund et al., 2007).

The CSF, therefore, aims to measure an individual's workplace themes of personal talent, as these are the basis for further strengths-based development (Hodges & Clifton, 2004). Its purpose is to help an individual develop and grow in line with positive psychology principles – identifying their strongest themes of talent which they can then use to develop their strengths (Asplund et al., 2007). Thus, the CSF adopts a different approach to strengths-based psychology to that of the VIA-IS, focusing on themes of talent as important contributors to an individual's strengths rather than looking at strengths themselves. Hodges and Clifton (2004) stated that strengths-based development is comprised of three stages: the identification of themes of talent, where individuals develop heightened self-awareness; incorporating this new perspective into their view of themselves and being able to see how these talents manifest in their behaviours; and the behaviour change stage where individuals are able to make attributions for their success in relation to their talents. The CSF is therefore viewed as a questionnaire to allow individuals to heighten their self-awareness, being used for subsequent discussions as the basis of interventions (Asplund et al., 2007). Hodges and Clifton (2004) argue that the development of specific workplace themes provides a context-specific language that allows individuals to express the things that they are good at.

In order to identify the relevant themes of talent, and then subsequently construct the questionnaire, Clifton and The Gallup Organisation initially looked at what made experts in multiple fields successful (Asplund et al., 2007). They identified individuals within different rolls that were considered exceptional and assessed the thoughts, feelings, and behaviours associated with the success in these different settings (Asplund et al., 2007). These qualities then informed the development of semi-structured interviews which were delivered to a large number of employees within their organisation (Asplund et al., 2007). The information generated through these interviews was then analysed, and emerging themes used as the basis

for the themes of talent within the CSF. An initial pool of questions was then generated, pilot tested, and items with the best psychometric properties were retained. This resulted in a questionnaire that contained 35 themes of talent, however subsequent analysis then reduced this to 34 themes (see Table 3 for a list of themes of talent, the number of items assessing each theme, and their definitions).

Within the 34 themes that make up the CSF, there are a total of 180 items. The exact number of items assessing each theme differs depending on that specific theme (see Table 3). Each item comprises two statements about an individual which are placed at the two opposite ends of a 5-point Likert scale. Individuals are then required to choose which statement they feel is most relevant to themselves, and whether they agree, or strongly agree, with this statement. Points 1 and 2 on the Likert scale, therefore, have descriptors that indicate strong agreement, or agreement, respectively, with the statement on the left. Points 4 and 5 on the scale indicate agreement or strong agreement, respectively, with the statement on the right. If an individual cannot choose between the two statements, there is a neutral option (the descriptor for point 3) on the scale (Asplund et al., 2007). Some of the statements used are linked to multiple themes, and as an individual is forced to decide between two statements, scores on items can contribute to an overall score on multiple themes. Once complete, mean scores from the statements are then calculated, and individuals are presented with their five highest scoring themes of talent (Asplund et al., 2007). The alpha levels reported for internal consistency range from .50 –.76, with test-retest reliabilities of .60 –.80. It is also argued that there are high levels of validity for the CSF, with criterion validity shown through links with the 16 Personality Factor Questionnaire (Cattell & Mead, 2008), California Psychological Inventory Personality Assessment (Gough, 2000), and the Big Five Inventory (John & Srivastava, 1999), along with support for construct validity from a hierarchical cluster analysis (Asplund et al., 2007). (For more specific information on the work conducted around validity, the reader is directed to Asplund et al., 2007 as discussing this topic in detail is beyond the scope of this thesis.)

The CSF therefore provides an assessment of themes of talent within the specific workplace domain. This is a key strength of the CSF, as it provides themes of talent specific to this context. Thus, it offers a measure of strengths developed specifically for the workplace, assessing themes of talent identified as relevant within this area. In 2007, the CSF had been taken by over 2 million people across a wide variety of different roles (Asplund et al., 2007). Its development led to increased research, and subsequent understanding, of strengths within the workplace (see section 2.4 for more details), in line with the initial

Table 3.

The CSF Themes of Talent, Number of Items Assessing Each Theme, and Their Definitions.

Theme of Talent	Number of Items	Definition
Achiever	6	Individuals take satisfaction from productivity, have high levels of stamina, and work hard.
Activator	7	Individuals translate thoughts into actions.
Adaptability	8	Individuals focus on the now, taking things as they come, and often going with the flow.
Analytical	11	Individuals consider the different factors that might impact different scenarios, and often look for the causes of something.
Arranger	13	Individuals are capable of organising multiple elements to ensure high levels of productivity.
Belief	11	Individuals are driven by key values that give their life a clear purpose.
Command	9	Individuals can take charge of situations, are capable of making decisions, and have a certain aura.
Communication	9	Individuals are good at presenting, conversing, and translating their own thoughts into words.
Competition	7	Individuals strive to be first, enjoy contests with others, and compare their performance levels to that of others.
Connectedness	8	Individuals do not believe in coincidences but rather in the fact that there is a link between all things.
Consistency	8	Individuals make attempts to treat all others in the same manner, often by having, and sticking to, clear guiding principles.
Context	4	Individuals make sense of the present by looking to the past.
Deliberation	8	Individuals can predict potential obstacles ahead of time, and often carefully consider any decisions before making them.
Developer	10	Individuals are aware of, and nurture, the development of others, often spotting minor improvements.
Discipline	14	Individuals create a level of order, structure, and routine.

Theme of Talent	Number of Items	Definition
Empathy	6	Individuals are capable of considering how others are feeling by imagining themselves in the position of others.
Focus	12	Individuals can prioritise tasks, take action, and then complete tasks, staying on track whilst doing this.
Futuristic	8	Individuals have a vision for the future, and through this are able to inspire other people.
Harmony	5	Individuals seek agreement and look for a level of consensus – they do not like conflict.
Ideation	7	Individuals are stimulated by ideas and are capable of connecting things that others might consider distinct.
Includer	7	Individuals are aware of others who may be left out and try to include and accept these into things.
Individualisation	6	Individuals are interested in the uniqueness of each person, often being able to assess how productive working relationships can occur between different individuals.
Input	5	Individuals have a desire for further knowledge and information.
Intellection	10	Individuals are contemplative and often enjoy intellectual discussions.
Learner	8	Individuals are energised by the process of learning new things and continuously improving.
Maximiser	7	Individuals look to use strengths to develop something good into something great, either for themselves or for the group.
Positivity	12	Individuals have high levels of excitement and enthusiasm that are often infectious.
Relator	8	Individuals have close relationships and enjoy achieving things with those that they are close to.
Responsibility	11	Individuals take ownerships of their actions.
Restorative	6	Individuals are capable of assessing what is wrong with a situation and finding a solution.

Theme of Talent	Number of Items	Definition
Self-assurance	13	Individuals have a high level of belief that they are capable of managing things in their lives, possessing a belief that the decisions they make are correct.
Significance	12	Individuals have a desire to be recognised and seen as important by others.
Strategic	4	Individuals are capable of seeing, and connecting, different patterns within situations and finding different ways to move forwards.
Woo	9	Individuals enjoying meeting, and making connections with, new people.

Note. Adapted from *The Clifton StrengthsFinder®2.0 Technical Report: Development and Validation (p. 32-36),* by J. Asplund, S. Lopez, T. Hodges, and J. Harter, 2007, Princeton, New Jersey: Gallup. Copyright (2007) by The Gallup Organization.

intention of the assessment tool (Hodges & Clifton, 2004). It is stated that such a scale was, therefore, necessary to facilitate strengths-based interventions to be both developed and then subsequently assessed and researched (Asplund et al., 2007) – further highlighting the importance of a strengths-based assessment specific to an individual domain. Despite this, however, the CSF may be slightly limited as it reports some alpha levels below the recommended value of .7 (Field, 2009; Tabachnick & Fidell, 2007). Whilst it is argued that the psychometric properties are adequate for the purpose of the CSF (Asplund et al., 2007), this suggests possible reliability issues with some of the sub-scales. Additionally, it is important to note that the context specific nature of the CSF also provides a potential limitation. As this scale has been specifically designed for the workplace, it is therefore not necessarily applicable within different contexts. This must be noted as the CSF addresses the issue of a general scale not capturing the complexity of strengths required in an individual context (Peterson & Seligman, 2004), however, in doing so it must be accepted that the scale may only be applicable within this domain.

2.3.3 Additional Strengths-Based Assessments

It is important to note that there are multiple other strengths-based assessment tools that exist (Simmons & Lehmann, 2013), but to go through each of them in detail is beyond the scope of this thesis. There are, however, two additional assessment methods that are worth briefly highlighting. Utilising the same framework as the VIA-IS, Peterson and Seligman (2004) also designed the Values in Action Inventory of Strengths for Youth (VIA-Youth) for individuals under 18 years of age. This assesses individuals on the same 24 strengths as the VIA-IS, however the questions were designed to be more specific to that population through focus group work with students as well as educational and developmental psychologists. It contains 198 items, all assessed on the same 5-point Likert scale as the VIA-IS, and with all subscales having alpha levels above .65. It is worth highlighting this assessment tool as the development of the VIA-Youth means there are two classifications from the same framework that allow individuals of any age the opportunity to identify their own individual character strengths. This shows the importance of ensuring the assessment tool is constructed, and relevant, for the specific target population. It also suggests that age is a factor to consider when looking at strengths.

The second additional assessment tool of note was developed more recently by Wright, Quick, Hannah, and Hargrove (2017). They stated that, despite the research into the area, there were still problems within the literature on agreeing what character actually is. Wright et al. (2017) highlight that for a construct to be measured effectively, there needs to be clarity of definition, which they stated to be lacking in the literature. Wright et al. (2017) stated that the VIA-IS actually added to the confusion within the literature as to what constitutes character, and thus character strengths. The VIA-IS is criticised for including traits that are clearly positive attributes but that may not be strengths of character as they lack the moral component that is part of the definition, such as creativity, and also for including traits that may actually be more complex processes, such as leadership (Wright et al., 2017). Further criticisms include a need for additional validation of the VIA-IS, along with issues of size as the 240 items limits the scale's practicality (Wright et al., 2017). Such criticisms led Wright et al. (2017) to develop their own character strengths scale – the Character Strength Inventory (CSI) – in order to create a scale that was shorter, more practical, and with high levels of validity, that assessed clearly defined concepts.

In developing the CSI, Wright et al. (2017) stated that there are five overall strengths that are present both historically and cross-culturally – valour, industry, self-regulation,

integrity, and critical thinking (or wisdom). These were extracted from previous reviews of strengths that had already been conducted, including the review by Peterson and Seligman (2004) which was used as the basis for the VIA-IS (Wright et al., 2017). Wright et al. (2017) then conducted their own literature review, assessing workplace research on character that specifically looked at these five strengths. The results of this process were then used to clearly define each of these five constructs (see Table 4) and based on these definitions a set of 105 items was developed. This was reduced through an initial study to a set of 40 items (8 per strength), all with alpha levels between .83-.91, and test-retest reliabilities (after three weeks) of .75-.83. A separate study also found alpha levels between .85-.90, showing consistency with the initial research (Wright et al., 2017).

Wright et al. (2017) state that, due to the psychometric properties highlighted above, the CSI does, as intended, provide a shorter, reliable, and valid character strengths assessment tool. In comparison to the VIA-IS, it also provides a different set of overarching strengths that are universal across time and culture, finding five rather than the six virtues identified by Peterson and Seligman (2004). This is also the case despite using some of the same underlying research (Wright et al., 2017). The CSI is therefore noteworthy as, despite the growing body of research into strengths-based psychology (see section 2.4), it highlights that there is still a level of disagreement as to what constitutes universal strengths that are consistent across time, culture, and situation. It may therefore be the case that, as discussed

Table 4.

The CSI Character Strengths and Their Definitions.

Character Strength	**Definition**
Valour	An individual is capable of handling difficulty and threat, acting positively despite facing hostility.
Industry	An individual persists regardless of setbacks.
Self-regulation	An individual displays discipline, controlling their actions and feelings consistently.
Integrity	An individual sticks to their principles and takes responsibility for what they do.
Critical thinking (wisdom)	An individual is capable of assessing different situations from different points of view and avoids making rash decisions.

previously, strengths need to be looked at in specific contexts (Lazarus, 2003; McNulty & Fincham, 2011; White, 2016).

2.3.4 A Comparison of Approaches

The approaches and assessment tools outlined previously have both key commonalities and differences between them that it is important to note. Whilst some of these factors have been briefly discussed in the previous sections, further consideration to these is given here.

An initial critical difference between the approaches taken are the underpinning definitions that have been used. As cited previously, the VIA-IS defines strengths in relation to good character which is further defined as being made of virtues, character strengths, and situational themes (Peterson & Seligman, 2004). Strengths are therefore referred to in relation to an underlying moral component – that is to say, strengths are ways to display moral virtues that are universally valued across time and culture. Whilst the CSI also both defines strengths in relation to good character and looked for qualities that were universally valued across time and culture (Wright et al., 2017), it's definition of strengths does not separate these into the different hierarchical levels of virtues and character strengths, as adopted by the VIA-IS approach. The CSI approach defines overarching strengths that may be universally valued, strengths that by the VIA-IS definition would potentially be classed as virtues. The CSI does not, therefore, focus on the moral component, or virtues, that underpins the VIA-IS's definition. It may define strengths in relation to good character, but still provides a different definition of this to the VIA-IS. The CSF, however, does not define strengths in relation to good character at all. This approach states that it is through understanding an individuals' talents and combining these with specific knowledge and skills that allows an individual to develop a strength – defined as an almost perfect level of performance (Hodges & Clifton, 2004). Strengths are therefore defined in relation to themes of talent, different to both the CSI and VIA-IS definitions, and focus on outcomes rather than good character. Furthermore, this approach focuses on the workplace, rather than the VIA-IS which looks more broadly across humanity. The CSF therefore defines strengths specifically in the workplace context, as workplace themes, rather than good character more generally as done by the VIA-IS. Thus, the CSF does not define strengths in relation to an underlying moral component. There is, therefore, a difference in the initial, underpinning, definitions used within these different approaches.

It is worth noting here that additional definitions of strengths also exist within the literature. As well as the definitions cited previously, strengths have been defined by Linley (2008) as an individual's pre-existing capacity to act or think in a specific way that energises, and is authentic to, the individual. Within Social Work settings, strengths have been defined in terms of external strengths – characteristics of an individual's surrounding environment such as their local community or work culture – and internal strengths – pre-existing qualities possessed within an individual, including cognitive or emotional strengths (Simmons & Lehmann, 2013). Additionally, Biswas-Diener (2010) define strengths as a set number of pre-existing qualities possessed by an individual that, in specific situations, allow that individual to deliver their best performance. These qualities shape an individual's behaviours, thoughts, and feelings, and are authentic (the quality is indicative of the truest version of the individual) and energising (individuals display engagement, enthusiasm, and excitement when using the qualities) for the individual (Biswas-Diener, 2010). These definitions, like those used by the CSF and CSI, differ to the VIA-IS's concept that strengths must serve higher-order virtues, and hence have an underlying moral component, in order to be classed as strengths. They also differ to the CSF's definition as they do not define strengths specifically in relation to outcomes, or as themes of talent. The concept of external strengths in social work suggests adopting a strengths-based approach to the environment (a concept that is not the focus of this thesis), however, the concept of internal strengths is somewhat analogous to the CSI idea of character strengths, with no underlying moral component. Indeed, common amongst all these definitions is that strengths are discussed as pre-existing internal qualities with no moral component, making them all similar to the CSI definition of strengths.

Whilst the different conceptualisations and definitions of strengths suggests a lack of commonality, there are, however, critical similarities within these. All definitions describe strengths in relation to some form of positive, internal, pre-existing qualities that are possessed by an individual and allow them to deliver an optimal level of performance. Multiple definitions refer to these qualities as being related to consistent thoughts, feelings, and behaviours (Biswas-Diener, 2010; Hodges & Clifton, 2004; Linley, 2008). Additionally, the VIA-IS, CSF, and CSI all approach strengths in line with trait theory, seeing them as similar to personality traits that are somewhat stable over time but can be developed (Asplund et al., 2007). It is also explicitly stated by most definitions that when strengths are used, individuals will display a sense of excitement, enjoyment, energy, and authenticity (Biswas-Diener, 2010; Hodges & Clifton, 2004; Linley, 2008; Peterson & Seligman, 2004). There may, therefore, be disagreement on the specific definitions used, however there is agreement

on the underpinning nature of strengths, along with the impact of these on an individual – an important distinction. (It is worth noting here that, as there is agreement about these different facets of strengths, the definition of a strength used for the research within this thesis will be an internal positive quality, trait, or characteristic that is authentic and energising, and leads to an individual's optimal level of performance. It will not focus on any underlying moral component as this does not seem to be consistent within different definitions. Further detail of the definition used is provided in section 2.6.)

Despite the slightly different conceptualisations and definitions of strengths used within the approaches outlined, the processes used to develop the different assessment tools have a level of commonality. The VIA-IS, CSF, and CSI all had an initial exploratory process when designing their questionnaires. Both the VIA-IS and CSI included reviews of the literature, with both preceding this with an additional exploratory stage – the VIA-IS with an initial brainstorming of information (Peterson & Seligman, 2004) and the CSI by assessing previous reviews in the area (Wright et al., 2017). Whilst the CSF did not conduct a review, it contained an exploratory stage of assessing the qualities of successful individuals and then utilising this information to conduct large scale interviews (Hodges & Clifton, 2004). This highlights another similarity in approach, as the VIA-IS presented information from the review process to other individuals within the field (Peterson & Seligman, 2004). Both the VIA-IS and the CSF therefore had external input into the development of their questionnaire. These exploratory processes were used by the VIA-IS, CSF, and CSI to outline the strengths that are included in their questionnaires. On the back of this, all then generated items and conducted testing to ensure adequate alpha levels. It is important to note the similarities in approaches here as this highlights that, despite different initial conceptualisations of strengths, researchers approached the generation of strengths and development of subsequent questionnaires in a similar way. This consistency in approach suggests the importance in strengths assessment development of an initial exploratory stage as a precursor to subsequent item generation and pilot testing.

It is also important to note the similarity in the processes used to develop the different assessment tools as, despite these similarities, they have led to a variation of outcomes. The fact that there are 34 qualities outlined in the CSF, 24 in the VIA-IS (split into six overarching virtues) and five in the CSI immediately shows a level of inconsistency in the qualities that have been identified. When examining these specific qualities more closely, there is a level of commonality in those outlined by the approaches but also variation. There are qualities within both the VIA-IS and the CSF that are distinct and unique to those

approaches. Within the VIA-IS, strengths such as love, forgiveness, appreciation of beauty, and gratitude are not represented within the CSF. Similarly, qualities in the CSF such as activator, competition, maximiser, and strategic do not have obvious counterparts within the other questionnaires. Some qualities within the questionnaires are, however, analogous to those outlined by the others. In comparison to the CSF, for example, strengths such as leadership, vitality, and love of learning in the VIA-IS are similar to those of command, positivity, and learner, respectively. Whilst some of the qualities outlined in the CSI do not match those in the CSF, the qualities of integrity and critical thinking are similar to those of responsibility and intellection. There is further commonality when comparing the CSI to the VIA-IS. The CSI aimed to identify qualities that were valued historically and cross-culturally – similar to the VIA-IS, specifically to the concept of virtues. If compared at the virtues level, there is similarity between the CSI qualities of critical thinking, valour, and self-regulation and the VIA-IS virtues of wisdom, courage, and temperance, respectively, but difference amongst the rest. If, however, you compare the CSI qualities at the strengths level – as the CSI referred to these as strengths not as virtues – then all 5 strengths have similar concepts within the VIA-IS. That all the CSI strengths are represented within the VIA-IS is unsurprising as the CSI included the review conducted in the development of the VIA-IS as one of its initial source materials (Wright et al., 2017). Despite this, it suggests some level of consistency in qualities that might be considered universal across time and culture, as the CSI did not solely base these strengths on that one review. Such consistency highlights a degree of similarity between approaches that initially looked at universal and general strengths, but further highlights how these are only partially represented in an approach that took a different perspective to strengths. Nevertheless, it is important to consider this difference of perspectives when looking at these outcomes. It may be possible that the different definitions used, and the different contexts that were considered in the initial research of these strengths played a critical role in the difference, and similarities, in outcomes. The CSF has a workplace focus, and therefore looked to identify themes of talent specific to the workplace context. Whilst the CSI also focused its latter stages of development in a workplace context, the initial exploratory phase of its research looked at qualities valued across time and culture more generally. This may explain the differences between the CSF and the VIA-IS and CSI, with certain qualities being relevant only within a workplace domain. The difference between the VIA-IS and CSI, in terms of number of qualities, suggests that certain strengths may be more relevant when considering strengths from a moral perspective. The fact that certain qualities are found across the different approaches suggests some qualities may be more

universal than others and apply beyond context. Both the VIA-IS and CSF, however, agree that context is important when looking at strengths (Hodges & Clifton, 2004; Peterson & Seligman, 2004), with the variation highlighted by these approaches further suggesting the importance of considering the context within which strengths are generated and examined.

In spite of a difference in perspective on strengths, and looking at different contexts, a key area of commonality between the VIA-IS and CSF relates to their original purpose. Both approaches aimed at creating a common language that could be used within their respective domains to drive the areas forward. The CSF stated that such a common language would form the foundation for interventions (Hodges & Clifton, 2004) with the VIA-IS looking to facilitate more discussion around strengths and virtues and facilitate future research within the area (Peterson & Seligman, 2004). It can be argued that, despite some of the differences, both have managed to achieve this to an extent, with research into strengths increasing over the course of the early part of the 21st century (Rusk & Waters, 2013; Simmons & Lehmann, 2013). As a result of these assessment methods, and the resulting research, more is therefore known about strengths-based approaches and their impact. It is this research which is outlined in the following section.

2.4 Research into Strengths

2.4.1 Assessment

Before discussing research looking at the impact of strengths-based approaches, it is important to note that research has been conducted examining the assessment tools used. Within the CSF, significant inverse correlation was found between the number of items assessing a theme of talent and the prevalence of that theme (Chara & Eppright, 2012). This suggests that the more items a theme has the less likely it is to be classed as a signature theme, with these themes therefore less prevalent in the literature. Evidence has also found issues with the items in the VIA-IS, with the initial 240 items found to produce a poor fitting factor structure that was only improved with a reduction in items to four or five per strength (Ng, Cao, Marsh, Tay, & Seligman, 2017). Attempts to produce much shorter versions have, however, failed to produce valid structures that clearly assess the same constructs as the VIA-IS and have the same initial proposed factor structure (Furnham & Lester, 2012; Vanhove, Harms & DeSimone, 2016). Indeed, a revised version has more recently been developed with high alpha levels and a reported six-factor structure, but this still contains 192 items

(McGrath, 2019). Furthermore, initial research by Peterson and Seligman (2004), using exploratory factor analysis, found a five-factor structure, suggesting strengths of restraint, alongside intellectual, emotional, interpersonal, and theological strengths. There is additional evidence that the VIA-IS does not support a six-factor structure, as initially intended (Macdonald, Bore, Munro, 2007; Ng et al., 2017), and there is also multiple research supporting a five-factor solution, across different countries and ages (Azañedo, Fernández-Abascal, & Barraca, 2014; Littman-Ovadia & Lavy, 2012; Proyer, Gander, Wellenzohn, & Ruch, 2014; Ruch, Weber, Park, & Peterson, 2014; Weber, Ruch, Littman-Ovadia, & Lavy, 2013). Such findings offer a level of support to Held's (2018) criticism that the strengths outlined in the assessment methods were made a priori rather than based on research evidence. Whilst this may be the case, Peterson and Seligman (2004) stated that they did not consider their initial classification as fixed but expected further development and changes as a result of an increase in the knowledge and understanding from research into human strengths. Findings of different factor structures and issues with items, therefore, are not unexpected. In fact, an initial aim of both the VIA-IS and CSF was to develop a common language that brought together researchers and practitioners to facilitate further research and interventions that increased knowledge (Hodges & Clifton, 2004; Peterson & Seligman, 2004). Thus, an initial assessment method was required to facilitate research so that subsequent knowledge could then revise such an assessment tool. Regardless of the exact factor structures and items, research in the area has increased and more is now known about the impact of strengths-based approaches as a result of the initial assessments being developed, as highlighted below.

2.4.2 Impact

Research into strengths-based approaches has found multiple benefits, both in general and in specific contexts. Within a workplace setting, strengths-based interventions were found to be related to increases in employee engagement, retention, productivity, and profit (Asplund et al., 2007; Connelly, 2002; Harter, Schmidt, & Hayes, 2002). Feedback on workplace strengths was also found to be related to increased life satisfaction scores (Hodges & Clifton, 2004), and applying strengths more in the workplace with higher positive experiences at work (Harzer & Ruch, 2013). From an education perspective, there is some evidence that strengths-based interventions have relationships with attendance, grades, and confidence (Hodges & Clifton, 2004), with one study finding significant increases in

American college grade point averages in a strengths-based intervention group compared to controls (Williamson, 2002).

In more general settings, strengths use has been found to be related to increases in self-esteem, self-efficacy, and confidence (Govindji & Linley, 2007; Hodges & Clifton, 2004; Peila-Shuster, 2012; Proctor, Maltby, & Linley, 2009; Wood, Linley, Maltby, Kashdan, & Hurling 2011), with increased strengths awareness (where individuals only identified what their strengths were and no further intervention was conducted) also related to increased confidence, productivity, and perception of better life choices (Hodges & Clifton, 2004). Additionally, strengths use has been found to be related to increased goal progress and attainment, with goal progress associated with psychological need fulfilment and increased wellbeing (Linley, Nielsen, Wood, Gillett, & Biswas-Diener, 2010). Further studies have, in fact, found strengths awareness and use are related to increased subjective and psychological wellbeing (Govindji & Linley, 2007; Proctor et al., 2009), along with increases in hope, vitality, and life satisfaction (Duan, Ho, Tang, Li, & Zhang, 2013; Harzer & Ruch, 2016; Hodges & Clifton, 2004; Wood et al., 2011). One study found increases in life satisfaction for strengths-based intervention groups compared with a control group regardless of whether the intervention group focused solely on identifying and developing their strengths or whether they focused on identifying and developing one strength and one weakness (Rust, Diessner & Reade, 2009). It is worth noting here that this suggests benefits of using strengths either alone or in conjunction with developing weaknesses, thus supporting the assertion that focusing on developing areas of strength does not need to detract from developing areas of weakness (Wong, 2011b).

Alongside the benefits previously mentioned, strengths awareness and use have also been found to be related to decreased levels of stress, anxiety, and depression (Wood et al., 2011). A randomised controlled trial study found that two strengths-based interventions (compared to three other positive psychology interventions and a placebo control) reduced depression and increased happiness up to six months after the intervention (Seligman, Steen, Park, & Peterson, 2005). A recent meta-analysis supports these findings, identifying studies that showed strengths use increased positive affect or happiness, life satisfaction, and showed a decrease in depression (Schutte & Malouff, 2018). Whilst a review by Quinlan, Swain, and Vella-Brodrick (2012) found only a relatively small number of intervention studies had been published, these consistently showed an increase in wellbeing as a result of strengths-based interventions. Studies mainly reported post-intervention benefits of up to six months, however one study showed benefits two years post-intervention but with these decreasing in

the third year (Quinlan et al., 2012). Whilst effect sizes were small to medium, it was reported that the longer interventions were more effective (Quinlan et al., 2012). A key finding within the review was that the strengths assessments used in studies differed, with the authors suggesting that different tools may be more suited to different situations (Quinlan et al., 2012). These findings collectively show that strengths-based interventions can consistently produce positive effects, across different contexts, with regards to a range of different outcomes.

2.5 Strengths-Based Approaches in Sport

As highlighted previously, research suggests adopting a strengths-based approach can consistently lead to desirable benefits across multiple contexts. Such benefits include increases in subjective and psychological wellbeing (Govindji & Linley, 2007; Proctor et al., 2009), life satisfaction, hope, vitality (Duan et al., 2013; Harzer & Ruch, 2016; Hodges & Clifton, 2004; Wood et al., 2011), happiness, confidence, self-esteem, self-efficacy (Govindji & Linley, 2007; Hodges & Clifton, 2004; Peila-Shuster, 2012; Proctor et al., 2009; Wood et al., 2011), engagement, retention, productivity (Asplund et al., 2007; Connelly, 2002; Harter et al., 2002), goal progress and attainment (Linley et al., 2010), as well as decreased stress, anxiety, and depression (Wood et al., 2011; Schutte & Malouff, 2018; Seligman et al., 2005). When considering these benefits, there is an overlap with areas identified and researched within the sport psychology literature – areas such as self-confidence and self-efficacy (Cox, Shannon, McGuire, & McBride, 2010), stress and anxiety (Neil, Wilson, Mellalieu, Hanton, & Taylor, 2012; Schinke et al., 2012), goal progress and attainment (Smith, Ntoumanis, & Duda, 2007), and wellbeing (Low, 2017; Podlog, Lochbaum, & Stevens, 2010; Sandardos & Chambers, 2019). (It is important to note that each of these research areas are complex areas in themselves and no attempt is made here to examine these areas as that is beyond the scope of this thesis.) Based on the plethora of benefits identified in other contexts, and the fact that such approaches may allow for a better understanding of extraordinary functioning (Strümpfer, 2005), it has been argued that there is therefore a compelling case to look at such approaches within sport psychology (Gordon, 2012).

Recent research has begun to allude to the benefits of looking at strengths within sport. Research has identified that developing self-awareness, specifically recognising one's own strengths and the contributions these make to the team, was considered an important outcome from a psychological skills training programme by athletes, coaches, and parents

(Gucciardi, Gordon, & Dimmock, 2009). Additionally, elite level Australian football coaches highlighted how focusing solely on weaknesses and not reinforcing an athlete's strengths was detrimental for athletic development, and that more is gained from balancing work on weaknesses with understanding strengths (Gucciardi, Gordon, Dimmock, & Mallett, 2009). Focusing on an athlete's strengths was also identified as an effective strategy to develop, and maintain, robust levels of sport-confidence by experienced applied sport psychology consultants (Beaumont, Maynard, & Butt, 2015). These findings, however, naturally emerged from the research, with the studies not specifically aiming to investigate, or adopt, a strengths-based approach. Such findings, therefore, suggest the need for further targeted research looking at strengths-based approaches within sport. As with other areas of modern psychology, however, sport psychology has traditionally focused on fixing problems and weaknesses rather than focusing on strengths (Enright, Hill, Sandford, & Gard, 2014; Gordon, 2012; Ludlham, Butt, Bawden, Lindsay, & Maynard, 2016). Whilst the findings that emerged from the aforementioned studies suggest such an approach may therefore be beneficial in sport, there is limited research specifically examining strengths-based approaches within the sport psychology literature (Gordon, 2012; Gordon & Gucciardi, 2011; Ludlham et al., 2016).

One study that has looked at the application of strengths-based approaches in sport examined individual strengths use (an individual proactively uses their strengths) and team strengths use (the extent to which a team or organisation creates an environment that allows an individual to use their strengths) in student athletes (Stander, Rothmann, & Botha, 2017). It was found that both individual and team strengths use were positively related to team embeddedness (referring to experiences of relatedness within a team and a perceived high cost of leaving), with team strengths use also predicting flourishing (Stander et al., 2017). Additionally, a case study has looked at the application of strengths-based approaches in sport to the development of mental toughness in elite cricketers (Gordon & Gucciardi, 2011). Through open ended questions athletes identified their own specific strengths and how these related to the rest of the team. The coaches then adapted training sessions, based on this information, to target specific strengths. Findings highlighted that the cricketers felt they benefitted from this approach, with the focus on strengths adding value to their development (Gordon & Gucciardi, 2011). This research, however, reports little-to-no empirical data, with only one quote provided regarding the outcomes and no report on the impact of the work on mental toughness levels – the initial research aim. A similar issue is also present in another case study that adopted a group-based strengths intervention with an international cricket

team. This intervention focused on the development of strengths-based, positive, habits that were present within the team when they performed at their best (Gordon, 2012). There was, however, also no reporting of the impact of the intervention and no empirical data provided.

A more recent case study on utilising strengths-based interventions in elite cricket, however, does provide evidence that such an approach may be beneficial (Gordon, Anthony, & Gucciardi, 2017). An adapted single subject design looked at the effectiveness of a strengths-based intervention on mental toughness development, with data collected from the individual athlete and two matched active control subjects (Gordon et al., 2017). All participants experienced a group strengths-based session where the concept of strengths was introduced. The intervention participant then took part in four individual consultancy sessions aimed at increasing their self-belief and attentional control. The mental toughness data showed only small, non-significant, increases for the controls from pre-season to the start of the season, and to post-season. The intervention participant, however, reported significant increases to their attentional control and self-belief from pre- to post-season. These significant increases were also reported by two coaches and two teammates who had been assessing the individual's mental toughness throughout the season (Gordon et al., 2017). A follow up interview identified that a strengths-based approach had been new to the athlete and that the tendency to focus on weaknesses had contributed to his self-doubt. He reported improvements in self-talk, attentional control, and that he felt his confidence was now less fragile (Gordon et al., 2017). This highlights the potential benefits of adopting a strengths-based approach to intervention work within sport psychology, specifically at developing self-belief and attentional control. The findings support those of Beaumont et al. (2015), that focusing on strengths may allow the development of a more robust level of sport-confidence. The use of control participants and multisource ratings provides a level of robustness to the study, removing potential maturation effects (Gordon et al., 2017). Caution is advised, however, on the generalisability of the findings by Gordon et al. (2017) as there was only one participant, and also as the absence of a strengths use measure meant conclusions could not be made as to whether the intervention was effective at increasing the athlete's strengths use. Additionally, it would be useful to see comparisons between this intervention and other sport psychology based interventions such as cognitive behavioural therapy (Didymus & Fletcher, 2017) and psychological skills training programmes (Zizzi, Blom, Watson, Downey, & Geer, 2009) to assess the effectiveness of the intervention in relation to alternatives. Despite these potential issues, however, the findings of this case study show the potential benefits of

strengths-based approaches and supports the need for further research looking at this area in sport (Gordon et al., 2017).

Additional research by Ludlham et al. (2016) supports both the potential benefits, and need for further research, of strengths-based approaches within sport. Ludlham et al. (2016) investigated a strengths-based approach known as super-strengths that was reported as being utilised currently by some individuals within the UK sport system. Interviews with sport psychology practitioners who had adopted this approach, and athletes who had experienced it, revealed super-strengths was defined as "a strategy for performance that utilises a potential world's best resource to gain a unique competitive edge in a performance context" (Ludlham et al., 2016, p. 220). Such an approach conceptualises strengths as more state-like rather than trait-like as they are dependent on the specific situation and are therefore more of a performance strategy. It is stated that they could be made from a combination of underlying resources such as athletic, physical, qualities and more trait-like personal qualities (Ludlham et al., 2016). Further interviews with elite athletes highlighted that they engaged with this approach and felt it had a positive impact on their performance (Ludlham, Bawden, Butt, Lindsay, & Maynard, 2017). Additional benefits were also outlined, including increased self-belief and team confidence, a shift in mindset as to where it was best to direct their energy, clarity of focus for training and goal-direction, enhanced motivation, and an increased ability to cope under pressure (Ludlham et al., 2017). It was also found that athletes felt the approach could be negative if individuals became reliant on their super-strengths, or these were over-used (Ludlham et al., 2017). Additionally, athletes identified a potential barrier to the approach being successful, suggesting that individuals might struggle to articulate what their super-strengths were, due to both discomfort and unfamiliarity with focusing on, and discussing, what they could be great at (Ludlham et al., 2017). Such a barrier suggests a focus on strengths is currently not commonplace, and also highlights the potential need for a way for athletes to identify what their super-strengths are. It was found that the current identification processes used for this approach included questioning athletes, performance data and observations, coaches' feedback, and general personality profiling (Ludlham et al., 2016). It may be the case, however, that a more formalised strengths-based assessment tool could help facilitate discussions with the athletes – in line with the use of the CSF as a starting point for self-discovery (Hodges & Clifton, 2004). Ludlham et al. (2016; 2017), however, argue that current strengths assessments, such as the VIA-IS, are not context specific and so may not provide athletes with methods that can help develop a competitive advantage – thus they are not applicable to the specific super-strengths approach. It is argued

that with super-strengths being more state-like in nature they may not necessarily be stable across contexts and would need adapting for different performance environments and situations (Ludlham et al., 2016). This is in contrast to the mainstream psychology conceptualisations of strengths as more trait-like, and thus more measurable (Hodges & Clifton, 2004; Peterson & Seligman, 2004; Wright et al., 2017). Such a criticism of the mainstream assessment methods, such as the VIA-IS, is therefore dependant on the conceptualisation of super-strengths as state-like qualities. Despite this, however, super-strengths are defined as being a combination of different attributes, including potential trait-like personal qualities. It may therefore be the case that such an assessment method might help athletes to understand the potential different trait-like resources they possess that may partially underpin their super-strengths. In line with Ludlham et al.'s (2016; 2017) criticisms, however, such a method would need to be specific to the overall context of sport as current assessment methods do not consider this specific context. The super-strengths research does, nevertheless, show potential benefits of adopting a specific conceptualisation of a strengths-based approach within sport. It also suggests further research looking into these approaches is required (Ludlham et al., 2016, 2017).

From the published research so far, it therefore seems that strengths-based approaches are beginning to be adopted by some practitioners within sport (Gordon, 2012; Gordon et al., 2017; Gordon & Gucciardi, 2011; Ludlham et al., 2016). Research into such approaches, however, is still lacking (Gordon, 2012; Gordon & Gucciardi, 2011; Ludlham et al., 2016), with calls for additional research to ensure both conceptual clarity and an evidence-based nature to strengths-based approaches within sport (Wagstaff & Leach, 2015). Wagstaff and Leach (2015) conducted a narrative review to identify potential strengths-based concepts that have been historically researched and thus already have an existing evidence-base in the performance domains of both sport and the military. Potential strengths-based concepts that were common across both domains were identified, aiming to not only highlight areas of commonality and promote knowledge transfer but also help the development of strengths-based approaches within both areas. For concepts to be included they had to be considered to have both applied and conceptual utility, be clearly transferable across both domains, have a strengths-based focus, and have been researched in at least one of the two areas. Six potential strengths-based concepts were identified, including mental toughness, positive affect, learned optimism, resilience, post-traumatic growth, and self-and-emotion regulation (Wagstaff & Leach, 2015). The review suggests that strengths-based concepts exist within the current literature (Wagstaff & Leach, 2015), alongside the more recent research looking specifically

at strengths-based approaches within sport (Gordon, 2012; Gordon & Gucciardi, 2011; Ludlham et al., 2016, 2017; Stander et al., 2017). Wagstaff and Leach (2015) stated that the review has the potential to help increase conceptual clarity around strengths-based concepts that are relevant to both performance domains. It was hoped, however, that their findings would also prompt additional research into strengths-based concepts, and approaches, to provide further clarity within this area in both sport and the military. It was stated that further research was essential to build on the emerging findings within the area to ensure an evidence-based nature of strengths-based approaches within sport (Wagstaff & Leach, 2015). As the review assessed concepts related to both the sporting and military domains – as combined performance domains – additional research examining strengths-based approaches in sport specifically may therefore help provide both a further evidence base and increased conceptual clarity around these approaches in the sporting domain.

Within the existing research examining strengths-based approaches in sport, there are, therefore, consistent calls for additional research into such approaches (Gordon, 2012; Gordon & Gucciardi, 2011; Ludlham et al., 2016; Wagstaff & Leach, 2015), with initial evidence suggesting these approaches are relevant, and beneficial, within sport (Gordon et al., 2017; Gordon & Gucciardi, 2011; Ludlham et al., 2016, 2017; Stander et al., 2017; Wagstaff & Leach, 2015). When considering the lack of empirical research into strengths-based approaches within sport against the historical development of research within this area of mainstream psychology it is possible to draw parallels. As reported previously, it was felt that there was a need for the development of a common strengths-based language, and conceptual clarity, that ensured common understanding within the field before research and interventions could increase (Hodges & Clifton, 2004; Peterson & Seligman, 2004). Such commonality and clarity occurred with the development of strengths-based assessment tools, which were then able to form the basis of further research and interventions (Hodges & Clifton, 2004; Peterson & Seligman, 2004). Such assessment tools, like the VIA-IS, VIA-Youth, and the CSI (Peterson & Seligman, 2004; Wright et al., 2017) are, however, general scales and consequently do not capture the complexity of the strengths required in different contexts (Peterson & Seligman, 2004). Peterson and Seligman (2004) state context is important and needs to be considered as some strengths are relevant, and therefore some are not relevant, to different contexts. Of the assessment methods reported previously, only the CSF is context specific, assessing strengths within a workplace setting – known as workplace themes (Hodges & Clifton, 2004). The context specific nature of this assessment tool might account for the different attributes it assesses compared to other questionnaires. Indeed, a common

criticism of the field is that a common language specific to different contexts is often lacking (White, 2016). Ludlham et al. (2016, 2017) also criticise assessment methods such as the VIA-IS for not being context specific, and thus, not necessarily being applicable within the sporting domain. A shared, common, language alongside clear assessment strategies have been cited as important tools when looking to evaluate strengths-based approaches (Peterson & Park, 2004). It may therefore be that the lack of research into strengths-based approaches within sport stems for a lack of a common language, or conceptual clarity, and an assessment method for sport-specific strengths. Such a gap in the literature suggests an opportunity for the development of a commonality of understanding as to the qualities that constitute sport-specific strengths, and subsequently a method to assess these strengths. The identification of these, and development of such an assessment method, may then help to facilitate further research, and applied application, within this area.

The central aim of this thesis is, therefore, to identify sport-specific strengths and to then develop, and provide initial validation for, a sport-specific strengths assessment tool that assesses these. It aims to investigate, and get consensus upon, the qualities and attributes that may be classed as relevant strengths within a sporting context – a gap in the current literature. As highlighted previously (Wagstaff & Leach, 2015), there may be current areas within the existing literature that could be considered strengths within a sporting context. Mirroring the development of other strengths-based assessment tools (Peterson & Seligman, 2004; Wright et al., 2017), and in line with the positive psychology principle of building on what is already known (Seligman & Csikszentmihalyi, 2000), this thesis therefore aims to review the current literature for potential strengths that have already emerged within the research and draw these together in one place. If, however, research into strengths-based approaches is to progress and develop in sport then it is also important to specifically examine sport-relevant strengths. The thesis therefore aims to build on any findings from the existing literature through exploratory work with an expert panel, to both assess the review findings and generate additional strengths relevant to the sporting context – in line with previous strengths assessment developments (Hodges & Clifton, 2004; Peterson & Seligman, 2004) – and to ensure the emerging strengths are based on clear research evidence (Held, 2018). The strengths developed through this exploratory process will then form the basis of a sport-specific strengths assessment tool – a further gap in the current literature – and the initial structure, validity, and reliability of this tool will be examined. Further detail about the aims of each specific study within this thesis can be found in Chapter 3.

2.6 Definition of Strengths Used Within the Thesis

At this junction it is worth being clear on the definition of strengths being used throughout this thesis. As discussed previously (see section 2.3.4), different definitions and conceptualisations of this term have been used within the literature (Biswas-Diener, 2010; Hodges & Clifton, 2004; Linley, 2008; Ludlham et al., 2016; Peterson & Seligman, 2004; Wright et al., 2017). Certain definitions include distinctive elements, viewing strengths in terms of character with a moral component and serving virtues (Peterson & Seligman, 2004), being comprised of workplace themes (Hodges & Clifton, 2004), or being defined as more state-like in nature (Ludlham et al., 2016). There are, however, elements common across most definitions of strengths. Baring the specific conceptualisation of super-strengths being more state-like (Ludlham et al., 2016), multiple approaches view strengths in line with trait theory, seeing them as qualities that are somewhat stable over time but can be developed (Asplund et al., 2007; Hodges & Clifton, 2004; Peterson & Seligman, 2004; Wright et al., 2017). All definitions within the mainstream psychology literature describe strengths in relation to some form of positive, internal, pre-existing qualities that are possessed by an individual and allow them to deliver an optimal level of performance (Biswas-Diener, 2010; Hodges & Clifton, 2004; Linley, 2008; Peterson & Seligman, 2004; Wright et al., 2017). Most definitions also state, explicitly, that when strengths are used individuals display a sense of excitement, enjoyment, energy, and authenticity (Biswas-Diener, 2010; Hodges & Clifton, 2004; Linley, 2008; Peterson & Seligman, 2004). There is, therefore, agreement within most of the literature on the underpinning nature of strengths, along with the impact of these on an individual.

The definition of strengths used within this thesis is therefore based on the areas of agreement within the literature. In line with the mainstream psychology literature, strengths will be considered to be trait-like in nature as qualities that are stable over time but can be developed, and are not either present or not but exist within people in degrees (Asplund et al., 2007; Hodges & Clifton, 2004; Peterson & Seligman, 2004; Wright et al., 2017). The definition will not include any underlying moral component to strengths as this is not consistent within different definitions in the literature. As the VIA-IS has been criticised for including positive attributes that may not be strengths of character as they lack a moral component (Wright et al., 2017), this thesis will therefore use a different term to the VIA-IS, referring to sport-specific psychological strengths. This will provide a level of distinction that this research is not viewing

positive internal strengths as requiring an underlying moral component[2]. In line with key attributes of strengths previously identified, sport-specific psychological strengths are defined as internal positive qualities, traits, or characteristics that are authentic and energising and lead to an individual's optimal level of performance.

2.7 Distinguishing Strengths From Other Concepts

Strengths can be distinguished from other related concepts in the existing literature. Mental toughness, resilience, and personality are areas of research that also relate to the positive qualities, traits, and characteristics of individuals (Allen, Greenlees, & Jones, 2013; Fletcher & Sarkar, 2012; Gordon, 2012). Mental toughness is seen as a multidimensional construct related to the way an individual approaches, views, and responds to the demands and challenges of a situation in order to consistently achieve high levels of performance (Gordon, 2012). Psychological resilience is also described as a multidimensional construct, defined as "the role of mental processes and behaviour in promoting personal assets and protecting an individual from the potential negative effect of stressors" (Fletcher & Sarkar, 2012, p. 675). Personality research looks at personality traits that refer to the stable pattern of thoughts, feelings, and behaviours that reflect an individual's predisposition to act in a specific way (Allen et al., 2013). These typically assess individuals on a continuum, for example an individual may score high or low for traits such as Neuroticism (Costa & McCrae, 2008) or Perfectionism (Cattell & Mead, 2008). At either end of these scales, the traits can be anchored in neutral qualities, such as introversion or extraversion, positive qualities, such as caring or emotional stability, or negative qualities, such as emotional instability or being unrestrained (Cattell & Mead, 2008).

Terms such as mental toughness and resilience are, therefore, positive attributes of individuals, with mental toughness encompassing different aspects that allow an individual to meet the demands of a situation, and resilience referring to the different assets that protect an individual from potential stressors (Fletcher & Sarkar, 2012; Gordon, 2012). As strengths are considered the positive qualities, traits, and characteristics of an individual that allow them to function optimally, it may be that both mental toughness and psychological resilience could be considered strengths – supported by a previous review (Wagstaff & Leach, 2015). Whilst

[2] It is noted here that the term character strength was used with participants, as this is a term they would have been more familiar with. The specific definition provided to participants, however, was in line with the definition of psychological strengths as outlined here.

the terms may feature as strengths, the research areas are distinct, as research into strengths is looking to identify a broader range of strengths than just these two concepts – suggested by previously identified strengths in other areas (Hodges & Clifton, 2004; Peterson & Seligman, 2004; Wagstaff & Leach, 2015; Wright et al., 2017). Additionally, as strengths refer to the positive qualities, traits, and characteristics of an individual, there may be overlap with aspects of personality research. Personality traits, however, encompass more than the positive, including both neutral and potentially negative traits (Cattell & Mead, 2008). Strengths, and strengths-based approaches, are therefore distinct as they focus solely on the positive aspects of an individual that allows them to function optimally. It may therefore be that terms such as mental toughness and resilience, or their underpinning assets, along with positive aspects of personality feature as strengths in the exploratory stage of identifying strengths within this research (Wagstaff & Leach, 2015), alongside other positive characteristics. Further research is required to examine links between strengths and personality (Macdonald et al., 2007), along with strengths and mental toughness (Gordon et al., 2017; Gordon & Gucciardi, 2011), however the research evidence to date suggests the concept of strengths is worthy of study in its own right.

It is worth noting here that the above research areas are complex areas in and of themselves and it is beyond the scope of this thesis to provide an in-depth discussion on each of these areas. Additionally, it is worth restating here that strengths-based approaches are a perspective, or lens, from which to view human development rather than a specific model or theory (Simmons & Lehmann, 2013). It is therefore important to note that such an approach may relate to multiple other areas within the sport psychology literature that looks at, or identifies, either positive qualities of individuals, such as mental toughness or psychological resilience, or examines optimal functioning, such as research into the Individual Zone of Optimal Functioning (Robazza, Pellizzari, & Hanin, 2004) and thriving (Brown, Arnold, Reid, & Roberts, 2018). It is, however, beyond the scope of this thesis to discuss all these areas. It is also worth noting that a systematic review of the sport psychology literature in relation to positive qualities, traits, and characteristics is presented in Chapter 5, which provides additional information on the positive qualities already found within the literature.

2.8 Chapter Summary

This chapter provided an overview of relevant background information relating to positive psychology, strengths-based approaches, and Sport. Strengths-based approaches

provide a perspective from which to view human development, focusing on using an individual's strengths to improve their overall functioning. Across different areas within psychology there is evidence that such an approach provides multiple benefits. Despite this, however, there is limited research looking at this approach in a sport setting. Research examining such an approach in sport so far, however, alludes to benefits within this context. It may be that the lack of further research in this area is due to the lack of a common language, or conceptual clarity, around sport-specific psychological strengths, and the lack of an assessment method for these. This gap in the literature highlights an opportunity to develop an understanding as to the qualities that constitute sport-specific strengths and then a method to assess these strengths. Research into this is presented in the following chapters of this thesis.

Chapter 3: Thesis Aims and Objectives

3.1 Introduction and Overarching Aims

Strengths-based approaches have consistently highlighted multiple benefits in different contexts. Despite initial research suggesting benefits of such approaches in sport (Gordon et al., 2017; Gordon & Gucciardi, 2011; Ludlham et al., 2016, 2017; Stander et al., 2017; Wagstaff & Leach, 2015), and calls for further research into this area (Gordon, 2012; Gordon & Gucciardi, 2011; Ludlham et al., 2016; Wagstaff & Leach, 2015), such approaches have received little research attention in this context. Chapter 2 outlined the development of strengths-based approaches, highlighting the importance of having both a common language as to what constitute strengths, along with an assessment tool to identify what these strengths are, before additional research and intervention work could be conducted. It also highlighted the importance of taking context into consideration within this area. The lack of research into strengths-based approaches within sport may consequently stem from a lack of a common language, or conceptual clarity, and an assessment method for psychological strengths specific to the sporting context (see Chapter 2 for more detail) – a gap in the literature and the focus of this thesis.

The overarching aim of this thesis is, therefore, to identify sport-specific psychological strengths and to then develop, and provide initial validation for, a sport-specific psychological strengths assessment tool. In doing this, an exploratory approach will be adopted in the initial stage of this thesis in order to investigate the relevant psychological strengths within the context of sport – strengths that can then provide the basis for such a tool. The specific research aims and objectives for each study are outlined below, with a summary of the key aims and objectives of this thesis provided.

3.2 Study 1

As highlighted in Chapter 2, within positive psychology are calls for strengths that have emerged from the literature (Held, 2018), and an importance is placed within the field on building on what it already known (Peterson & Seligman, 2004; Seligman & Csikszentmihalyi, 2000). Initial evidence suggests there may be areas within the existing sporting literature that could be considered strengths within this context (Wagstaff & Leach, 2015). The primary aim of Study 1 is, therefore, to identify the positive qualities, traits, or

characteristics that could be classed as psychological strengths within the current sport psychology literature.

3.3 Study 2

Study 1 will have identified potential psychological strengths in sport that have emerged and are present within the current literature. If research into strengths-based approaches is to progress and develop in sport, then it is also important to specifically examine and explore sport-relevant strengths. Study 2 therefore aims to build on the findings from Study 1 and forms the second part of the initial exploratory phase of this thesis. The primary aim of Study 2 is to explore the psychological strengths identified in Study 1 and to get consensus from an expert panel as to the sport-relevant psychological strengths. This is in line with previous strengths assessment development processes (Hodges & Clifton, 2004; Peterson & Seligman, 2004) and will ensure emerging strengths are based on clear research evidence (Held, 2018). Subsidiary aims of this study are to get experts to specifically generate sport-relevant psychological strengths, along with reviewing the findings from Study 1.

3.4 Studies 3 and 4

Once the initial exploratory phase is completed, and there is consensus on the sport-relevant psychological strengths, the second stage of this thesis aims to develop, and initially validate, a sport-specific psychological strengths assessment. The primary aim of Study 3 is to develop an assessment tool for the strengths identified and to initially explore the factor structure of this tool. Study 3 aims to develop questions that assess the strengths agreed upon in Study 2. It then aims to explore the factor structure of this tool, to identify the number of latent constructs underlying these items and label them. The final aim of this thesis, and the primary aim of Study 4, is then to confirm the factor structure identified in Study 3 using a new, independent, sample.

3.5 Summary of Research Aims

1. To identify the positive qualities, traits, or characteristics that could be classed as psychological strengths within the current sport psychology literature.

2. To explore the psychological strengths identified in Study 1 and to get consensus from an expert panel as to the sport-relevant psychological strengths.
3. To develop an assessment tool for the strengths identified in Study 2 and to initially explore the factor structure of this tool.
4. To confirm the identified factor structure of the assessment tool in an independent sample.

Chapter 4: Methodological Considerations

4.1 Chapter Introduction

During the course of this thesis decisions were made regarding the appropriate methodologies that would allow the aims of this thesis to be met. This chapter outlines the different methodological considerations from each stage of the thesis. It does not aim to replace the method sections within the subsequent chapters but to provide additional insights as to the considerations that occurred at different stages throughout this thesis. In line with the aims outlined in Chapter 3, these stages include considerations of an initial exploration of the literature, of research methods using an expert panel, and around questionnaire design. Further methodological considerations, along with information regarding ethical approval of the research, are also presented. The considerations within this chapter are outlined here to allow the subsequent chapters to focus on the work that was conducted rather than also discussing additional considerations.

4.2 Exploring the Existing Literature

The initial aim of Study 1 was to identify the positive qualities, traits, or characteristics that could be classed as psychological strengths within the current sport psychology literature. Thus, a form of detailed literature review was deemed appropriate. As the research question was exploratory in nature it was important to include a wide range of studies covering both quantitative and qualitative findings. Due to the heterogeneous nature of the literature, review methods that assessed only either quantitative or qualitative research such as meta-analysis, qualitative meta-ethnography, or qualitative meta-synthesis were therefore deemed inappropriate (Erwin, Brotherson, & Summers, 2011; Eysenck, 1995; France et al., 2019; Perestelo-Pérez, 2012). Systematic reviews, however, provide a way of bringing together findings from both types of studies, synthesising these together through narrative means (Perestelo-Pérez, 2012). A systematic review refers to a scientific way of making sense of the current information and knowledge within a specific area, bringing the findings of relevant studies together (Petticrew & Roberts, 2006). Considering the initial purpose of this stage of the thesis, this type of review was considered an appropriate methodology. Furthermore, systematic reviews have also been used in previous literature as a precursor to questionnaire development (Lewis, Ireland, Abbott, & Ireland, 2017).

It is worth noting that a scoping review may also have been an appropriate method, with a scoping review referring to a quick exploratory method of assessing the literature in a specific area, often used with broad research questions (Armstrong, Hall, Doyle, & Waters, 2011; Pham et al., 2014). Due to the exploratory nature of the current research, such a method may have been appropriate. Scoping reviews are, however, often used to inform systematic reviews and so are intended to be conducted rapidly, not necessarily including quality assessments or data extraction as part of the process (Armstrong et al., 2011). Guidelines for specific procedures as to how to conduct scoping reviews are also reported as lacking within the literature (Armstrong, Hall, Doyle, & Waters, 2011; Pham et al., 2014). Systematic reviews, however, have clear guidelines, making this a more robust, detailed, process (Perestelo-Pérez, 2012). Thus, such a method is also in line with calls for more systematic approaches to the development of research evidence in sport psychology (Biddle, 2006). The use of a systematic review was therefore deemed as a more appropriate method.

4.3 Research Using an Expert Panel

Various methods were considered in addressing the second aim of this thesis – the exploration of the findings from Study 1 and gaining consensus from an expert panel as to sport-relevant psychological strengths. A subsidiary aim was also to get experts to specifically generate sport-relevant psychological strengths, along with reviewing the findings from Study 1. Methods were therefore considered that would be able to utilise experts to review and generate information and allow a consensus to be reached.

An initial consideration was the use of focus groups. Focus groups can be a useful exploratory method of data collection in a new area using a group of experts (Kvale & Brinkmann, 2009; Morgan, 1996). This method encourages a variety of viewpoints on the topic in question, providing opportunities for participants to interact and comment on each other's ideas (Kvale & Brinkmann, 2009). Such a method may have therefore been applicable to address the second aim of this thesis. There are, however, logistical issues with this method (Morgan, 1996). As participants need to be in one place at the same time, experts' schedules, ability (and willingness) to travel, and thus initial location, have all been highlighted as problems with using focus groups (Morgan, 1996). There are also suggestions that individual interviews can prove more effective at generating new ideas (Morgan, 1996). Additionally, focus groups are not always concerned with gaining consensus but rather on exploring alternative viewpoints (Kvale & Brinkmann, 2009). As the current research aimed to gain

consensus from a group of experts – with the level of expertise of participants prioritised over geographical location – as well as generating ideas, such a method was not deemed the most appropriate to address the research aims.

An alternative method that was considered was the use of individual telephone interviews (Kvale & Brinkmann, 2009). Previous sport psychology research has used telephone interviews effectively, with these methods removing the logistical challenge of geographical location (Beaumont et al., 2015; Gould, Collins, Lauer, & Chung, 2007). Whilst a useful method for idea generation (Morgan, 1996), these do not necessarily provide the opportunity for other participants to comment and feedback on the overall views of the group (Kvale & Brinkmann, 2009). Thus, one-off individual interviews were not considered an appropriate method as a way to gain consensus from an expert panel. Multiple grounded theory interviews, however, may have addressed the aims of this research (Coolican, 2004), with grounded theory a useful method when there is limited research on a specific topic (Wuest, 2012). Through such an approach, emerging themes from one interview could have been discussed in subsequent interviews with experts, allowing initial findings to be commented on by the rest of the participants (Coolican, 2004). Once saturation had been reached, follow up interviews with participants could have occurred to comment on the emergent findings to assess relevance (Charmaz, 2001; Coolican, 2004). It is therefore acknowledged that multiple grounded theory interviews may have been an appropriate method at this stage to generate ideas and gain a level of consensus. It is, however, important to note that this study also aimed to review the findings from the systematic review (Study 1) as well as generate information. As these findings included a large number of qualities for participants to review (see Chapter 5 for details), it was deemed that grounded theory interviews did not necessarily provide the best opportunity to review, and rate, large numbers of specific qualities.

Considering the specific research aims, it was deemed that a traditional Delphi method was an appropriate methodology for this phase of research. The Delphi is a method that aims to reach a level of consensus between a group of experts on a specific topic (Fink, Kosecoff, Chassin, & Brook, 1984). It is an interactive, multi-round, method (Efstathiou, Coll, Ameen, & Daly, 2010) that is advised to generate information in areas of limited research (Hazelbaker, 2013) when a consensus is desired (Fink et al., 1984). Previous research has highlighted that Delphi research can be effective via online methods and is recommended as it removes the logistical issue of location (Lewis et al., 2017; Sandrey & Bulger, 2008). It typically involves two to four rounds of data collection utilising experts in

the area as participants (Giannarou & Zervas, 2014). Individual participants generate information and then evaluate and feedback on the overall views of the group, being given an opportunity to revise their own judgements in response to those of the other participants (Verschuren et al., 2011). Such a method therefore provided an opportunity for experts to generate information, review both the information generated by the other experts as well as the findings from Study 1, and to then provide an overall group consensus. Thus, this method allowed all research aims to be met and did not present logistical issues – a strength of this research methodology (Iqbal & Pipon-Young, 2009). Additionally, Delphi methods have been used previously within different sporting contexts (Cupples & O'Connor, 2011; Hazelbaker, 2013; Lu, Hsu, Chan, Cheen, & Kao, 2012; Morley, Morgan, McKenna, & Nicholls, 2014; Quartiroli, Wagstaff, Herms, & Kemmel, 2020), and in multiple questionnaire design studies (Bing-Jonsson, Bjørk, Hofoss, Kirkevold, & Foss, 2014; Edmunds, Haines, & Blair, 2005; Lewis et al., 2017; Xuereb, Ireland, & Davies, 2009) and is therefore considered an appropriate methodology.

4.3.1 Delphi Method Considerations

It is important to note the difference between a traditional and modified Delphi method as both were considered as potential methodologies for this research (Sandrey & Bulger, 2008). In a traditional Delphi method, there is typically an initial idea-generation, open-ended, exploration phase which is then followed by an evaluation phase (Sandrey & Bulger, 2008). A modified Delphi method typically eliminates the exploratory phase, asking participants to comment on pre-determined information from the beginning of the research (Sandrey & Bulger, 2008). Whilst this provides a degree of control over the areas discussed, it would have limited findings from this study to the qualities/ psychological strengths that were initially presented to the experts, as it eliminates the ability of these experts to generate information relevant to the research question. Consideration was given to presenting the findings from Study 1 to the experts as Round 1 of this process in a modified Delphi format, asking experts to evaluate these. Doing this, however, would not have allowed experts to generate psychological strengths themselves and thus not addressed this part of the research aims. Inclusion of an initial idea-generation phase, however, still allowed the findings from Study 1 to be evaluated later on in the process, but added additional qualities generated by the experts. As this phase of the research was exploratory in nature, it was therefore deemed that a traditional Delphi, rather than a modified Delphi, method was more appropriate.

The use of a traditional Delphi method also led to the decision to use a three-round method. As an initial idea generation phase was desired, a two-round method would provide no opportunity for experts to both rate the qualities and revise judgments. It has also been suggested that there is a trade-off between the number of rounds and experts' participation levels, with a larger number of rounds leading to increased participant drop-out (Giannarou & Zervas, 2014). It was therefore deemed that three rounds were appropriate as this allowed the Delphi to meet both the research aims and the criteria of a traditional Delphi method without being so long as to result in high drop-out rates (Giannarou & Zervas, 2014). Round 1 therefore allowed experts to generate information, Round 2 provided an opportunity for this information, in conjunction with the large amount of information found in Study 1, to be assessed and rated by the entire group, and Round 3 provided an opportunity for the experts to revise their judgements (Giannarou & Zervas, 2014).

Within the Delphi method, consideration was also given to the Likert scale used for experts to rate the relevance of the qualities they generated, and those found in Study 1. Likert scales of 3, 5, 7, and 10 points have been used previously in Delphi methods and are recommended in the literature (Giannarou & Zervas, 2014). This stage of the Delphi method aimed to identify qualities that experts rated as relevant, somewhat relevant, or not relevant as psychological strengths within sport, whilst also providing a neutral option that could be used (Leung, 2011). The use of 5 or 7-point Likert scales were therefore considered. It is acknowledged here that either of these scales could have been used and are in line with previous uses in Delphi method research and recommendations (Giannarou & Zervas, 2014). It was however, deemed that a 7-point Likert scale provided enough response options that would allow participants to distinguish between qualities they considered relevant, somewhat relevant, and not relevant (Giannarou & Zervas, 2014).

It is important to note that there is always a trade-off when selecting research methodologies. The flexibility of a Delphi method, along with the ability to address the relevant research aims through anonymous expert participation, consideration and review, alongside an opportunity for revision of judgments to help build consensus, were considered key strengths of this method that made it applicable at this stage of research (Sandrey & Bulger, 2008). Additionally, the Delphi method provides all panel members an opportunity to contribute equally and removes conflict, which may not be the case in other methods (Sandrey & Bulger, 2008; Verschuren et al., 2011). Despite these strengths, it is acknowledged that a common criticism of this method is that findings are dependent on the experts used, suggesting that an alternative group of experts may generate different findings

(Sandrey & Bulger, 2008). Be that as it may, such a criticism is also applicable to qualitative research in general (Kvale & Brinkmann, 2009) and thus could have been applied if different methodologies were chosen. By bringing in findings from Study 1, however, the Delphi method ensured the qualities being assessed were not solely generated by the experts, but included those identified from numerous studies within existing literature. Thus, the qualities being assessed were from a broad range of sources, reducing the sole reliance on the group of experts to generate all the potentially relevant psychological strengths. This potential limitation is therefore noted, however, due to the strengths of the Delphi method, alongside the fact it has been recommended for use in psychology research (Iqbal & Pipon-Young, 2009) and used in both sporting contexts and multiple questionnaire design studies (Bing-Jonsson et al., 2014; Cupples & O'Connor, 2011; Edmunds et al., 2005; Hazelbaker, 2013; Lewis et al., 2017; Lu et al., 2012; Morley et al., 2014; Quartiroli et al., 2020; Xuereb et al., 2009) it was deemed as an appropriate method for this stage of the research.

4.4 Questionnaire Design

The final aims of this thesis were to develop, and provide initial validity for, a sport-specific psychological strengths questionnaire. It is recommended that questionnaires contain an item generation stage, consideration of the appropriate scale, and then subsequent statistical procedures (Rattray & Jones, 2007). As outlined in Chapter 3, items for the questionnaire were generated based on the findings from Studies 1 and 2, in line with recommended questionnaire development procedures – the process for which can be found in Chapter 7 (Rattray & Jones, 2007). Consideration was then given to the appropriate Likert scale to use within the questionnaire. In the literature, there is evidence that 4, 5, 6, and 11-point Likert scales do not differ in terms of means, standard deviations, reliability, or factor loadings (Leung, 2011). A 5-point Likert scale was therefore used to provide enough response options to allow participants to rate items as either like or unlike them, whilst also providing a neutral option (Leung, 2011). It is acknowledged that an 11-point Likert scale could also have achieved this, and therefore been used, as well as being in line with recommendations (Leung, 2011). A 5-point Likert scale, however, is not only in line with

recommendations (Leung, 2011) but also used in both previous strengths assessments (Peterson & Seligman, 2004) and questionnaires (Costa & McCrae, 2008)[3].

Additionally, it is recommended that after item generation and scale development the underpinning structure of a new questionnaire needs to be assessed (Field, 2009; Rattray & Jones, 2007). Within questionnaire design, it is highlighted that new questionnaires should be developed through initial exploratory factor analytic procedures followed by a confirmatory factor analysis using an independent sample (Anderson & Gerbing, 1988). When conducting both of these processes, researchers must consider multiple different elements and it is important to consider the most appropriate procedures to use (Brown, 2015; Field, 2009). It is these considerations – within both the exploratory and confirmatory areas – that are presented below.

4.4.1 Exploratory Analytical Procedures

Initially, exploratory analytical procedures need to be conducted when developing a new questionnaire (Anderson & Gerbing, 1988). Both Exploratory Factor Analysis (EFA) and Principal Components Analysis (PCA) are often used as techniques to initially explore the underlying structure of a questionnaire (Field, 2009). Whilst often used interchangeably in the literature, EFA and PCA are different procedures (Field, 2009). It is important, therefore, to be clear as to the rationale as to why one method is chosen over the other – a factor considered within this thesis that is outlined below.

The aim of exploratory analytical procedures is to find common, underlying, concepts within the data (Field, 2009). Both EFA and PCA explore the relationships between variables, aiming to explain the correlations within the data set by identifying underlying concepts (Field, 2009). The primary difference is in relation to the variance analysed (Field, 2009). The aim of these procedures is to understand whether there are underlying concepts within the data (factors in EFA and components in PCA) that parsimoniously represent the items (or variables) within a questionnaire (Field, 2009). The intention, therefore, is to look for multiple variables that all cluster onto one underlying concept (Field, 2009). Factor analytical procedures are, therefore, concerned with common variance between variables – the proportion of which present within a variable is referred to as the commonality (Field,

[3] It is acknowledged here that the use of different point Likert scales is a large area and to discuss this in detail is beyond the scope of this thesis.

2009). This is as opposed to the unique, or error, variance, of an individual variable (Field, 2009). EFA methods look to only analyse the shared, or common, variance (commonality) that each variable shares with the others, and so removes the unique, error, variance (Field, 2009). Findings from these methods are therefore considered more generalisable as the unique, error, variance to that specific sample has been removed (Field, 2009). PCA differs, however, as it makes the assumption that all variance within the sample is common variance, and so analyses the total variance within the variables (Field, 2009). This therefore includes both the common and unique (error) variance for each variable. As PCA includes all variance, it therefore becomes more of a unique solution that best represents that specific data set (Field, 2009). Findings from this approach therefore require additional confirmation of any underlying constructs, or structure, identified (Field, 2009). Thus, PCA identifies different components within that data set whereas EFA removes unique variance to make the identified factors more applicable to further populations (Winter & Dodou, 2012). Both techniques, however, do examine the underlying constructs within a data set, and there is research evidence that there is little difference in the solutions generated by these approaches (Field, 2009).

Study 3 within this thesis aims to explore the underlying structure of the questionnaire, and whether there are underpinning concepts that the items load on to. It is, therefore, concerned with common factors that explain the common variance between items. As reported in the previous paragraph, both EFA and PCA will allow this to be achieved to a greater or lesser extent. EFA, however, focuses solely on the common variance between variables and removes the unique variance, whereas PCA includes both common and unique variance. EFA procedures were therefore explored first within this study. Different extraction methods of EFA, however, require the data to meet specific assumptions for this procedure to be appropriate (see the following paragrpah). Should the data not meet these assumptions, PCA was deemed appropriate as it would still allow the common variance to be explored, will generate underlying components that represent the data, and as solutions have been shown to have little difference to those of EFA (Field, 2009; Guadagnoli & Velicer, 1988). Whilst this process would still include the unique, or error, variance, and thus require confirmation of any underlying components, these procedures will occur in Study 4 and thus, PCA would still allow the aims of Study 3 to be met should the EFA assumptions be violated.

Within EFA, there are different extraction methods (Field, 2009). Information as to the best method is reported as minimal within the literature, with little advantage found for the different methods, and multiple methods reported as adequate approaches (Costello &

Osborne, 2005; Fabrigar, Wegener, MacCallum, & Strahan, 1999). It is suggested that Maximum Likelihood (ML) generates a factor solution that best represents any underlying patterns in the data, but that Principal Axis Factoring (PAF) is best for recovering weaker factors (Winter & Dodou, 2012). Fabrigar et al. (1999) recommend ML as it provides a greater number of fit indices. This method, however, requires data to be normally distributed as otherwise this extraction method can produce deceptive results (Fabrigar et al., 1999). If this assumption is not met, Fabrigar et al. (1999) recommend a principal factors extraction method (such as PAF). Both ML and PAF have been found to provide acceptable factor solutions (Winter & Dodou, 2012). As there is little evidence which method is more effective (Costello & Osborne, 2005), the recommended ML would be used if the data were normally distributed. Should this assumption be violated, then PAF would be used.

The use of either ML or PAF is also dependent on the data not violating the overall assumption for EFA that there is no multicollinearity (very high levels of correlated variables) or singularity (perfectly correlated variables) within the data (Field, 2009; Tabachnick & Fidell, 2007). The data was therefore screened for these issues. In line with recommendations, however, if the assumptions of no multicollinearity or singularity are violated then EFA procedures would be deemed inappropriate (Field, 2009; Tabachnick & Fidell, 2007). PCA, however, does not require an absence of multicollinearity due to differences in the underlying statistical processes between EFA and PCA (Tabachnick & Fidell, 2007)[4]. Should the data not be appropriate for EFA procedures, PCA would therefore be used as the extraction method. As cited earlier, PCA is deemed an appropriate alternative, with evidence of little difference between solutions generated by EFA and PCA found (Guadagnoli & Velicer, 1988), and a follow up study being conducted to confirm the components identified.

Once factors are extracted, they are then normally rotated to enhance ease of interpretation by providing a factor solution that maximises high correlations between variables and factors and minimises low ones (Tabachnick & Fidell, 2007). This process occurs regardless of the extraction method used and aims to maximise the factor loadings of variables on one factor and minimise their loadings on others (Field, 2009). Within this thesis, both orthogonal and oblique rotations were considered.

[4] It is noted that discussing the underpinning statistical procedures of both EFA and PCA is beyond the scope of this thesis. The reader is directed to Tabachnick and Fidell (2007), as well as Field (2009), for more information on this subject.

Orthogonal rotation methods keep factors separate and ensure they remain uncorrelated with each other, whereas oblique rotation methods do not do this, and allow factors to correlate (Field, 2009). It is suggested that orthogonal methods are therefore appropriate when factors are believed to be independent and that oblique rotations are appropriate when factors are believed to be related (Field, 2009; Tabachnick & Fidell, 2007). Orthogonal rotations are, however, suggested to be potentially unnaturalistic as psychological constructs are normally related to others in some way (Field, 2009; Tabachnick & Fidell, 2007). As the constructs in this research are psychological in nature, it was therefore considered that an oblique rotation was more appropriate to allow factors the potential to correlate with each other. This rotation method would not cause factors to correlate but provides an opportunity for any correlations that are present to be found – thus, a purely orthogonal, or independent, solution may still be possible with an oblique rotation (Field, 2009; Tabachnick & Fidell, 2007). Additionally, oblique rotation solutions are reported to be more likely to provide good fitting solutions in subsequent confirmatory factor analysis, making it even more applicable within Study 3 (Brown, 2015). There are two main oblique rotation methods used, Direct Oblimin (DO) and Promax, with both methods found to produce satisfactory results (Fabrigar et al., 1999; Field, 2009; Tabachnick & Fidell, 2007). DO is, however, recommended by multiple sources (Field, 2009; Tabachnick & Fidell, 2007). In line with these recommendations, this rotation method was therefore used in Study 3, meaning that regardless of extraction method an oblique rotation in the form of DO was used.

4.4.2 Confirmatory Factor Analysis

It is recommended that once an initial exploratory analysis has occurred within questionnaire development, a confirmatory factor analysis should then occur (Anderson & Gerbing, 1988). Confirmatory factor analysis (CFA) is used as a statistical technique to examine a hypothesised factor structure, testing a pre-specified model to confirm the number of underlying concepts and the relationship between these and the questionnaire items (Brown, 2015). The objective of CFA is to obtain parameter estimates (such as factor loadings) that best reproduce the relationships in the sample (Brown, 2015). As well as being concerned with how well items load onto factors (as in EFA), CFA is therefore also concerned with how the predicted/ specified model fits the data – the goodness of fit (Brown, 2015). Thus, it is important to be clear on a relevant estimation method as well as goodness-

of-fit indices that need to be considered when conducting a CFA – factors considered within this thesis that are outlined below.

Two common estimation methods are Maximum Likelihood (ML) and Generalised Least Squares (GLS), which have both been shown to produce similar results (Brown, 2015). The recommended estimation method, however, and most widely used for CFA is ML, as it provides a more complex and comprehensive set of fit indices (Brown, 2015; Wang & Ahmed, 2004). As reported for EFA, ML, however, requires data to be normally distributed (Brown, 2015). It is suggested that deviations from this assumption may only impact the parameter estimates if it is extreme deviation, however, fit indices may be impacted from small violations of this assumption (Brown, 2015). It is recommended that if data is not normally distributed then a different estimation method, or process, should be used (Brown, 2015). Data could be transformed to be more normally distributed, or methods such as bootstrapping[5] or item parcelling[6] could be used (Brown, 2015). Such methods, however, have problems as any transformation procedure may change the relationships within the data, and item parcels have not been shown to outperform individual items and can potentially disguise underlying factors within the data (Brown, 2015). There are more recent methods that remove the need for data transformation and are recommended above these procedures – Weighted Least Squares (WLS) and Robust ML (Brown, 2015). WLS has been shown to be a good estimation method, but only in very large sample sizes (Brown, 2015). Robust ML, however, has been shown to outperform WLS, identified as a reliable estimation method, and provides statistics that are robust to non-normality within the data (Brown, 2015). This method is also commonly reported within the literature (Arnold & Fletcher, 2015; Lane, Harwood, & Nevill, 2005). Within Study 4, therefore, as ML provides more complex fit indices this recommended estimator would be used if the data is normally distributed, however, should this assumption be violated, Robust ML would be used instead.

Traditionally, goodness of fit has been assessed using chi-squared (χ^2), with significant results indicating a model does not fit the data (Brown, 2015). This fit statistic is, however, impacted by non-normal data and sample size, with large samples often resulting in rejected models even if differences between the estimated and sample models are small (Brown, 2015). It is recommended, therefore, that other fit indices are used as the basis of

[5] This refers to a resampling procedure that uses the data as the original population and then generates sets of random samples from this data, replacing the data after sampling so that a specific case could be randomly selected in one sample more than once.

[6] This refers to a procedure where multiple items are summed to provide an average that creates a "parcel" that might be better able to approximate normally distributed data.

model fit (Brown, 2015). Such indices fall into three overall categories of fit statistic – those that indicate absolute model fit (assessing overall, general, fit of a model), those that correct for model parsimony (assessing the overall parsimonious nature of a solution and reducing fit for models lacking parsimony), and those that assess comparative fit (assessing the specified model against alternatives; Brown, 2015). Utilising a combination from these categories is therefore recommended to provide more robust information regarding the goodness of fit of a model (Brown, 2015). In line with this approach, the Standardised Root Mean Square Residual (SRMR – a measure of absolute fit), Root Mean Square Error of Approximation (RMSEA – a measure of parsimony), the Comparative Fit Index (CFI – a measure of comparative fit), and the Tucker-Lewis Index (TLI – another measure of comparative fit) will be used within Study 4 to assess goodness of fit (Brown, 2015). These are recommended and have been shown to perform well as goodness of fit indices (Brown, 2015; Hu & Bentler, 1999). It is recommended that SRMR and RMSEA values close to or below .05 and .06, respectively, along with CFI and TLI values close to or greater than .95 are used, as these values suggest good model fit (Brown, 2015; Hu & Bentler, 1999). Within the literature there is a lack of consensus on the exact interpretation of these indices, with some suggesting values need to be clear cut-off points and others suggesting they should be used as guidelines (Brown, 2015; Hu & Bentler, 1999). Such debate is beyond the scope of this thesis, but within the current research the recommended values were used as guidelines when interpreting goodness of fit. This is in line with recommendations that models within CFA should not be respecified solely to improve a goodness of fit statistic (Brown, 2015). Values were therefore used as guidelines rather than cut-offs to prevent this from occurring.

Should the overall goodness of fit indices suggest a poor fitting model, and hence re-specification of the initial model be required, the modification indices (MI)[7] and standardised residuals (SR)[8] would be examined in line with recommendations to identify potential misspecification areas (Brown, 2015). These statistics allow for more localised areas within the CFA to be assessed for misspecification (Brown, 2015). It is worth noting here that both MI and SR are sensitive to sample size, with large samples resulting in increased values. Brown (2015) therefore recommends looking for outlying values rather than a specific cut-off

[7] These are calculated for each parameter that is fixed/ constrained in the CFA model (i.e. if an item is specified to load onto one factor only then the cross-loading of that item is fixed to 0). They indicate how much the overall model fit (χ^2) may reduce if that specific parameter was not fixed to a specific value but freely estimated (Brown, 2015).

[8] Where goodness-of-fit indices indicate the overall fit of the model, standardised residuals refer to the difference between the expected individual relationships amongst the items based on the predicted/ specified model and the actual relationships in the data (Brown, 2015).

point when using these to help re-specify the model – the approach that would be adopted in this thesis should re-specification be required. Furthermore, when appropriate, and in line with recommendations, the expected parameter change (EPC)[9] values will be used in conjunction with MI values to help identify areas that may need re-specification. Additionally, it is recommended that interpretability, and size, of the parameter estimates are considered (Brown, 2015). It is suggested that these are not used as the sole basis for re-specification in a very poor-fitting model, and so these will only be used to aid decision-making when necessary, in line with previous research (Arnold & Fletcher, 2015).

As the factors within CFA are not observed they do not have their own scale and it is therefore a requirement for CFA that researchers define their unit of measurement (Brown, 2015). This can be achieved by setting the unit of measurement of the factor to be the same as one of the items, or indicator variables, which is then referred to as a marker variable, or by fixing the variance of the factor to a specific value (Brown, 2015). Both approaches produce standardised solutions, however, the marker variable approach also produces unstandardised solutions (Brown, 2015). Neither approach has therefore been recommended unless a researcher is only concerned with standardised solutions for a specific reason, where fixing the variance of the factor is recommended (Brown, 2015). Additionally, marker variables are the most common method of scaling factors, used widely within the literature (Arnold & Fletcher, 2015; Brown, 2015). As marker variables provide additional data to fixing the variance of the factor, there is no strong rationale for choosing one method over the other, and marker variables are widely used within CFA research, this method of scaling the factor was adopted in Study 4. In line with recommendations, the variable with the highest factor loading from Study 3 was selected as the marker variable for each factor (Brown, 2015).

4.5 Additional Methodological Considerations

This thesis employed a multi-stage process to investigate, and identify, relevant psychological strengths in sport. Such a process meant that at the initial stages of this research the over-inclusion of qualities was preferred to under-inclusion. It is important to note here that decisions were guided by this principle in the initial research conducted as subsequent stages of this thesis provided opportunities to reduce the qualities included if they

[9] EPC values are calculated for each MI and provide an estimate of how much the specific parameter may change (either positively or negatively) should the fixed/ constrained parameter be freely estimated (Brown, 2015)

were not relevant. Study 2 provided an opportunity for experts to remove potentially irrelevant qualities identified in Study 1, and Study 3, through exploratory statistical procedures, provided a further exploration of the qualities identified in Study 2. This approach was therefore adopted to ensure thoroughness at each stage of the research, ensure potentially relevant qualities were not missed, and to allow the research to be driven by the data (Held, 2018).

It is also important at this stage to highlight the issue of reflexivity. The research conducted in this thesis involved multiple stages of interpretation and reconceptualization of large amounts of data. In line with recommendations for research where such processes occur, the author acknowledges the potential for personal views, perspectives, philosophies, and personal involvement to impact the research (Coolican, 2004). This has been considered at every stage, however, with triangulation adopted where necessary to minimise the potential impact of this and reduce any potential bias from the use of only one researcher (Leech & Onwuegbuzie, 2007). Additionally, when required, a guiding framework was used to help guide decision-making across all researchers (see Chapter 5 for an outline of this framework; Gerring, 1999).

4.6 Ethical Approval

All studies within this thesis received ethical approval from the University of Central Lancashire. As Study 1 did not involve participants, no consent was required. In Studies 2, 3, and 4, all participants were provided with information about the requirements of that specific study, after which they provided written consent prior to the studies commencing. In Study 2 specifically, participants were given information at each round of the Delphi method about the requirements of that specific round, informed about their right to withdraw at that stage, and asked to consent to taking part in both that specific round and the overall research again. This ensured consent was explicitly gained for each stage and that participants were reminded of their rights as the research progressed. In Studies 3 and 4 participants initially provided consent prior to completing the questionnaire. Once the questionnaire had been completed, participants were reminded of their right to withdraw and asked to consent again prior to submitting their results.

4.7 Chapter Summary

This chapter provided an overview of the different methodological considerations from each stage of the thesis. It has outlined both alternative methods that were considered along with considerations made within the chosen methodologies. The chapter did not aim to replace the method sections of the following studies, but to provide additional insight into the considerations that occurred throughout different stages of this thesis. Thus, details were not included regarding every aspect of the methods used. The following chapters will now outline each study, including the methods and approaches adopted.

Chapter 5: Study 1 – Assessing Potential Psychological Strengths in the Existing Sport Literature: A Systematic Review

5.1 Chapter Introduction

Chapter 2 highlighted the lack of a strengths assessment tool that is specific to the context of sport – a gap in the current literature. It outlined that there is a lack of research examining strengths-based approaches within sport despite emerging evidence that such approaches provide benefits in this context (Gordon, 2012; Gordon et al., 2017; Gordon & Gucciardi, 2011; Ludlham et al., 2017; Stander et al., 2017). It is possible to draw parallels when considering the lack of empirical research into strengths-based approaches within sport against the historical development of research within this area of mainstream psychology. As previously reported, it was stated that there was a need for the development of a common strengths-based language, and conceptual clarity, to ensure common understanding within the field before research and intervention work could increase (Hodges & Clifton, 2004; Peterson & Seligman, 2004). This commonality and clarity occurred with the development of strengths-based assessment tools that were then able to form the foundation of further research (Hodges & Clifton, 2004; Peterson & Seligman, 2004). Of the assessment tools previously reported, however, only the CSF is context specific (Hodges & Clifton, 2004), with other assessment tools, such as the VIA-IS, VIA-Youth, and the CSI (Peterson & Seligman, 2004; Wright et al., 2017), being general scales that consequently do not capture the complexity of the strengths required in different contexts. Peterson and Seligman (2004) state context is important and needs to be considered as some strengths are relevant to different contexts, with a common criticism of the field being that a common strengths-based language specific to different contexts is often lacking (White, 2016). Such assessment tools have, therefore, been criticised for not being context specific and thus not necessarily applicable within the sporting domain (Ludlham et al., 2016; 2017). It has been stated that a shared common language alongside clear assessment strategies are important when looking to evaluate strengths-based approaches (Peterson & Park, 2004). It may therefore be that the lack of research into strengths-based approaches within sport stems from a lack of a common language, or conceptual clarity, and a subsequent assessment method for sport-specific psychological strengths.

For such an assessment tool to be developed, there is therefore a need to first understand the concepts, or psychological strengths, that are relevant within the specific

context of sport – in line with previous questionnaire development (Johnston, Leung, Fielding, Tin, & Ho, 2003; Kehl et al., 2014). In order for there to be a common language, and shared understanding, it is important to be clear on the terms being discussed (Kristjansson, 2010). When considering the development of other strengths-based assessments, there have been initial exploratory stages to help identify the relevant strengths that are then used to underpin these assessments (Hodges & Clifton, 2004; Peterson & Seligman, 2004; Wright et al., 2017). Both the VIA-IS and CSI included reviews of the literature, with both preceding this with an additional exploratory stage – the VIA-IS with an initial brainstorming of information (Peterson & Seligman, 2004) and the CSI by assessing previous reviews in the area (Wright et al., 2017). Whilst the CSF did not conduct a review, the qualities of successful individuals were assessed, with this information used to conduct large scale interviews which were analysed for emerging themes (Hodges & Clifton, 2004). These exploratory processes were used by the VIA-IS, CSF, and CSI to outline the strengths that are included in their questionnaires (Hodges & Clifton, 2004; Peterson & Seligman, 2004; Wright et al., 2017). This consistency in approach suggests the importance of an initial stage to understand the relevant strengths that will later be assessed, and to provide a common language for the specific context (White, 2016). It is, therefore, important to be clear as to the relevant psychological strengths within a sporting context that will underpin any assessment tool, in order to provide a level of conceptual clarity.

Initial research has begun to provide a level of conceptual clarity, and evidence, around potential strengths-based concepts that are relevant to the sporting context. A review by Wagstaff and Leach (2015) was conducted to identify potential strengths-based concepts that have been historically researched in the performance domains of both sport and the military. Potential strengths-based concepts that were common across both domains were identified, aiming to highlight areas of commonality, promote knowledge transfer, and help the development of strengths-based approaches within both areas. Concepts were included if they were considered to have applied and conceptual utility, be clearly transferable across both domains, had a strengths-based focus, and were researched in at least one of the two areas. This resulted in six potential strengths-based concepts being identified, including mental toughness, positive affect, learned optimism, resilience, post-traumatic growth, and self-and-emotion regulation (Wagstaff & Leach, 2015). Wagstaff and Leach (2105) stated that the review has the potential to help increase conceptual clarity around strengths-based concepts that are relevant to both performance domains (Wagstaff & Leach, 2015). It was stated that further research was, however, required to build on the emerging findings within

the area to provide further clarity and ensure a robust evidence-based nature of strengths-based approaches within sport (Wagstaff & Leach, 2015). As the review assessed concepts related to both the sporting and military domains – as combined performance domains – additional research examining strengths-based approaches in sport specifically may therefore help provide not only a further evidence base, but also increased conceptual clarity around the relevant psychological strengths within the sporting domain.

Whilst further research may build on the review findings of Wagstaff and Leach (2015), the review does provide initial evidence that there might be areas within the existing sporting literature that could be considered psychological strengths within this context. One of the initial aims of modern positive psychology was to build on what is already known about growth and optimal functioning to allow what is already known to be integrated with further research into the positive (Gable & Haidt, 2005; Seligman & Csikszentmihalyi, 2000). There are also calls within positive psychology for strengths that have emerged from the literature (Held, 2018). Taken together with the initial evidence that there may be psychological strengths within the existing sporting literature (Wagstaff & Leach, 2015), these factors suggest the importance of identifying, and drawing together, any potential psychological strengths that have already emerged within the research. This would build upon previous findings (Wagstaff & Leach, 2015) and what is already known (Gable & Haidt, 2005; Seligman & Csikszentmihalyi, 2000), allow qualities that may have been identified in isolation to be brought together (Linley & Joseph, 2004), and provide insight into potential relevant psychological strengths within the context of sport.

The primary aim of Study 1 is, therefore, to identify the positive qualities, traits, or characteristics that could be classed as psychological strengths within the current sport psychology literature. It aims to draw together these qualities so there is an increased understanding of the positive qualities that have currently been identified, and an increased level of conceptual clarity as to the potential psychological strengths that are relevant to the sporting context (Gable & Haidt, 2005; Seligman & Csikszentmihalyi, 2000). To achieve this, the current research utilised the systematic review methodology. This is in line with previous calls for more systematic approaches to the development of research evidence in sport psychology (Biddle, 2006), and consistent with the review stages in the development of previous strengths assessment tools (Peterson & Seligman, 2004; Wright et al., 2017).

5.2 Method

5.2.1 Design

Following established guidelines (Moher, Liberati, Tetzlaff, & Altman, 2009; Perestelo-Pérez, 2012; Petticrew & Roberts, 2006) a systematic review of the sports literature was conducted. A systematic review is a scientific way of making sense of the current information and knowledge within a specific area, bringing the findings of relevant studies together (Petticrew & Roberts, 2006). As the research question was exploratory in nature it was important to include a wide range of studies covering both quantitative and qualitative findings. Thus, due to the heterogeneous nature of the literature, a non-statistical synthesis was deemed more appropriate than a meta-analysis (Eysenck, 1995; Perestelo-Pérez, 2012).

To ensure systematic reviews are conducted and reported with sufficient quality, it is important to follow recommended guidelines (Page et al., 2021). It has been suggested within the literature that AMSTAR-2 (a measurement tool to assess systematic reviews) could be used as a guiding checklist when conducting systematic reviews (Shea et al., 2017). As this was designed, however, to assess the quality of existing reviews, it does not specifically explain how to conduct a review and so is not recommended by the authors for conducting new reviews (Shea et al., 2017). The Cochrane Collaboration, however, provide specific guidelines for how to conduct and report new high quality systematic reviews (Higgins et al., 2021). This includes the Methodological Expectations of Cochrane Intervention Reviews (MECIR) set of standards. It is stated, however, that Cochrane reviews focus on intervention studies and are targeted at those who make decisions regarding healthcare (Higgins et al., 2021). Additionally, it is recommended that the MECIR guidelines are used in conjunction with an alternative approach (Higgins et al., 2021) – the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; Moher et al., 2009). PRISMA is stated as the foremost set of guidelines used when conducting systematic reviews (Eden, Levit, Berg, & Morton, 2011), is adopted by over 400 journals, and is widely endorsed in the literature (Page et al., 2020, 2021). PRISMA provides a set of guidelines that ensures a transparent account of the methods and results can be reported (Page et al., 2021). It is also applicable to reviews that do not just focus on intervention studies but focus on a broad range of methods (Page et al., 2021). As the current review did not focus on intervention studies or healthcare, and due to its widespread use and recommendations within the literature, the approach

adopted within this systematic review is therefore in accordance with PRISMA guidelines[10] (Moher et al., 2009).

5.2.2 Inclusion criteria

In order to address the research aims, studies were considered for inclusion if they provided primary source data relating to the positive qualities, traits, or characteristics possessed by athletes, and had been published in peer-reviewed journals, in English, within the last 25 years from the beginning of the review (1989-2014). Research needed to address elite/ expert athletes with a mean age of 18 years of age and over. Those under 18 years old were excluded as children may require a separate set of characteristics as they need to be considered as their own group, not as simply "miniature adults" (Peterson & Seligman, 2004). Studies that assessed Paralympic athletes were excluded due to the unique, specific, requirements of this population (Burkett, 2008), as were those assessing non-athlete and clinical populations. Papers addressing coaches' views on athletic performance, however, were included due to the informed nature of this group (Bloom, Falcão, & Caron, 2014). As the qualities and characteristics valued by different cultures vary (Chen, Brockner, & Katz, 1998; Kim, Hunter, Miyahara, Horvath, Bresnahan, & Yoon, 1996; Sims, 2009), studies were excluded if they were from Eastern or collectivist cultures.

5.2.3 Search Strategy

Based upon established systematic review guidelines (Moher et al., 2009; Petticrew & Roberts, 2006), a clear search strategy was outlined and subsequently conducted. Between August 2014 and March 2015 research papers were gathered from the following online databases: SPORTDiscus, PsychInfo, PsychArticles, ProQuest Psychology Journals, and Web of Science. In line with previous work (Peterson & Seligman, 2004), keywords related to the research aims were brainstormed, triangulated by a team of researchers, and checked in a thesaurus for additional related terms. The keywords generated through this process included both first and second level search terms. The first level search terms referred to positive

[10] It is noted here that this review was conducted in accordance with the 2009 PRISMA guidelines due to the time that it was conducted. It is acknowledged that these have subsequently been updated in 2020 and so updated guidelines exist (Page et al., 2021). For the full PRISMA guidelines used in this review, the reader is directed to Moher et al. (2009).

qualities, traits, and characteristics in sport and were used on their own, initially. Second level search terms, which referred to the level of athlete, were then combined with the first level terms and used to find additional papers. These keyword combinations were used in each database (see Table 5 for a full list of search terms).

Retrieved papers were reviewed in three stages (Lloyd Jones, 2004): by title, abstract, and full-text. Papers that did not meet the inclusion criteria were excluded at each step (see Figure 1). Papers that were unavailable online were obtained through hand-searching journals, inter-library loans, and contacting the authors. Once all relevant papers had been acquired and reviewed, the reference lists of papers that met the inclusion criteria were searched. Additional papers were then obtained and reviewed using the same process. This resulted in a total of 109 papers being identified that were subsequently quality assessed.

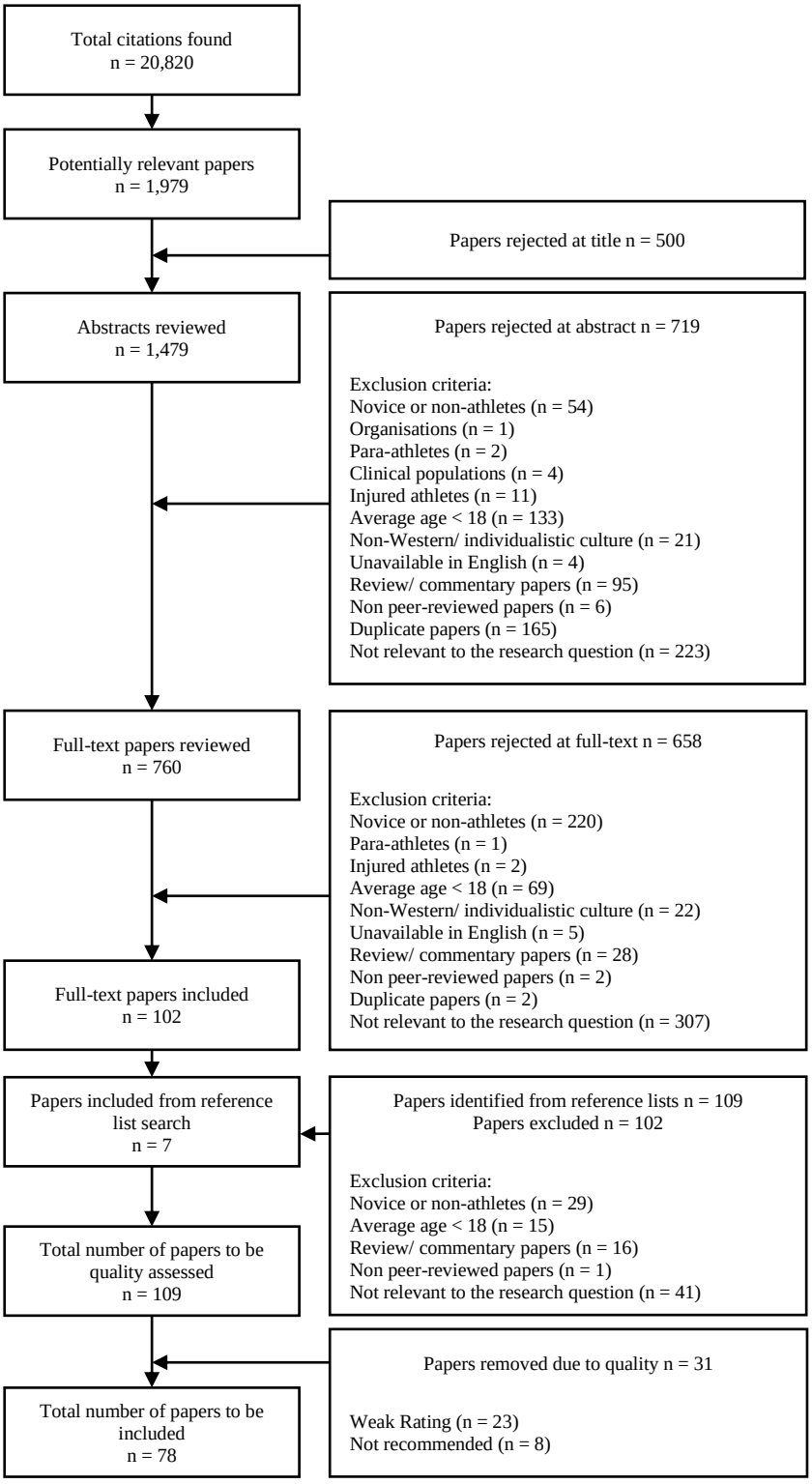
Table 5.

The First and Second Level Search Terms Used During the Systematic Review.

First Level Search Terms	Second Level Search Terms
Sport and Personality Trait	Elite
Sport and Trait	Expert
Sport and Psychological Foundation	Professional
Sport and Attribute(s)	Skilled
Sport and Qualities	Experienced
Sport and Abilities	Athlete
Sport and Skills	
Sport and Capabilities	
Sport and Assets	
Sport and Talents	
Sport and Positive Psychology	
Sport and Positive	
Sport and Strengths	
Sport and Character Strengths	
Sport and Character	
Sport and Characteristics	

Figure 1.

Flowchart of the Selection Process for Inclusion and Exclusion of Papers.



5.2.4 Quality Assessment

In order to protect the review from potential bias within individual papers, all studies were quality assessed (Perestelo-Pérez, 2012). Due to the fundamental differences between quantitative and qualitative research Guba (1981) suggests the trustworthiness of qualitative research should be assessed by different criteria than quantitative research. As the current review contained both quantitative and qualitative studies, two different quality assessment tools were therefore used – the Effective Public Health Practice Project (EPHPP; 1998) quality assessment tool for quantitative studies and the VAKS (the Danish acronym for Appraisal of Qualitative Studies) quality assessment tool for qualitative studies (Schou, Høstrup, Lyngsø, Larson, & Pulsen, 2011; see Appendices A and B for the quality assessments used). Papers that used mixed methods were reviewed using both tools.

Schou et al. (2011) highlight that many qualitative assessment tools simply aim to mimic quantitative tools and do not address the specific nature of qualitative research. The VAKS tool was used as it was, however, designed specifically for qualitative assessment, and has been shown to assess the key areas of trustworthiness (Guba, 1981) required for qualitative research. Furthermore, Hannes, Lockwood, and Pearson (2010) have found that some qualitative assessment methods do not address key validity issues related to qualitative research, such as the relationship between the researcher and the data, as well as issues of triangulation – key factors in qualitative research (Patton, 2002). The criteria used by Hannes et al., (2010) to assess the validity of qualitative studies are, however, addressed by the VAKS assessment method (Schou et al., 2011). This quality assessment tool was therefore considered appropriate for the qualitative papers included in the current review.

Despite the numerous quality assessment methods for quantitative papers (Bland, Meurer, & Maldonado, 1995; Cowley, 1995; Deeks et al., 2003; Downs & Black, 1998), there is no consensus in the literature as to the best method to use (Lang & Kleijnen, 2010). In a systematic review of quality assessment methods only 6 out of 194 tools were recommended for use (Deeks et al., 2003). Due to this lack of consensus on the best assessment method, Petticrew and Roberts (2006) stated that it is important to choose an assessment method that fits the nature of your review. The EPHPP was therefore used as it was one of the six recommended methods (Deeks et al., 2003), assessed a wider range of study designs beyond randomised controlled trials (an uncommon design in the sports literature; Shaw, Gorely, & Corban, 2005), and was found to have both content and construct validity (Thomas, Ciliska, Dobbins, & Micucci, 2004). Additionally, when compared to the

Community Preventive Services assessment method – another recommended in the review of quality assessments (Deeks et al., 2003) – the EPHPP consistently rated items more negatively (Thomas et al., 2004), meaning it was less likely to over-include poor quality studies. The EPHPP was therefore considered to be appropriate to assess the quantitative papers included in the current review.

Having a quality assessment tool that is clear and easy to use is also considered an important factor in assessing study quality (Petticrew & Roberts, 2006). Both tools were therefore also used as they were considered appropriate from a practical perspective. Reviewers rated the EPHPP as clear and easy to use, with the accompanying dictionary clarifying potential questions (Thomas et al., 2004). Furthermore, reviewers stated that VAKS was simple to use, helpful in assessing study quality, and allowed them to see aspects of the research they might not have considered otherwise (Schou et al., 2011).

The EPHPP assessed papers on six different areas: selection bias, design, confounders, blinding, data collection methods, and withdrawals and drop-outs (National Collaborating Centre for Methods and Tools, 2008). Within each area the papers were rated on specific questions which determined whether that area was rated as strong, moderate, or weak. The ratings of the six areas then determined the overall rating of the article. Papers were considered as strong if they were rated as weak on no areas and strong on at least three, moderate if there was one weak rating or less than three strong areas, and weak if there were two or more areas rated as weak (see Appendix A for a copy of the EPHPP).

The VAKS assessed papers on five different areas: formal requirements, credibility, transferability, dependability, and confirmability (Shou et al., 2011). Within each area there were a series of statements that required responses from 1 (*totally disagree*) to 4 (*totally agree*). The scores for the statements within the area were then summed and divided by the total number of statements in that area to give each section an overall score out of 4. This was done as the authors stated that certain items within each area may not be relevant to the specific article, thus providing the reviewer with the flexibility to adapt the tool to the individual article being assessed (Shou et al., 2011). The total scores for each area were then summed to give an overall score out of 20. Papers with a score of 15 and above were rated as recommended for inclusion, those with a score of 10-14 were rated as recommended with reservations, and those with a score below 10 were rated as not recommended (see Appendix B for a copy of the VAKS).

To ensure trustworthiness of the data, and minimise bias, triangulation occurred on a cross-section of both quantitative and qualitative papers prior to full assessment (Leech &

Onwuegbuzie, 2007). Three researchers rated each article independently, followed by discussions about overall ratings of quality until a consensus was reached for both sets of papers. The quality assessment was then conducted in full, revealing eight strong, 42 moderate, and 23 weak quantitative papers, and 14 qualitative papers recommended, 17 recommended with reservations, and eight not recommended[11]. As both quality assessment tools were designed for health research and not specifically for the sporting literature (of which, at the time of conducting the assessment, none existed), the overall scores for each paper will not be presented in the review. This is due to the fact that certain study designs that are prevalent in sport, such as observational designs (Rhodes & Quinlan, 2015; Still-Ostrowski, Gould, & Covassin, 2009), were weighted in a more negative manner due to randomised controlled trials being the gold standard in health research (Lang & Kleijnen, 2010; Rosen, Manor, Engelhard, & Zucker, 2006). Papers that were not recommended (qualitative) or rated as weak (quantitative), however, were removed from the review. This resulted in eight qualitative and 23 quantitative papers being removed, leaving a total of 78 papers (28 qualitative, 47 quantitative, and three mixed methods) included in the review and analysed.

5.2.5 Data Extraction and Analysis

Data was extracted from each article and collated into individual data tables (see Appendix C for an example of the individual data tables). These included information about the research aims, number, age, gender, level, and origin (i.e. nationality) of the participants, the sports included, research design, any scales/ questionnaires used, and the key findings in relation to the positive qualities, traits, or characteristics possessed or required by athletes. These tables were then condensed into an overall summary table of each study (see Appendix D) which was then analysed to create summary tables which are presented in the results (see section 5.3). First, sample characteristics were summarised. Secondly, the positive qualities, traits, and characteristics identified were extracted, resulting in 115 different terms being included. For qualitative papers, these constructs were taken from the lowest possible level of data included in the article (i.e. raw data themes rather than higher-order themes) to ensure information was extracted with as little researcher bias as possible.

[11] Three papers included mixed quantitative and qualitative approaches. As these papers were assessed using both quality assessment methods, this is the reason for the totals here combining to more than the number of papers included in the study.

To give clarity to the data, and provide both practical and theoretical utility, similar terms were grouped together into higher-order themes, or overarching sport-specific psychological strengths, to give a more concise list of qualities – a method adopted previously in sport research (Johnston, Harwood, & Minniti, 2013). This was in line with previous suggestions that systematic reviews need to go beyond the data and generate overall themes that encompass the findings from the original papers (Thomas & Harden, 2008). To achieve this, Gerring's (1999) framework of concept formation was used. Specifically, to determine suitable groupings, the overall grouping title, and a definition, the terms were assessed in relation to eight criteria; *familiarity* (clarity of the concept to the reader), *resonance* (if the concept confers the right meaning), *parsimony* (how brief the definition/ list of attributes is for the concept), *coherence* (how much the attributes belong to each other), *differentiation* (how distinct the attributes are from others), *depth* (the number of accompanying properties shared by the attributes), *theoretical utility* (the usefulness of the concept within academia), and *field utility* (the practical usefulness of the concept). In line with Gerring's (1999) recommendations, this involved comparing and contrasting terms in order to identify similarities and differences. As Gerring (1999) highlights that a trade-off must occur between the eight criteria, this was an iterative process with terms added and removed from different groups whilst assessing this new group in relation to the eight criteria. As with previous stages of this research, to ensure trustworthiness of the data the groupings were analysed independently by four researchers (Leech & Onwuegbuzie, 2007). Detailed discussions then occurred about the groupings, the overall title, and the definitions, and also to probe for explanations of the decisions made (Lincoln & Guba, 1985). This resulted in minor changes, with subsequent discussions occurring until consensus was reached for all areas. This led to the development of 13 higher-order themes, or overarching sport-specific psychological strengths, within which the results are presented.

5.3 Results

The results are presented in two sections. The first section outlines the demographic characteristics of the participants included in the research within the systematic review. The second section presents the specific concepts that were identified from the research papers.

5.3.1 Demographic Characteristics

Of the 78 papers included in the review, 28 were qualitative, 47 were quantitative, and three included mixed methods. The mixed method papers have only been counted once in the overall number of studies, however, their demographic characteristics are included in both the qualitative and quantitative sections below. This is to ensure that the overall summary of qualitative and quantitative papers accurately reflects the demographic information of studies that utilised those methods. A summary of the demographics can be found in Table 6. Whilst the overall findings are presented together, the demographics are separated into qualitative and quantitative papers due to the often-different nature of samples between these two methodologies (Thompson, 1999).

Qualitative papers. The qualitative papers included a total of 592 participants (374 males, 153 females, and 65 participants whose gender was not reported), with an age range of 16-70 years old and a mean age range of 18.5-59.4 years old (with only 19 studies reporting the mean age). This included 459 athletes, 66 coaches, 25 parents, four administrators, four sport psychologists, eight musicians, and one paper that included a total of 26 coaches, parents, and administrators but with no breakdown of numbers (see Table 6 for a summary of the qualitative paper participant demographics). Of the included papers, 19 included athletes only, three coaches only, and two athletes, coaches, and parents only. A single paper included each of the following: athletes and coaches; athletes, coaches, and sport psychologists; coaches and support staff; coaches, parents, and administrators; athletes and parents; athletes and musicians; and athletes, coaches, and administrators. Nine papers addressed males only, 20 used mixed gender participants, and two papers did not mention gender.

Papers reported participants competing at different standards, with multiple competitive levels reported in some papers. Thirteen papers included Olympic level athletes, with five papers including gold medallists and one paper Olympic medallists with no breakdown of medal type. An additional two papers included Olympic level coaches. One paper included world record holders and athletes rated in the top five in the world in their sport. Athletes of international standard were reported by 12 papers, with six papers including athletes and coaches of professional standard. A combination of national, state, district, and collegiate level participants were reported by eight papers.

Table 6.

A Summary of Sample Characteristic of the Qualitative and Quantitative Papers in Study 1.

Sample Characteristic	Qualitative Papers	Quantitative Papers	Total
Participant Type			
Athletes	459	8,080	8,523[a]
Coaches	66	14	80
Parents	25	-	25
Administrators	4	-	4
Sport psychologists	4	-	4
Non-athletes	-	338	338
Other	34	-	34
Total	592	8,432	9,008[a]
Gender			
Male	374	5,202	5,566[a]
Female	153	2,396	2,543[a]
Not reported	65	834	899
Age			
Age range	16-70	13-66	13-70
Mean age range	18.5-59.4	18.3-38.7	18.3-59.4
Competition Level			
Olympic gold medallists	25	10	25[a]
Olympic medallists	6	52	58
Olympic	62	250	306[a]
World Championship	-	303	303
International	320	806	1,126
National	-	1,176	1,176
State	7	-	7
District	26	936	962
Professional	60	1,269	1,329
Collegiate	35	1,853	1,888
Club	-	656	656
Semi-professional	-	115	115
Non-athletes	-	326	326
Other	51	293	344
Not reported/missing	-	387	387

[a] Sixteen athletes (10 male, six female; 10 Olympic gold medallists and six Olympic level) were removed from the overall totals as they were participants from mixed design papers and so were duplicated in the figures.

Participants came from 10 different countries, with some papers including participants from multiple nationalities[12]. Nine papers included participants from Great Britain, eight from the United States of America, seven from Australia, two from Ireland, one from Canada, and one from New Zealand. Six papers did not report participants' nationality.

The qualitative papers included athletes from 51 different sports. The most widely reported sport was track and field, with 13 papers including athletes from this sport, followed by swimming in 10 papers, hockey in seven, cricket and soccer in six each, rowing in five, and judo and rugby in four (rugby union was used as a specific term in two further papers). A full list of sports included is presented in Appendix E. Two papers did not provide information about the sports the participants were from.

Quantitative papers. The quantitative papers included a total of 8,432 participants (5,202 males, 2,396 females, and 834 participants whose gender was not reported), with an age range of 13-66 years old and a mean age range of 18.3-38.7 years old (with 44 papers reporting the mean age). This included 8,080 athletes, 338 non-athletes, and 14 coaches (see Table 6 for a summary of the quantitative paper participant demographics). Of the included papers, 43 included athletes only, six athletes and non-athletes, and one paper included athletes and coaches. Nineteen papers addressed males only, three addressed females only, and 24 used mixed gender participants. Four papers did not mention gender.

As with the qualitative papers, participants competing at different standards were reported, with multiple competitive levels in some papers. Five papers included Olympic level athletes, with one including Olympic champions and one Olympic medallists with no breakdown of medal type. One paper included World Championship level athletes, 12 papers included athletes of an international standard, and 15 as of professional standard. A total of 20 papers included athletes of national, regional, county, district or club standard. Collegiate level athletes were included by 13 different papers, and three papers included athletes described as of competitive standard.

Of the comparison groups included in some papers, two reported semi-professional athletes, one non-professional athletes, and three recreational athletes. Additionally, three papers included college level non-athlete controls, three included non-athletes, and one paper

[12] These were often not separated out in papers preventing exact numbers of participants from each nationality being reported. This was also the case for the quantitative papers.

simply reported non-elite athlete controls. Finally, one paper had competitive level data missing, and one did not report the split between the athletes and non-athletes included.

Participants came from 11 different countries, with some studies including participants from multiple nationalities. Fifteen papers included participants from the United States of America, 10 from Great Britain, four from Italy, three from each of Australia and Spain, two from each of Canada and Hungary, and one from each of France, Greece, Iceland, and South Africa. Seven papers did not report participants' nationality.

The quantitative papers included athletes from 59 different sports. These did not include 11 of the sports reported in the qualitative papers but included an additional 19 sports. The most widely reported sport was swimming, with 11 papers including athletes from this sport, followed by track and field in 10 papers, soccer in nine, basketball in eight, cricket and rugby union in six each, tennis and volleyball in five each, and American football, baseball, gymnastics, judo, and skiing in four each. A full list of sports included is presented in Appendix E. Six papers did not provide information about the sports the participants were from.

Overall demographics. In total, the papers in the review therefore included 9,008 participants, with an overall age range of 14-70 years old and a mean age range of 18.3-59.4 years old. Participants included 5,566 males, 2,543 females, and 899 participants whose gender was not reported. Participants competed at multiple different standards, coming from 13 different countries and a total of 70 different sports (see Appendix E). A summary of this information can be found in Table 6.

5.3.2 Qualities Extracted

A total of 115 different terms were extracted from the papers included in the review. Using the procedure detailed previously, these were grouped into 13 higher-order themes, or overarching sport-specific psychological strengths. These were categorised as commitment, self-confidence, love of the sport, personal responsibility, open-mindedness, self-discipline, emotional regulation, analytical, team-player, sport intelligence, leadership, moral values, and creativity (see Table 7 for the full list of higher-order themes, or overarching sport-specific psychological strengths, the extracted terms that comprise these themes, and the reference numbers for the included papers). Each higher-order theme, or overarching sport-specific psychological strength, is discussed below. Reference numbers for specific papers are

provided in brackets, when appropriate, to allow the reader to identify the relevant papers being referred to within the text if they wish to do so, whilst avoiding long lists of references in the text detracting from the findings. These reference numbers correspond to the papers included at the bottom of Table 7 or in Appendix D.

Commitment. This strength included 27 different terms that were extracted from 52 papers. It encapsulates terms related to an athlete's dedication to working hard and to persist in the face of obstacles and difficulties.

Nine papers within this overall strength identified multiple qualities as key components of mentally tough athletes. Athletes with at least one Olympic or World Championship gold medal, along with coaches and sport psychologists, identified determination, work-ethic, and an ability to push yourself to the limit as underpinning attributes of mental toughness across multiple sports (42). Multiple studies found coaches also perceived commitment, perseverance, persistence, desire, motivation to achieve, and courage to confront challenges as positive qualities possessed by mentally tough athletes (8, 10, 30, 74). Additionally, dedication to training, drive, and the ability to go the extra mile were identified as components of mental toughness in international cricketers and NCAA division one athletes from multiple sports (6, 7). Being able to cope with adversity and rebound from setbacks were also identified as attributes of mentally tough athletes by both NCAA multisport athletes and coaches (7, 74).

Characteristics such as work-ethic, determination, and a drive to meet high expectations were identified as key attributes of Olympic champions (27). Specifically, perseverance, persistence, and competitiveness were identified as characteristics that contributed to the development and maintenance of Olympic, double Olympic, or double World Championship gold medallists (18, 27). Higher levels of focus specifically on swimming were found in swimmers who were Olympic gold medallists, world record holders, or ranked in the top five in the world, compared to sub-elite swimmers – those who had qualified for the USA National Championships (39). Being highly committed to excellence was also found to positively influence Olympic athletes' ability to achieve (29).

Multiple qualities were also identified as important for the development and success of international and professional athletes. Mills, Butt, Maynard, and Harwood (2012) found UEFA A and pro licenced coaches believed determination to be a key factor influencing positive player development, with further papers identifying determination, commitment, and work-ethic as important characteristics in developing expertise and excellence in international

Table 7.

The Full List of Higher-Order Themes, or Overarching Sport-Specific Psychological Strengths, The Extracted Terms That Comprise These Themes, and the Corresponding Paper Reference Numbers for the Included Papers.

Higher-Order Themes (no. of papers)	Terms Extracted and the Corresponding Paper Reference	Definition
Commitment (52)	Determination – 21, 27, 30, 33, 41, 47, 52, 55, 57 Perseverance – 3, 8, 18, 27, 30, 48, 62, 72, 76 Persistence – 7, 21, 27, 48, 55, 72, 74 Commitment – 4, 7, 13, 17, 21, 25, 29, 30, 47, 48, 64, 76 Work ethic – 6, 7, 10, 27, 30, 33, 42, 52, 54, 55, 57, 72, 74, 77 Dedication – 4, 7, 17, 27, 37, 47, 55, 62 Drive – 7, 17, 27, 47 Desire – 8, 41, 47, 48, 52, 55 Headstrong – 27 Not willing to accept failure – 48 Conscientiousness – 1, 20, 38, 44, 56 Perfectionism – 27, 31, 50, 76 Pride – 10, 27, 30 Good enough not good enough – 47 Coping with setbacks/ adversity – 2, 4, 7, 8, 23, 27, 29, 37, 45, 47, 52, 55, 65, 66, 73, 74, 75, 77 Coping with not winning having excelled – 47 Showed robustness during difficult time – 48 Competitiveness – 6, 10, 18, 21, 24, 27, 28, 30, 36, 47, 52, 55, 57	A dedication to working hard and to persist in the face of obstacles and difficulties.

Higher-Order Themes (no. of papers)	Terms Extracted and the Corresponding Paper Reference	Definition
	Not willing to accept 2nd best – 47, 48 Mental strength – 36, 55 Winning mentality and desire – 10 Courage – 8, 27 Focus on career development – 30, 39, 41, 42, 48 Athletic identity – 24, 33, 57, 76 Need for achievement – 3, 8, 15, 24, 28, 33, 47 Challenge – 25, 64, 70, 71 Goal-oriented/ task-focused – 26, 28, 70, 71	
Self-confidence (47)	Confidence – 2, 6, 7, 8, 11, 12, 18, 20, 22, 23, 24, 27, 29, 34, 36, 40, 43, 48, 51, 52, 53, 54, 57, 59, 65, 70, 71, 72, 74, 75, 77 Belief – 6, 10, 17, 30, 41, 42, 47, 48, 49, 55, 76 Self-efficacy – 16, 45, 77 Optimism – 10, 20, 27, 52, 57, 63 Positive attitude – 7, 18, 19, 21, 29, 30, 70, 71 Positive goal beliefs – 35 Hope – 14	An overall belief in oneself and one's ability.
Love of the sport (13)	Love and passion – 7, 10, 17, 21, 27, 37, 54, 55, 75 Fun/ enjoyment – 17, 27, 29, 55, 72, 77 High enthusiasm – 3	One's enjoyment and passion for one's sport.
Personal responsibility (36)	Personal responsibility – 3, 10, 27, 33, 47, 48, 52, 67 Independence – 6, 8, 18, 24, 27, 48, 54 High self-motivation – 16, 18, 27, 30, 39, 49, 54, 55, 70, 71, 75	One's ability to act on one's own, making one's own decisions and taking responsibility for oneself.

Higher-Order Themes (no. of papers)	Terms Extracted and the Corresponding Paper Reference	Definition
	Self-set challenging targets – 3, 6 Preparation – 6, 27, 30, 48, 55, 71, 77 Goal-setting – 2, 4, 5, 7, 13, 16, 18, 23, 27, 30, 37, 45, 48, 55, 69, 70, 71, 73 Imagery for preparation – 4, 18, 19, 27, 47, 48, 72 Organised – 17, 27, 30, 48 Mental preparation – 3, 33, 70, 71 Physical preparation – 3, 70, 71 Mental-rehearsal – 2, 70 Imagery – 3, 13, 18, 27, 53, 69, 71	
Open-mindedness (19)	Open to new experience – 18, 20, 54, 55 Willing to learn – 3, 6, 18, 27, 54, 55, 77 Coachability – 2, 12, 23, 24, 27, 45, 47, 52, 55, 57, 73 Openness – 38, 44 Curiosity – 23	One's tendency to be willing to learn, try, and master new things.
Self-discipline (37)	Discipline – 8, 30, 48, 55 Sacrifice – 8, 30, 37, 47, 48, 54, 55, 75 Ability to adhere to performance plans – 48 Professional attitude – 6, 21, 24, 27, 29, 30, 55 Patience – 27, 72 Routines – 3, 19, 54, 55, 70, 71, 75 Concentration – 2, 4, 7, 8, 9, 10, 16, 19, 20, 23, 27, 29, 30, 41, 42, 48, 52, 55, 57, 73, 74, 77 Attentional Control – 5, 25, 27, 69 Prioritising sport – 3, 33	One's ability to exercise self-control of behaviour, remaining patient, and making sacrifices to achieve one's aim.

Higher-Order Themes (no. of papers)	Terms Extracted and the Corresponding Paper Reference	Definition
Emotional regulation (55)	Emotion control – 4, 5, 7, 13, 20, 27, 30, 42, 44, 68, 69 Emotional Intelligence – 10, 30, 46, 52, 68, 78 Controlling arousal – 4, 16, 25, 29, 48, 67, 70, 71, 77 Relaxation – 5, 13, 16, 18, 27, 53, 69 Self-talk – 4, 13, 16, 18, 27, 53, 69 Performing under pressure – 6, 7, 10, 18, 19, 30, 37, 41, 42, 47, 48, 52, 54, 74, 77 Activation – 2, 13, 69 Anger – 23, 28, 58, 60, 61 Lower levels of anxiety – 5, 11, 23, 24, 27, 32, 34, 40, 43, 51, 59, 60, 67 More facilitative interpretations of anxiety – 34, 40, 43, 51, 53, 59, 60 Peaking under pressure – 2, 23, 27, 33, 45, 65, 73 Freedom from worry – 2, 12, 23, 27, 45, 73 Control – 25, 64 Neuroticism – 1, 38, 56, 68	One's ability to control thoughts, feelings, and physical sensations, and to not let these interfere with performance.
Analytical (15)	Problem solver – 75, 77 Analytical – 6, 9, 24, 27, 36 Evaluative – 42, 48 Down to earth perspective – 10 Self-awareness – 10, 18, 27, 29, 30, 47, 48, 52, 77 Realistic – 27 Maintaining realistic expectations – 47, 48 Honest and realistic view of achievements – 10 Detail oriented – 27	An ability to think critically in order to honestly assess and evaluate different situations, including oneself and one's performance.

Higher-Order Themes (no. of papers)	Terms Extracted and the Corresponding Paper Reference	Definition
Team-player (12)	Team responsibility – 30 Social skills/ intelligence – 10, 27, 48, 52, 77 Good teammate/ play for team – 27, 30, 52, 77 Communication – 55, 77 Humble – 27 People orientation – 24, 67 Acceptability – 44 Agreeableness – 1, 38	An ability to work well with and help others, doing what is best for the group.
Sport intelligence (19)	Awareness of environment/ situation – 20, 42, 47 Knowledge – 55, 74 Sport Intelligence – 10, 27, 30, 52 Anticipation – 7, 75 Killer instinct – 27, 42 Ability to maximise resources – 27 Decision-making – 27, 77 Automaticity – 13, 27, 69 Sporting experiences – 70, 71 Ability to react and read environment quickly – 9 Adaptation – 4, 48, 75, 77	An awareness, understanding, and knowledge of one's sport, and how to deal with and capitalise on different situations.
Leadership (5)	Leadership – 7, 18, 77 Inspirational – 30 Comfort with conflict – 24	An ability to bring people together and inspire them, working in a clear direction.

Higher-Order Themes (no. of papers)	Terms Extracted and the Corresponding Paper Reference	Definition
Moral values (5)	Sportspersonship – 24, 27, 77 Honesty – 27, 30 Values – 10, 30 Respect – 77	A clear sense of respect and understanding for what is right and wrong, and acting accordingly.
Creativity (7)	Creative – 18, 20, 27, 75 Risk taker – 6, 10 Willing to step out of comfort zone – 47	An ability to generate new and original ideas and ways of doing things.

Note. Reference numbers: 1 = Allen, Greenlees, & Jones (2011); 2 = Andrew, Grobbelaar, & Potgieter (2007); 3 = Anshel (1995); 4 = Bertollo, Saltarelli, & Robazza (2009); 5 = Bois, Sarrazin, Southon, & Boiché (2009); 6 = Bull, Shambrook, James, & Brooks (2005); 7 = Butt, Weinberg, & Culp (2010); 8 = Cook, Crust, Littlewood, Nesti, & Allen-Collinson (2014); 9 = Corrado, Murgia, & Freda (2014); 10 = Coulter, Mallett, & Gucciardi (2010); 11 = Covassin & Pero (2004); 12 = Cox, Shannon, McGuire, & McBride (2010); 13 = Crust & Azadi (2010); 14 = Curry, Snyder, Cook, Ruby, & Rehm (1997); 15 = Davis & Mogk (1994); 16 = Devenport (2006); 17 = Duffy, Lyons, Moran, Warrington, & MacManus (2006); 18 = Durand-Bush & Salmela (2002); 19 = Eklund, Gould, & Jackson (1993); 20 = Fletcher & Sarkar (2012); 21 = Galli & Vealey (2008); 22 = Gat & McWhirter (1998); 23 = Géczi, Bognár, Tóth, Sipos, & Fügedi (2008); 24 = Gee, Marshall, & King (2010); 25 = Golby & Sheard (2004); 26 = Gondola & Wughalter (1991); 27 = Gould, Dieffenbach, & Moffatt (2002); 28 = Greene, Sears, & Clark (1993); 29 = Greenleaf, Gould, & Dieffenbach (2001); 30 = Gucciardi, Gordon, & Dimmock (2008); 31 = Gucciardi, Mahoney, Jalleh, Donovan, & Parkes (2012); 32 = Guillén & Sánchez (2009); 33 = Halldorsson, Helgason, & Thorlindsson (2012); 34 = Hanton, Neil, Mellalieu, & Fletcher (2008); 35 = Hanton, O'Brien, & Mellalieu (2003); 36 = Hays, Maynard, Thomas, & Bawden (2007); 37 = Holt & Mitchell (2006); 38 = Hughes, Case, Stuempfle, & Evans (2003); 39 = Johnson, Tenenbaum, Edmonds, & Castillo (2008); 40 = Jones & Swain (1995); 41 = Jones, Hanton, & Connaughton (2002); 42 = Jones, Hanton, & Connaughton (2007); 43 = Jones, Hanton, & Swain (1994); 44 = Kajtna, Tušak, Baric, & Burnik (2004); 45 = Kioumourtzoglou, Tzetzis, Derri, & Mihalopoulou (1997); 46 = Lane & Wilson (2011); 47 = MacNamara, Button, & Collins (2010a); 48 = MacNamara, Button, & Collins (2010b); 49 = Mallett & Hanrahan (2004); 50 = Martinent & Ferrand (2006); 51 = Mellalieu, Hanton, & O'Brien (2004); 52 = Mills, Butt, Maynard, & Harwood (2012); 53 = Neil, Mellalieu, & Hanton (2006); 54 = Phillips, Davids, Renshaw, & Portus (2010); 55 = Phillips, Davids, Renshaw, & Portus (2014); 56 = Piedmont, Hill, & Blanco (1999); 57 = Poczwardowski, Diehl, O'Neil, Cote, & Haberl (2014); 58 = Robazza, Bertollo, & Bortoli (2006); 59 = Robazza & Bortoli (2003); 60 = Robazza & Bortoli (2007); 61 = Ruiz & Hanin (2011); 62 = Ruiz-Tendero & Martín (2012); 63 = Seligman, Nolen-Hoeksema, Thornton, & Thornton (1990); 64 = Sheard & Golby (2010); 65 = Smith & Christensen (1995); 66 = Spieler, Czech, Joyner, Munkasy, Gentner, & Long (2007); 67 = Steiner, Denny, & Stemmle (2010); 68 = Szabo & Urbán (2014); 69 = Taylor, Gould, & Rolo (2008); 70 = Thelwell & Maynard (2000); 71 = Thelwell & Maynard (2002); 72 = Vernacchia, McGuire, Reardon, & Templin (2000); 73 = von Guenthner & Hammermeister (2007); 74 = Weinberg, Butt, & Culp (2011); 75 = Weissensteiner, Abernethy, & Farrow (2009); 76 = Weissensteiner, Abernethy, Farrow, & Gross (2012); 77 = Woodcock, Holland, Duda, & Cumming (2011); 78 = Zizzi, Deaner, & Hirschhorn (2003).

athletes from multiple sports (4, 17, 18, 47, 55). It was also found by one paper that a lack of dedication and not being prepared to do the hard work were identified as factors that stopped cricketers progressing to the elite level (55). Papers identified that being able to focus on their (the athlete's) career development was an important positive quality for athletes. Lifestyle factors, such as having full-time work, were identified by one paper as inhibiting factors for success by international athletes from multiple sports (17). Additionally, the ability to cope with setbacks and adversity was identified across multiple papers. Both athletes and coaches within different qualitative papers highlighted that being able to positively deal with setbacks (47, 52, 55), including mistakes (4), injuries (77), criticism (37), or defeats (29), was a positive characteristic possessed by some athletes that allowed them to successfully develop and achieve.

Quantitative evidence primarily supports the components of this overarching strength. Multiple papers found that international athletes scored significantly higher on commitment levels than lower level athletes (13, 25, 64, 76). Halldorsson, Helgason, and Thorlindsson (2012) found that international, national, and professional Icelandic athletes in multiple sports scored significantly higher than controls on consistently giving a high level of effort, and being determined to never give up, even in the face of obstacles. Australian international swimmers, along with state and national cricketers, scored significantly higher on perseverance than club, and sub-state, level athletes, respectively (3, 76), with Olympic, World, and European Championship triathletes and professional coaches agreeing that perseverance and dedication were in the top five factors that influenced an athlete's performance (62).

Mixed support was found, however, for some components of this overarching strength. Conscientiousness was found to predict limited performance variance, but also found to be significantly higher in athletes of a higher skill level (1, 38, 44, 56). Additionally, no significant difference was found on coping with adversity between international adult ice-hockey players and their under 18 counterparts (23), however, coping with adversity was found to be a significant positive predictor of athlete level (45), baseball batting performance (65) and the starting status of American Footballers (66).

Self-confidence. This strength was related to an athlete's overall belief in themselves and their ability. It represents the terms of confidence, belief, self-efficacy, optimism, being positive, positive goal-beliefs, and hope. These were extracted from 47 different papers.

Within this overall strength, multiple qualitative papers identified confidence, self-belief, and having a positive attitude as important factors for the development and maintenance of elite level performance. These were identified by multiple Olympic or World Championship medallists, Olympic and international level athletes from multiple sports, and by professional UK soccer coaches (17, 18, 19, 29, 36, 47, 48, 52, 54, 72). MacNamara, Button, and Collins (2010b) found that confidence in your ability to succeed, to develop, and an ability to maintain self-belief, were all important characteristics that helped some international level athletes develop excellence. Other papers also identified that confidence, self-belief, being optimistic, and having a positive attitude, were positive factors that influenced Olympic athletes' performance and success (18, 19, 27, 29), and international athletes' ability to achieve their potential (49).

Confidence and self-belief were also identified as important attributes of mental toughness by athletes, coaches, support staff, and parents across multiple sports (7, 8, 10, 30, 74). Bull, Shambrook, James, and Brooks (2005) identified that having robust self-confidence, or an unshakable self-belief, as well as a belief that they (the athlete) could be the one to make the difference were key attributes of mental toughness within international cricketers. Having an unshakable self-belief in your ability to achieve, and that you possess unique qualities that give you an advantage were also reported as attributes of mentally tough Olympic and World Championship medallists, and international athletes (41, 42). Olympic champions also identified confidence as a quality of resilient athletes (20).

Two quantitative papers found no significant difference on confidence scores between elite (international and professional) and non-elite (amateur and semi-professional) cricketers (40), and between international Hungarian ice-hockey adult athletes compared with under 18 athletes (23). Multiple quantitative studies did, however, find that higher experienced, or ranked, athletes scored significantly higher on confidence and self-belief compared with lower experienced, or ranked, athletes (2, 34, 51, 76). International, national, and professional level athletes were found to have significantly higher confidence levels than athletes who were below national level and non-professional athletes in a wide range of sports, including biathlon, canoeing, skiing, swimming, tennis, soccer, basketball, volleyball, and rugby (43, 53, 59). Thelwell and Maynard (2002) found that total self-confidence was ranked as the most important characteristic for repeatable good performance by professional British cricketers. Research also identified that confidence and dispositional hope scores significantly predicted subjective and actual performance levels (11, 12, 14, 24, 65). Having positive expectations was found to link to confidence levels, with elite athletes that had

positive goal-expectations found to report significantly higher levels of self-confidence than either elite athletes with negative goal-expectations or non-athletes (35).

Love of the sport. This strength is comprised of three terms extracted from a total of 13 different papers, 12 of which were qualitative and only one quantitative. It captured qualities relating to an athlete's enjoyment and passion for their sport.

Multiple papers found that the terms comprising this overarching strength were important characteristics that helped athletes' development. Specifically, experienced international Australian cricketers, administrators, and coaches identified that passion, love for the game, and focusing on fun and enjoyment were important qualities for the development of expertise in both batting and bowling (54, 55, 75). Coaches and parents of district level British Rugby players also identified enjoyment and fun as characteristics required by elite athletes (77). Three papers found focusing on fun, a sense of humour, and passion for their specific sport were important attributes that positively impacted the development, performance, and success of Olympic athletes, including Olympic champions, from multiple sports (27, 29, 72). The quantitative study in this overall strength supports this, finding that international Australian swimmers scored significantly higher than club level athletes on enthusiasm for training and competition (3).

Personal responsibility. The components of this strength related to an athlete's ability to act on their own, make their own decisions, and take responsibility for themselves. This strength represents 12 terms which were extracted from 36 different papers.

Six papers identified components of this overarching strength as positive mental toughness attributes. British Premier League academy coaches and international cricketers identified independence as an important quality of mental toughness, with this term being defined in one paper as taking personal responsibility (6, 8). Preparation, acknowledging self-responsibility, and being self-motivated were also found as attributes of mentally tough Australian football and soccer players (10, 30).

Multiple qualitative papers identified components of this strength such as independence, personal responsibility, high self-motivation, and preparation as positive qualities that helped to facilitate elite level development and success (18, 27, 47, 48 52, 54, 55, 75). Specifically, one paper found high levels of self-motivation were reported by Olympic gold medallist swimmers, world record holders, or swimmers ranked in the top five in the world, but only by around 50% of their sub-elite sample (39). Self-motivation and

preparation were also identified as important for the development of expertise by groups of elite international Australian fast bowlers – one paper using a sample of bowlers with a combined 2,400 test wickets in over 600 matches and another a sample that had at least 100 test wickets each (54, 55). Coaches, administrators, and parents identified preparation as an important characteristic in the development of expertise in rugby (77), with a lack of time-management highlighted as an inhibiting factor for elite development and success by international Irish multisport athletes (17).

Quantitative papers identified that international and collegiate athletes scored significantly higher on responsibility items than non-elite athletes and non-athletes (3, 67). Additionally, being highly motivated along with mental and physical preparation were identified as important characteristics required for repeatable good performance in cricket. There was, however, no agreement on the exact importance of these qualities between batsmen and bowlers (70, 71).

Specific preparation strategies were identified and included in this overarching strength. Papers identified imagery/ mental rehearsal and goal-setting as important preparation strategies that influenced the development of excellence in international athletes (4, 16, 27, 37, 47, 48, 55). Both imagery and goal-setting were identified as skills that were used to prepare for competition by athletes with either Olympic or World Championship gold medals (18). Two papers, however, found that this was a positive skill that was used only by some Olympic gold medallists and not by all (19, 27), with quantitative evidence finding Olympic champions scored significantly lower on imagery use than other international athletes, and Olympic non-medallists scoring significantly higher on imagery use (27, 69). Additional quantitative papers, however, found that international swimmers, along with professional, and "highly ranked" rugby players scored significantly higher on imagery use than club swimmers, semi-professional, and lower ranked rugby players (2, 3, 53). Goal-setting use was also found to be significantly higher in Olympic and national level athletes compared with minor league baseball players and county standard athletes (27, 45).

Open-mindedness. This strength represents terms extracted from 19 different papers, including open to new experience, willing to learn, coachability, openness, and curiosity. These terms all relate to an athlete's tendency to be willing to learn, try, and master new things.

The qualities of open to new experience, willing to learn, and coachability were highlighted by multiple qualitative papers. Always striving to learn and improve, along with

coachability, having an open mind, being willing to try new things, and being a student of the sport, were found as important qualities in the development and maintenance of high-level performance for Olympic and World Championship gold medallists, as well as elite international Australian cricketers (18, 27, 54, 55). Additionally, being open to new experience was identified by Olympic athletes as a positive personality trait of resilient athletes (20), with another paper finding that exploiting learning opportunities was an attribute of mental toughness in elite British cricketers (6).

Quantitative evidence found mixed support for the components of this strength. One paper found that Olympic champions did not differ significantly on coachability compared with minor league baseball players (27). It was also found as a negative predictor of subjective performance in collegiate athletes, with no significant difference found on coachability scores between international adult and under 18 athletes (12, 23). Multiple papers, however, found that coachability scores significantly positively discriminated international and adult athletes from non-elite and under 18 athletes, and predicted performance when in conjunction with additional variables (23, 24, 45). This quality was also identified as being significantly higher in top, compared to lower, ranked South African rugby players (2), and athletes who successfully transitioned into the Olympic training centre in Colorado scored significantly higher on coachability than those who did not (57). Openness scores were found by one paper to not be significantly different between international athletes from high-risk sports compared to non-athletes, but significantly higher in non-risk sport athletes compared to non-athletes (44). Additionally, international Australian swimmers scored significantly higher than club swimmers on improvement being more important than winning (3).

Self-discipline. This strength included terms from 37 different papers. It covered qualities related to an athlete's ability to exercise self-control of behaviour, remaining patient, and making sacrifices to achieve one's aims.

Within this strength, the components of discipline, sacrifice, concentration, routines, and professional attitude were all identified as important factors in the development and success of elite level athletes by multiple qualitative papers. Specifically, being willing to make sacrifices, discipline, having the "right attitude," and having routines were identified as important qualities in the development of expertise in both batting and bowling by experienced international Australian cricketers, administrators, and coaches (54, 55, 75). Three additional papers identified that being self-disciplined, willing to make sacrifices,

sacrificing social and family time, and being willing to give up other activities and arrange your life around sporting endeavours were all factors that influenced the development of expertise and excellence in international multisport athletes and British soccer players (37, 47, 48). UEFA A and pro licenced soccer coaches, along with rugby coaches, parents, administrators, and international athletes also identified that heightened concentration, having an ability to focus on task relevant cues, remain focused, and block out distractions helped facilitate elite level development and success (16, 48, 52, 77). Additionally, qualities such as knowing when to switch on and switch off, being able to refocus after mistakes, discipline, and making self-sacrifices were identified across multiple sports by Olympic and World Championship gold medallists, international athletes, coaches, and parents as important attributes of mentally tough athletes (7, 8, 10, 30, 41, 42, 74).

Extracted qualities within this overarching strength were also identified as positive factors that influenced Olympic athletes' performance. Blocking out distractions and focusing on their own performance, having the ability to focus and not be easily distracted, tunnel vision in order to eliminate distractions, and patience were all identified in qualitative papers as characteristics that helped Olympic athletes succeed (19, 27, 29, 72). Eklund, Gould, and Jackson (1993) found that systematic performance routines, that were adhered to, were seen as positively influencing the success of American Olympic medallist wrestlers. It must be noted that, whilst all medallists reported using these disciplined routines, the specific content varied between individuals (19). Quantitative evidence found that Olympic champions were significantly higher on attentional control and concentration than other international athletes and minor league baseball players, respectively, and significantly lower on concentration disruption than collegiate American footballers (29). No significant difference, however, was found on attentional control in one paper between USA Olympic medallists and non-medallists (69).

Additional quantitative evidence also mainly supports the components of concentration, attentional control, and routines. Top ranked rugby union players and international rugby league players were found to score significantly higher on concentration and attentional control, respectively, than athletes of a lower standard (2, 25). Mixed evidence was found relating to age of athletes, with one paper finding no significant difference on concentration between adult and under 18 international ice hockey players, and one finding significantly higher focus and concentration scores in senior, compared to junior, professional rugby players (9, 23). One paper found international Australian swimmers scored significantly higher than club level swimmers on having a regular routine (3), with

two papers finding international British cricketers rated following a set pre-match routine as one of the top five criteria required for repeatable good performance (70, 71).

Emotional regulation. This strength included 14 terms that were extracted from 55 different papers. These covered an athlete's ability to control thoughts, feelings, and physical sensations, and to not let these interfere with their performance.

Within this strength, the components of emotion control, emotional intelligence, and peaking under pressure were all identified by qualitative papers as important attributes of mental toughness. Specifically, being emotionally stable, having self-control, remaining calm under pressure, and making the correct decisions under pressure were identified as key components of mental toughness by Olympic and World Championship gold medallists, as well as international multisport athletes and coaches (7, 10, 30, 42). Additionally, athletes from multiple sports, including international British cricketers, and NCAA coaches identified that handling and performing under pressure as well as thriving on the pressure of competition were attributes of mentally tough athletes (6, 41, 74).

Further qualitative papers identified components of this strength related to emotional control. Being able to regulate emotions, or emotion competence, was identified by UEFA A and Pro licenced coaches as an important quality in the development of elite British soccer players (52). Being emotionally even and calm was found as an important characteristic that helped Olympic champions succeed, with relaxation and self-talk identified as positive skills that allowed Olympic athletes to get into an optimal state to perform (18, 27, 29). It was reported that experiencing unexpected nerves and feeling emotionally on edge were factors that negatively impacted Olympic athletes' performance (29). Multiple papers also highlighted that being able to relax, self-regulate arousal, get into an optimal performance state, and cope with pressure and expectation were important qualities for the development and maintenance of elite performance (4, 16, 47, 48, 52, 54, 77). Specifically, the ability to regulate arousal and cope with competitive pressures were found in two studies as qualities that helped to facilitate the development of excellence in international athletes from both individual and team sports (47, 48). High expectations were welcomed by some Olympic wrestling champions, finding these energising for their performance, however others preferred to ignore such expectations and found them unwelcome (19).

Quantitative evidence within this overarching strength also primarily supports the terms included. Multiple papers found that emotional stability, emotional intelligence, self-regulation, peaking under pressure, and freedom from worry were significantly higher in

athletes compared to non-athletes (32, 44, 45, 59, 67, 68, 78). Additionally, multiple papers identified significant differences based on level of athlete, with higher level athletes scoring significantly higher on qualities such as overall control, emotion control, activation control, and performing well in front of others (2, 25, 33, 64). Specifically, emotional control was found to be significantly higher in golfers who made the cut on the French professional tour compared to those who did not (5). This quality was one of a number of factors, including relaxation, which discriminated 80.50% of this group and was a significant predictor of performance in conjunction with cognitive anxiety scores. Olympic medallists were also found to score significantly higher on emotional control, peaking under pressure, freedom from worry, and relaxation, and lower on negative thinking, than other international athletes and minor league baseball players (27). One paper, however, found no significant difference between Olympic medallists and non-medallists on their use of activation and relaxation strategies (69), with an additional paper finding semi-professional rugby players reported significantly more use of relaxation than professionals (53).

Components of this strength relating to anxiety identified a facilitative interpretation of anxiety as a positive quality of athletes. Multiple papers found that higher experienced athletes reported significantly lower somatic and cognitive anxiety, along with more facilitative interpretations of both types, than lower experienced athletes (34, 51, 53, 59). Two additional papers, however, found that professional cricketers and national standard swimmers did not significantly differ compared to semi-professional cricketers and sub-national level swimmers on cognitive and somatic anxiety intensity, respectively, but did have a more facilitative interpretation (40, 43). Within three papers, when participants were split into those with facilitative and debilitative interpretations of anxiety, the majority of higher-level athletes were found in the facilitative group (40, 43, 59).

Three quantitative papers assessed the impact of specific components of this strength on performance within American collegiate sport. Emotional intelligence scores were found to not be significantly correlated to baseball batting performance, and athlete's personal ratings of peaking under pressure were only modest predictors of pitching performance (65, 78). Freedom from worry was, however, found to significantly predict athletes' subjective performance, and coaches' ratings of baseball players' ability to peak under pressure were found as the best psychological predictor of batting and pitching performance in minor league baseball (12, 65).

Analytical. This strength included terms relating to an athlete's ability to think critically in order to honestly assess and evaluate different situations, including themselves and their performance. It covers terms which were extracted from 15 different papers.

Within this overarching strength, multiple qualitative papers identified qualities such as analytical, evaluative, and self-awareness as important positive qualities for Olympic athletes' performance. Specifically, self-awareness, the ability to analyse, be realistic, and keep things in perspective were identified as positive factors that influenced the development, maintenance, and success of Olympic and World Championship medallists from multiple sports (18. 27, 29). Innate analytical skills were also reported by two Olympic or World Championship medallists as a factor they used to source confidence (36). Furthermore, Olympic and World Championship medallists also identified that being able to recognise and rationalise failure, along with knowing when to celebrate success were key attributes in developing mental toughness (42). Self-awareness, self-reflection, and having an honest and realistic view of achievements were also identified as mental toughness attributes by international athletes and coaches (6, 10, 30).

Additional papers within this overarching strength found positive qualities that impacted athlete development. Two papers identified that being self-critical regardless of performance outcomes, being aware of the processes required for your own development, and having an ability to recognise your weaknesses and to then work on them were important factors for achieving excellence (47, 48). Further to this, two papers reported that UEFA A and pro licenced soccer coaches, along with district level rugby coaches, felt self-awareness, being able to honestly self-appraise and apply this information to performance, and problem-solving helped facilitate the development of elite athletes (52, 77).

Team-player. This strength included terms from 12 different papers. These covered an athlete's ability to work well with and help others, doing what is best for the group.

The terms included within this overarching strength were found as important attributes for the development of expertise and mental toughness, as well as successful performance, by multiple papers. Being a good teammate, being good with people, humble, likeable, and sociable were all identified as characteristics that some Olympic gold medallists felt were important for their success (27). Taking responsibility for your role in the team and being team-oriented (focusing on the team's success) were identified as important attributes of mental toughness by Australian football coaches (30). Additionally, British soccer coaches, along with district level rugby union coaches, administrators, and parents identified

that being an effective team player, having social skills/ competence, and effective off-pitch communication skills were important qualities for the development of elite performance (52, 77). Having an ability to interact effectively with fellow performers and support staff as well as being able to fit into new environments were also identified as characteristics that helped international athletes achieve excellence (48).

The quantitative evidence within this overarching strength, however, suggests little difference in social skills between athletes and non-athletes. No significant difference was found between collegiate and non-athletes on people orientation, between ultramarathon runners and a normative sample on agreeableness, or between international athletes and non-athletes on acceptability – referring to an understanding of, and a need to help, others, and an ability to engage in effective cooperation (38, 44, 67). One paper, however, found a significant difference between higher level athletes (international and national level) and lower level athletes (regional, club, and collegiate level) on agreeableness scores (1).

Sport intelligence. This strength included terms relating to an athlete's awareness, understanding, and knowledge of their sport, and how to deal with and capitalise on different situations. These were extracted from a total of 19 different papers.

Many of the terms within this overarching strength were closely related. Multiple papers identified components of this strength as important for the successful development and maintenance of elite level performance. Research into cricket found that international Australian cricketers and coaches identified that being able to anticipate the bowler's delivery, adaptability, and knowledge were important for the development of expertise (55, 75). Using your previous experience from the sport was also identified by two papers as an important factor for repeatable good performance in professional British cricketers (70, 71). Being able to adapt to the demands of a situation, along with a willingness to change plans if necessary, and good game awareness were also identified by international athletes as characteristics that helped some athletes develop excellence and expertise (4, 47, 48, 77). Similarly, having a high level of sport intelligence was identified by British soccer coaches as important for the successful development of elite soccer players (52), and also identified by USA coaches as well as international Australian coaches and athletes as an important attribute of some mentally tough athletes (10, 30, 74). Additionally, having a killer instinct in order to capitalise on a moment, using aspects of the environment to your advantage, reading the game, and anticipation were identified as mental toughness attributes by multisport Olympic and World Championship medallists and international athletes (6, 42). Olympic

gold medallists also identified that sport intelligence, an ability to make good decisions, and an ability to identify opportunities in the environment and act on these to cause changes were positive qualities that helped to facilitate successful performance and resilience (20, 27). As well as this, professional Italian rugby union players were found to score significantly higher on having an ability to read and react to the environment than junior professionals (9).

Leadership. The components of this strength covered an athlete's ability to bring people together and inspire them, working in a clear direction. The strength included the terms of leadership, inspirational, and comfort with conflict, which were extracted from five different papers.

Leadership was identified by double Olympic or World Championship medallists, along with rugby coaches, sports administrators, and parents, as an important characteristic that contributed to the development and maintenance of some elite level athletes (18, 77). Having leadership qualities and being inspirational were also identified as attributes of mental toughness in NCAA Division One multisport athletes and Australian footballers (7, 30). A composite list of variables, which included comfort with conflict, was found to significantly predict the number of goals, assists, and points accumulated by a sample of National Hockey League (NHL) players over a 15-year period (24).

Moral values. This strength included terms extracted from five different papers (four qualitative and one quantitative), which included sportspersonship, honesty, values, and respect. These terms were related to having a clear sense of respect and understanding for what is right and wrong, and acting accordingly.

Gould, Dieffenbach, and Moffatt (2002) identified that sportspersonship, which included good moral values and an ability to speak their mind and be honest, were characteristics that some Olympic champions felt had helped them to achieve success. This quality, along with respect, was also identified by parents as an important characteristic for the development of young British rugby players (77). Sportspersonship was found to be a significant predictor of NHL player performance over a 15-year period, as part of a composite list of variables (24). Additionally, having personal values, along with honesty, were identified as attributes of mental toughness in Australian football and soccer (10, 30).

Creativity. The terms comprising this strength were extracted from 7 qualitative papers, and included creative, risk taker, and willing to step out of comfort zone. The

components of this strength related to an ability to generate new and original ideas and ways of doing things.

Being creative and innovative were found as characteristics that were important for the development of expertise, excellence, and success by international athletes, coaches, and administrators, as well as Olympic and World Championship medallists across multiple sports (18, 27, 47. 48. 75). Specifically, being innovative was found as a positive personality trait possessed by Olympic champions that helped facilitate resilience (20), with two papers finding that an important attribute of some mentally tough international cricketers and soccer players was their willingness to take risks and try things in order to achieve (6, 10).

5.4 Discussion

The primary aim of the current research was to identify the positive qualities, traits, or characteristics that could potentially be classed as psychological strengths within the current sport psychology literature. It aimed to draw these qualities together to provide an increased understanding of the positive qualities that have previously been identified. Through synthesizing the information identified in the review, 13 overarching psychological strengths emerged that represented the 115 terms extracted from the literature. This was in line with previous suggestions that systematic reviews need to go beyond the data and generate overall themes that encompass the findings from the original papers (Thomas & Harden, 2008). These overarching psychological strengths were commitment, self-confidence, love of the sport, personal responsibility, open-mindedness, self-discipline, emotional regulation, analytical, team player, sport-intelligence, leadership, morality, and creativity.

The findings of the current review show that within the existing sport psychology literature there are multiple positive qualities, traits, and characteristics that have been identified as important for athletes in relation to different outcomes. Mainly, the positive qualities that were extracted were identified as important for the development and maintenance of expertise, excellence, and successful performance, as well as underpinning positive qualities of mental toughness and resilience. Qualitative evidence mainly identified these in an exploratory way, utilising methods such as semi-structured interviews. A very limited number of qualitative papers also identified qualities that inhibited development or performance. The majority of quantitative evidence examined specific qualities (such as emotional intelligence, anxiety, and perfectionism) or compared higher and lower level athletes on characteristics, through the use of questionnaires. Primarily, the quantitative

evidence supported the qualities identified through the qualitative research, with higher level athletes seeming to score higher on these qualities than lower level athletes – there were only a small number of studies identified that suggested no difference for certain characteristics based on competitive level or age. This review has therefore brought together previous findings from different areas, using different methodologies and approaches, and synthesised these to generate a new list of potential psychological strengths specific to the sporting context – an initial set of strengths that has been previously lacking in the sports literature.

Previous research suggested the presence of potential strengths-based concepts within the existing sport psychology literature (Wagstaff & Leach, 2015). This research, however, identified concepts related to both the areas of sport and the military as combined performance domains, and called for further research to provide clarity, and ensure a robust evidence-base, of strengths-based approaches within sport (Wagstaff & Leach, 2015). The current research supports the identification of positive qualities that could be classed as psychological strengths within the sport psychology literature specifically, as well as some of the specific concepts previously identified, such as emotional regulation. Where the previous review identified overall concepts within the literature (such as posttraumatic growth, mental toughness, and resilience), by adopting the systematic review methodology the current research went further by identifying the constituent parts of relevant overarching concepts and synthesising these together with other positive qualities extracted from the literature. Terms such as mental toughness and resilience were identified previously as potential strengths-based concepts (Wagstaff & Leach, 2015) but were excluded as qualities from this review as they were shown to be comprised of other attributes (see section 5.3.2) – an exclusion supported by previous research where such terms were also removed for this reason (Johnston et al., 2013; Peterson & Seligman, 2004). The systematic process of the current research has therefore identified additional potential psychological strengths specific to the sporting domain from a robust evidence-base.

When considered in relation to existing strengths from other domains, the current research also suggests novel findings. Some of the current findings are consistent with those from previous strengths assessments, such as leadership and creativity (in the VIA-IS), whilst some are analogous to others, such as emotional regulation compared to the VIA-IS strength of self-regulation, or moral values compared to belief in the CSF (Hodges & Clifton, 2004; Peterson & Seligman, 2004). Other qualities identified, however, are different, with previous assessments making no reference to some of the overarching concepts identified in this review such as self-confidence, love of the sport, or sport-intelligence. The current findings

therefore highlight the importance of having strengths specific to the different context, and thus the importance of examining strengths within the context of sport.

When considering the importance of context, it is acknowledged that the current study only included published data that was written in English and pertained to Westernised cultures. Whilst this is a potential limitation, the extensive literature search conducted, however, did not reveal a large number of papers in different languages or from different cultures. Nevertheless, it is noted that further research examining the positive qualities, traits, or characteristics specific to the sporting context may be required for non-Western cultures to build upon the findings from this review. It is acknowledged that this work is important, however conducting this extends beyond the scope of this thesis.

It is also important to acknowledge that there is potentially a positive bias in terms of the papers included in the review due to the nature of the research question. This review was specifically looking to identify positive qualities, traits, or characteristics that could potentially be classed as psychological strengths within the existing sport psychology literature. The research has addressed this initial purpose, and it is therefore acknowledged that the nature of the research may have meant papers that addressed negative qualities only may have been omitted from the study as these did not address the specific research aims. Indeed, there was a limited number of qualitative papers looking at both positive and inhibiting qualities, so potential papers looking specifically at negative qualities may not have been included. It is worth noting, therefore, that the majority of conflicting evidence identified in the current review may primarily come from the quantitative evidence as this research looked at levels of specific qualities in athletes or compared the presence of certain characteristics between groups. Such research would therefore either confirm or deny the presence of, or assess differences in the levels of, specifically examined variables, thus meaning that there was a possibility of finding that certain qualities were not higher within specific athletic populations, and hence finding conflicting evidence. Whilst the qualitative research was exploratory in nature, with limited papers exploring both positive qualities and inhibiting ones it was less likely to identify negative, or conflicting, qualities. This has resulted in a lot of the conflicting evidence that some of the qualities identified are not potentially psychological strengths specific to sport coming from the quantitative papers. Such findings suggest the potential need for further research that examines both the positive and negative, or inhibiting, factors of athletic development and performance within the same paper, in line with the positive psychology principle of providing balanced research that focuses on strengths and weaknesses (Gable & Haidt, 2005; Peterson, 2006; Seligman &

Csikszentmihalyi, 2000; Snyder & Lopez, 2002). Such research, however, is beyond the scope and purpose of the current thesis. The potential positive bias is therefore noted, potentially explains the nature of the conflicting evidence in the review, but is accepted as it is in line with the research aims.

It must also be acknowledged here that some of the positive qualities identified are complex areas and fields of study in their own right, for example areas such as anxiety or motivation (Mellalieu, Hanton, & Fletcher, 2006; Tenenbaum & Eklund, 2007). Due to the nature of the review, the current study makes no attempt to summarise these entire fields or go into depth on these topics as this is beyond the scope of this thesis. The review simply highlights these as possible positive qualities, traits, or characteristics that have the potential to be classed as psychological strengths, and the reader is encouraged to look into more detail around any specific area should they wish to do so.

As the current research involved interpretation and reconceptualization of large amounts of data, the issue of reflexivity within the research must be noted. Whilst triangulation occurred to minimise this process, future research which further explores this list of sport-specific strengths is required to ensure that the development of a set of sport-specific psychological strengths is a robust process. Such research is also important as the qualities identified within this review were extracted from papers examining different research areas and thus papers did not specifically approach the positive qualities of athletes through the lens of a strengths-based approach. Further research is therefore required to build on the emerging potential psychological strengths from this review by specifically examining the positive qualities, traits, and characteristics of athletes through the lens of a strengths-based approach. This is in line with previous strengths assessment development processes that built upon initial exploratory work to further examine the qualities identified (Hodges & Clifton, 2004; Peterson & Seligman, 2004; Wright et al., 2017). Such additional research will help develop a robust set of sport-specific psychological strengths, based on clear evidence, that has the potential to drive further theoretical development within this area around the impact of utilising, and building upon, these strengths.

In conclusion, through synthesizing the information extracted from existing research papers the current study identified a set of potential sport-specific psychological strengths – something that has been previously lacking in the sports literature. These findings offer support to some previous strengths but also highlight new strengths that were not part of previous strengths classifications (Hodges & Clifton, 2004; Peterson & Seligman, 2004; Wagstaff & Leach, 2015). The systematic process of the current research has therefore

identified additional potential psychological strengths specific to the sporting domain from a robust evidence base. The current findings highlight the importance of having strengths specific to different contexts, and thus the importance of examining strengths within the context of sport. The current study therefore provides evidence that additional research into this area within sport is warranted. Further research is therefore needed to build on the emerging potential psychological strengths from this review that specifically examines the positive qualities, traits, and characteristics of athletes through the lens of a strengths-based approach.

Chapter 6: Study 2 – Generating, and Gaining Consensus Upon, Sport-Relevant Psychological Strengths: A Delphi Study

6.1 Chapter Introduction

As stated previously (see Chapter 2), before research and interventions based on strengths-based approaches could increase within mainstream psychology, there was a need for the development of a common strengths-based language, and conceptual clarity, to ensure common understanding within the field (Hodges & Clifton, 2004; Peterson & Seligman, 2004). This commonality and clarity occurred with the development of strengths-based assessment tools that were then able to form the foundation of further research (Hodges & Clifton, 2004; Peterson & Seligman, 2004). Of the assessment tools previously discussed, only the CSF is context specific, with others being general scales that do not capture the complexity of the strengths required in different contexts (Hodges & Clifton, 2004; Peterson & Seligman, 2004; Wright et al., 2017). Peterson and Seligman (2004) state context is important and needs to be considered as some strengths are relevant to different contexts, with a common criticism of the field being that a common strengths-based language specific to different contexts is often lacking (White, 2016). These assessment tools have therefore been criticised for not being context specific, and thus not necessarily applicable within the sporting domain (Ludlham et al., 2016, 2017). It may therefore be that the lack of research into strengths-based approaches within sport stems from a lack of a common language, or conceptual clarity, and a subsequent assessment method for sport-specific psychological strengths. For such an assessment tool to be developed, there is a need to first understand the concepts, or psychological strengths, that are relevant within the specific context of sport – in line with previous questionnaire development (Johnston et al., 2003; Kehl et al., 2014).

Study 1 began the process of examining the potential sport-specific psychological strengths to provide increased clarity as to the relevant psychological strengths within the context of sport. This study identified a set of potential sport-specific psychological strengths by synthesizing, and reconceptualising, positive qualities, traits, and characteristics that were extracted from the existing literature. These findings supported some previously identified strengths but also highlighted additional new potential psychological strengths specific to the sporting domain – qualities that were not part of previous classifications (Hodges & Clifton, 2004; Peterson & Seligman, 2004; Wagstaff & Leach, 2015). Such findings highlight the importance of having strengths specific to different contexts, and therefore the importance of

examining strengths within the context of sport. The review, however, extracted qualities from papers examining different research areas, and thus papers did not specifically approach the positive qualities of athletes through the lens of a strengths-based approach. Whilst Study 1 outlines potential psychological strengths that are already present in the literature, if research into strengths-based approaches is to progress and develop in sport then it is also important to specifically examine and explore sport-relevant psychological strengths. Previous research (see Chapter 2) has highlighted the need for, and importance of, additional research that specifically looks at strengths-based approaches within the context of sport (Gordon, 2012; Gordon & Gucciardi, 2011; Gordon et al., 2017; Ludlham et al., 2016; Stander et al., 2017; Wagstaff & Leach, 2015). It was stated that further research in this area was essential to ensure a robust evidence-based nature of strengths-based approaches within sport (Wagstaff & Leach, 2015). Further research is therefore required to build on the emerging potential psychological strengths identified in Study 1 by specifically examining the positive qualities, traits, and characteristics of athletes through the lens of a strengths-based approach.

When considering the development of the strengths assessments previously reported, they all used multiple initial exploratory methods to ensure a robust process as the foundation for identifying the relevant underpinning strengths that were included (Hodges & Clifton, 2005; Peterson & Seligman, 2004; Wright et al., 2017). Both the VIA-IS and CSI conducted literature reviews that were preceded by other exploratory processes – an initial brainstorm of information for the VIA-IS (Peterson & Seligman, 2004) and an assessment of previous reviews in the area by the CSI (Wright et al., 2017). A subsequent stage was then included by the VIA-IS where the qualities identified were presented at numerous conferences and discussed with individuals outside the initial research team before they were refined (Peterson & Seligman, 2004). The CSF identified the qualities of successful individuals as an initial exploratory stage, before using this information as the basis for large scale interviews which were analysed for emerging themes (Hodges & Clifton, 2004). These exploratory processes were used by the VIA-IS, CSF, and CSI to outline the strengths that are included in their assessments, ensuring a robust process in the development of conceptual clarity (Hodges & Clifton, 2004; Peterson & Seligman, 2004; Wright et al., 2017). Thus, other strengths assessments had multiple stages before arriving at a consensus as to the relevant strengths that underpinned their assessment tools (Hodges & Clifton, 2004; Peterson & Seligman, 2004; Wright et al., 2017). To ensure a robust evidence-base for strengths relevant within the context of sport (Held, 2018; Wagstaff & Leach, 2015), and hence conceptual clarity within

this area, additional work is therefore required that builds on the findings from Study 1 and specifically examines psychological strengths in sport.

The primary aim of Study 2 is, therefore, to specifically examine, and generate, the positive qualities, traits, and characteristics of athletes that may be considered strengths through the lens of a strengths-based approach. It also aims to build on Study 1 by further exploring the psychological strengths identified in the systematic review in order to get a consensus as to the psychological strengths relevant within a sporting context. To achieve this, a Delphi method will be adopted where an expert panel will generate relevant psychological strengths. These strengths will then be combined with the findings from Study 1 and ranked by the panel in order to get a consensus as to sport-relevant psychological strengths. This is in line with previous strengths assessment development processes (Hodges & Clifton, 2004; Peterson & Seligman, 2004) and will ensure emerging strengths are based on clear research evidence (Held, 2018). Thus, Study 2 forms the second part of the initial exploratory phase of this thesis.

6.2 Method

6.2.1 Design

In order to achieve the research objective, a traditional Delphi method was used in this study (see Chapter 4 for more detail and considerations of adopting a traditional compared to a modified Delphi method). The Delphi is a methodology that aims to reach a level of consensus between a group of experts on a specific topic (Fink, Kosecoff, Chassin, & Brook, 1984). It is an interactive, multi-round, method (Efstathiou, Coll, Ameen, & Daly, 2010) that is advised to generate information in areas of limited research (Hazelbaker, 2013) when a consensus is desired (Fink et al., 1984). It typically involves two to four rounds of data collection utilising experts in the area as participants (Giannarou & Zervas, 2014). Individual participants generate information and then evaluate and feedback on the overall views of the group, being given an opportunity to revise their own judgements in response to those of the group (Verschuren et al., 2011). This method has been used previously within different sporting contexts (Cupples & O'Connor, 2011; Hazelbaker, 2013; Lu, Hsu, Chan, Cheen, & Kao, 2012; Morley, Morgan, McKenna, & Nicholls, 2014; Quartiroli et al., 2020), and in multiple questionnaire design studies (Bing-Jonsson, Bjørk, Hofoss, Kirkevold, & Foss, 2014; Edmunds, Haines, & Blair, 2005; Lewis, Ireland, Abbott, Ireland, 2017; Xuereb,

Ireland, & Davies, 2009). The current Delphi study utilised a panel of experts in three consecutive rounds in order to generate and evaluate sport-relevant psychological strengths.

6.2.2 Participants

Within Delphi research, it is important to select a panel of experts based on established inclusion criteria (Sandrey & Bulger, 2008). Previous criteria have been established as guidelines for selecting experts, covering four key areas: knowledge and practical experience within the area being looked at; both a willingness, and ability, to take part in the study; time to contribute to the Delphi study; and efficient communication skills (Skulmoski, Hartman, & Krahn, 2007). These were used as the basis for inclusion in this research along with additional criteria. As the expert knowledge/ expertise is critical for the reliability and validity of the Delphi method (Giannarou & Zervas, 2014), it was important to ensure individuals did not bias the results towards one specific sport. Whilst individuals needed knowledge and practical experience within sport, a key additional inclusion criteria for this research required participants to therefore have experience of multiple sports. The inclusion of elite/ experienced athletes and/or coaches was considered, however, these individuals may have biased the results towards one specific sport as they would be unlikely to represent multiple sports. Their inclusion may have therefore either created a set of psychological strengths that were biased towards one sport (if a large section of participants came from one sport, or similar sports), or may have resulted in participants classing potential psychological strengths as relevant/irrelevant only in relation to their specific sport, rather than sport in general. In order to fulfil this, and the other previously established criteria (Skulmoski et al., 2007), experienced sport psychologists who had worked across multiple sports were deemed as an appropriate expert population. This group could provide a wide view of potential psychological strengths across multiple sports (knowledge in the relevant area), had practical experience working within similar areas to those being discussed, whilst also possessing effective communication skills (Tenenbaum, Lidor, Papianou, & Samulski, 2003). To ensure the relevant level of expertise, participants were also required to have at least five years' experience working in elite sport (defined as Olympic or professional level sport; Swann, Moran, & Piggott, 2015). Five years' experience was used as the inclusion criteria as a larger number of years of experience could have potentially biased the sample by age/ generation (Boulkedid, Abdoul, Loustau, Sibony, & Alberti, 2011; Coolican, 2004; Sandrey & Bulger, 2008).

In line with previous recommendations for the construction of an expert panel in a Delphi study (Giannarou & Zervas, 2014), a combination of purposive and snowballing sampling (Coolican, 2004) was used to recruit experienced sport psychologists as the participants. Experts were initially identified through professional networks and knowledge of those working in elite sport. Twenty-six potential participants were identified, contacted, and invited to take part in the research. They were also asked if they could circulate the study information to other sport psychology practitioners in their networks who met the inclusion criteria. This resulted in 16 individuals consenting to take part in the research. Prior to the study commencing, two participants withdrew from the research, leaving 14 participants in the final study. This sample size was within the recommendation for Delphi methods, with smaller samples expected due to the expert nature of the participants (Giannarou & Zervas, 2014).

All participants were chartered psychologists with the British Psychological Society (BPS), with 11 also reporting Health and Care Professions Council (HCPC) registration and five British Association of Sport and Exercise Sciences (BASES) registration. Participants included both males (eight) and females (six), between the ages of 25-64. The majority of participants described themselves as applied practitioners, and experience levels ranged from 5.5 years to 35, with a mean of 17.11 years of experience. Twelve of the 14 participants reported having worked at Olympic/ Paralympic level, with 12 also reporting having worked at the professional level. (It is worth noting that the two participants who had not worked at Olympic/ Paralympic level had, however, worked at the professional level). Twelve participants reported currently working at international level, with 10 reporting that they currently work at Olympic and professional level (see Table 8 for a full breakdown of the demographics of the participants). The number of sports participants had worked in ranged from 2-21, with an individual working in a mean of 8.57 sports. Participants had worked across a total of 45 different sports, including golf (nine participants), football (eight), athletics (seven), rugby (six for just rugby with an additional three specifying rugby union), cricket (six), boxing (five), sailing (five), shooting, (five), and swimming (five; see Appendix F for a full breakdown of the sports the participants had worked in).

Of the 14 participants, 13 completed Round 1 of the Delphi method. Two of these, however, missed the deadline for this round resulting in 11 participants (78.57%) providing data for Round 1. Twelve participants (85.71%) completed Round 2, with one participant stating they had not completed Round 1 (the missing participant from Round 1). Ten participants (71.42%) completed Round 3.

Table 8.

Demographics of the Experts Included in Study 2.

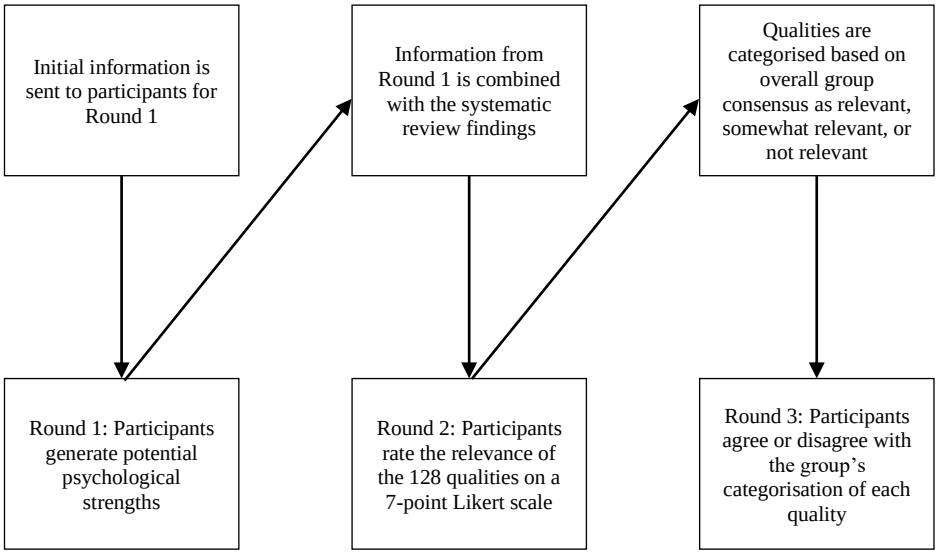
Demographic Characteristics		Frequency
Gender	Male	8
	Female	6
Nationality	United Kingdom	13
	United States of America	1
Age (years)	25-34	3
	35-44	7
	45-54	3
	55-64	1
Experience (years)	Experience Range	5.5-35
	Experience Mean	17.11
Occupation	Applied Practitioner	9
	Professor of Sport Psychology	2
	Psychologist	1
	Lecturer	1
	Researcher	1
Current level of athlete being worked with	Olympic	10
	Paralympic	2
	Professional	10
	International	12
	Commonwealth Games	1
	National	10
	Regional	3
	Club	2
	Recreational	1
	University/ collegiate	3
	None	1
Highest level of athlete worked with	Olympic	12
	Paralympic	2
	Professional	12
	International	5
	National	1

6.2.3 Materials and Procedure

The current study utilised a three-round Delphi method (Giannarou & Zervas, 2014). The entire Delphi process was conducted online, with participants emailed a link to each round. Previous research has highlighted that Delphi research can be effective via online methods (Lewis et al., 2017). Prior to the study commencing, participants were sent information as to what the entire process entailed and given the option to consent. The link to each round then outlined the processes for that round, specifically. At each round participants were also informed of their right to withdraw and asked to consent to taking part in both the round and the overall research (see Appendix G for the information provided to participants). Participants had a two-week period from the commencement of the round in which to respond, in line with previous research (Johnston et al., 2013). Once the results of Rounds 1 and 2 were received, they were processed and used to form the basis of the following round (see Figure 2 for the Delphi process). To track which participants completed each round, participants generated a participant number that was unique to them and unidentifiable to ensure anonymity. Neither these, nor names or other demographic information were shared with other members of the expert panel. The Delphi method was pilot tested on two sport psychology practitioners, with minor modifications made.

Figure 2.

A Diagram Showing the Delphi Procedure Used in Study 2.



Round 1 asked participants to initially provide demographic information (as presented in section 6.2.2). In line with traditional Delphi procedures (Sandrey & Bulger, 2008), participants were then asked to reflect on their experiences and to list the positive qualities, traits, and characteristics that they would consider to be psychological strengths of athletes. For each term identified, participants were asked to also provide a brief definition of that term. As with the systematic review, where the terms mental toughness and resilience were used by experts these were replaced with the underpinning components highlighted in the definition provided (Johnston et al., 2013; Peterson & Seligman, 2004). The information generated in Round 1 was content analysed (Miles & Huberman, 1994), with duplicate and similar terms collapsed using the definitions provided by the experts to guide decision making where necessary.

The qualities identified in Round 1 were then collated and merged with the terms extracted from the systematic review, with duplicate terms removed[13]. During Round 2 participants were presented with this list of qualities and asked to rate the relevance of each quality as a psychological strength within the sports setting. This was done on a 7-point Likert scale (Giannarou & Zervas, 2014) using the descriptors of *extremely irrelevant* (1), *irrelevant* (2), *mostly irrelevant* (3), *unsure* (4), *mostly relevant* (5), *relevant* (6), and *extremely relevant* (7). Within the literature, Likert scales of between 3 and 10 points are recommended (Giannarou & Zervas, 2014). A 7-point Likert scale was used in this study to ensure enough response options were available to allow participants to distinguish between qualities that were relevant, somewhat relevant, and not relevant (Giannarou & Zervas, 2014). To avoid order effects, the qualities in this round were presented to the participants in a randomised order generated by the online software.

The ratings from each participant in Round 2 were then collated together to identify terms where there was a consensus. Previous recommendations within the literature state a consensus occurs when there is a score of 80% or more on two categories within a 7-point Likert scale, and promote the use of the median to reflect a majority agreement (Hsu & Sandford, 2007). A consensus as to the relevance of a quality was therefore deemed within this study if 80% of participants rated this as *relevant* or *extremely relevant* and there was a median score of 6 (*relevant*) or higher. A quality was then considered somewhat relevant if scored within the group as *relevant* or above by 50-79% of participants, and not relevant if

[13] To remove as much potential reflexivity as possible the terms extracted from the literature in the systematic review were used here.

scored by 49% or less. Based on this, the qualities were therefore split into three categories – relevant, somewhat relevant, and not relevant.

These three categories were presented to participants in Round 3. Whilst the current study was interested in identifying only those qualities regarded as relevant within this context, participants were presented with all three groups to provide them with an opportunity to revise their judgements in response to those of the group (Verschuren et al., 2011). At this stage, participants were asked to state their agreement or disagreement with the overall ratings. Where participants disagreed, they were able to provide a new rating using the same 7-point Likert scale from Round 2. Agreement of 80% or more was also considered a consensus in this round (Hsu & Sandford, 2007). Qualities in the somewhat or not relevant categories could be classed as relevant, therefore, if there was 80% disagreement with these overall ratings and 80% agreement on new ratings. At the end of this round, those qualities with 80% or higher levels of agreement as relevant qualities were considered relevant psychological strengths within sport.

6.3 Results

6.3.1 Round 1

In Round 1 participants identified an initial list of 93 qualities. The process of collapsing duplicate and similar terms (see section 6.2.3) resulted in 57 distinct qualities identified by the experts in Round 1 that comprise the data set for this round (see Table 9 for the qualities identified and their definitions). One participant provided qualities but with no definitions, resulting in two qualities with no definition.

6.3.2 Round 2

The 57 qualities identified in Round 1 were then merged with the terms extracted from the systematic review, resulting in 128 different qualities sent to the experts. Of these qualities, 32 reached a consensus of ≥80% as *relevant* or *extremely relevant* with a median of ≥6. The remaining areas did not reach the cut-off point, with 49 qualities rated as *relevant* or *extremely relevant* by ≥79-50% of participants and 47 rated as *relevant* or *extremely relevant* by ≤49% of participants (see Table 10 for the list of qualities, the percentage of responses as *relevant* or *extremely relevant*, and the median average).

Table 9.

The Qualities, and Definitions, Identified by the Expert Panel in Round 1.

Quality Identified	Definition
Ability to build and maintain relationships	Can develop and maintain good relationships with people; knows that a support team is important to their success and can communicate well with people.
Ability to perform under pressure	Performs when it counts; thrives under pressure.
Ability to simplify	Able to treat their sport still “as a game.”
Ability to view obstacles as challenges	Ability to see obstacles as challenges to accomplish rather than reasons for giving up and always bounce back to continue their goals.
Aggression	Will tread on anything/ anyone to get what they want.
Analytical	Work systematically/ analytically to find creative/ innovative solutions.
Awareness of the situation	Acting quickly on information that may help them improve performance.
Balanced	Stable emotionally following good/ poor performances.
Commitment	Leaving no stone unturned; total focus on the little things that make a difference, making sure they get everything done and set an example to others; despite what is going on in their environment the athlete is focused on what they want to get out of it (sport) and committed to that rather than being distracted.
Communication	An ability to engage with everyone within the team set-up – playing and support staff.
Competitiveness	Always gives 100% and 'never say die' – a must win mentality, not necessarily within the rules.
Concentration	Focus when it matters.
Conscientiousness	Works hard, trains hard, puts the hours in.
Considerate	Mindful of others within a team / organisation.

Quality Identified	Definition
Coping with setbacks	Can manage setbacks/ disappointments; able to deal with failure effectively; can cope with adversity and thrive; never gives up regardless of what they experience.
Courage	Does not fear fear – faces up to problems and makes hard decisions; willing to be brave and bold under pressure.
Creative	Proactive in identifying solutions to problems / difficult circumstances.
Decision making	Effective decision maker – an executer.
Desire to continually improve	Wants to continually improve.
Detail oriented/ attention to detail	Individual focuses on the details that contribute to performance success; leaves no stone unturned.
Determination	Drive to achieve success; able to keep going; determined in what they want to achieve; does not give up – never says "no" but are "can do" people.
Discipline	Sticks to the plan and attends to the advice given/ set; doing things they may not want to do.
Emotion control	Can manage emotions to support performances and to be able to make rational decisions to support training and competition.
Emotionally Intelligent	An ability to empathise with all team members and specific personal or sport situations.
Energy giver	Enthusiasm that is contagious.
Enjoys performing on the big stage	Sees the opportunity to perform in front of a big crowd as exciting and looks forward to it.
Enthusiasm	Really positive about the opportunity that their training and involvement in their sport could give them in terms of winning medals.
Forward thinker	Does not dwell on past mistakes.
Goal-oriented/ task focused	Everything comes back to their goal – does this activity/ task help me win a gold medal; nothing else matters, just achieving this goal / target, even to the point where personal relationships

Quality Identified	Definition
	may suffer; focused and always remains on-task to the point of "bloody mindedness."
Good teammate	Athlete supports others in tough training sessions and has empathy for competition experiences that may be good or bad – this creates a connection with others and strengthens relationships.
High self-motivation	Able to complete the desired training; motivated to achieve goals; always looking for how they can be better and driven towards this.
Honesty	Honest to others and themselves; genuine moral and ethical integrity.
Inquisitiveness	An inquiring mind that extends beyond psychological, technical, physical, and tactical awareness.
Inspirational	A desire to inspire others to push themselves to places they haven't been; inspires other to follow their path; people look up to and respect their attitude and behaviours.
Love of competing	An athlete looks forward to competition and relishes the experience to compete against others; enjoys challenge; steps up at competition and performs better in competition than in training.
Methodical	-
Need for achievement	Internal desire or need to achieve.
Openness	The athlete is open to discussing and reflecting on performances; open to ideas from coaches and support staff; open to new ideas or the thoughts of others.
Optimism	Sees failure as an opportunity and finds solutions for problems; manages setbacks with solutions and sees the positives in everything; sees the silver linings to the clouds; displays positivity about the future.
Passion	Passionate about their sport; smiles and gets excited when talking about their sport; extends beyond a love of their sport, it means everything, almost to their detriment at times.

Quality Identified	Definition
Patience	Understands the long term as well as the short term.
Personal responsibility	Takes ownership and is proactive to bring about positive change or performance; owns what they do; takes complete responsibility for their own actions.
Persuasive	An ability to persuade others around them to expend effort to assist with team goals, not simply an individual within a team sport.
Pragmatic	-
Pride	A sense of accomplishment in being professional in their work.
Principled	Have a personal philosophy that is contextually transferable, certainly within their sport.
Problem solver	If something does not go well, a motivation to look for a solution (if possible).
Reflective	Able to think about what they can do to improve, and have perspective.
Responsive	Reacts positively or actively to others.
Robust confidence	Backs themself to perform when it matters regardless of form.
Self-awareness	Understands themselves and what will work for them and how to make decisions that will work for them; can be themselves in all situations.
Selflessness	Willingness to sacrifice their own progression for the benefit of the whole.
Sense of humour	Can bring perspective to what they are doing and working on achieving.
Social skills	Knows how to use people to get what they want, tend to identify the right people to have around them and know how to keep them.
Trustworthy	Can be taken at their word.
Willing to learn	Can take on information and make changes as appropriate. Asks a lot of questions; not afraid of making mistakes in training and knowing that they can learn from the training.
Work ethic	Works hard at everything.

Table 10.

The Qualities Identified as Relevant, Somewhat Relevant, and Not Relevant in Round 2, Their Percentage of Responses as Relevant or Extremely Relevant, and Their Median Average.

Overall Category	Quality	Percentage of Responses as Relevant/ Extremely Relevant	Median Rating
Relevant	Commitment	100.00%	7
	Dedication	100.00%	7
	High self-motivation	100.00%	7
	Persistence	100.00%	7
	Professional attitude	100.00%	7
	Competitiveness	100.00%	6
	Ability to perform under pressure	91.67%	7
	Drive	91.67%	7
	Willing to learn	91.67%	7
	Work ethic	91.67%	7
	Perseverance	91.67%	6.5
	Desire	91.67%	6
	Desire to continually improve	91.67%	6
	Mental preparation	91.67%	6
	Mental strength	91.67%	6
	Personal responsibility	91.67%	6
	Willing to step out of comfort zone	91.67%	6
	Determination	90.00%	6
	Ability to view obstacles as challenges	83.33%	7
	Coachability	83.33%	7
	Coping with setbacks	83.33%	7
	Discipline	83.33%	7

Overall Category	Quality	Percentage of Responses as Relevant/ Extremely Relevant	Median Rating
	Peaking under pressure	83.33%	7
	Physical preparation	83.33%	7
	Preparation	83.33%	7
	Love of competing	83.33%	6.5
	Adaptation	83.33%	6
	Attentional control	83.33%	6
	Goal-oriented/ task focused	83.33%	6
	Passion	83.33%	6
	Self-awareness	83.33%	6
	Emotion Control	81.82%	6
Somewhat Relevant	Concentration	75.00%	6.5
	Winning mentality	75.00%	6.5
	Ability to maximise resources	75.00%	6
	Ability to read and react to the environment quickly	75.00%	6
	Courage	75.00%	6
	High enthusiasm	75.00%	6
	Positive attitude	75.00%	6
	Realistic view of achievements	75.00%	6
	Self-set challenging targets	75.00%	6
	Showing robustness during difficult times	75.00%	6
	Honesty	72.73%	6
	Communication	66.67%	6.5

Overall Category	Quality	Percentage of Responses as Relevant/ Extremely Relevant	Median Rating
	Awareness of environment/ situation	66.67%	6
	Decision making	66.67%	6
	Emotional Intelligence	66.67%	6
	Enjoys performing on the big stage	66.67%	6
	Goal-setting	66.67%	6
	Not willing to accept 2nd best	66.67%	6
	Optimism	66.67%	6
	Organisation	66.67%	6
	Problem solver	66.67%	6
	Reflective	66.67%	6
	Robust Confidence	66.67%	6
	Sport intelligence	66.67%	6
	Ability to build and maintain relationships	58.33%	6
	Activation	58.33%	6
	Adherence to plans	58.33%	6
	Analytical	58.33%	6
	Conscientiousness	58.33%	6
	Controlling arousal	58.33%	6
	Killer instinct	58.33%	6
	Need for achievement	58.33%	6
	Positive goal beliefs	58.33%	6
	Pragmatic	58.33%	6
	Prioritising sport	58.33%	6
	Realistic expectations	58.33%	6
	Routines	58.33%	6
	Sacrifice	58.33%	6
	Values	58.33%	6

Overall Category	Quality	Percentage of Responses as Relevant/ Extremely Relevant	Median Rating
	Comfort with conflict	54.55%	6
	Automaticity	50.00%	5.5
	Control	50.00%	5.5
	Coping with not winning, having excelled	50.00%	5.5
	Down to earth perspective	50.00%	5.5
	Facilitative interpretations of anxiety	50.00%	5.5
	Leadership	50.00%	5.5
	Patience	50.00%	5.5
	Responsive	50.00%	5.5
	Sense of humour	50.00%	5.5
Not Relevant	Challenge	41.67%	5
	Curiosity/ inquisitiveness	41.67%	5
	Detail oriented/ attention to detail	41.67%	5
	Evaluative	41.67%	5
	Forward thinker	41.67%	5
	Fun/ enjoyment	41.67%	5
	Headstrong	41.67%	5
	Independence	41.67%	5
	Openness	41.67%	5
	Pride	41.67%	5
	Risk taker	41.67%	5
	Self-talk	41.67%	5
	Good enough is not good enough	41.67%	4.5

Overall Category	Quality	Percentage of Responses as Relevant/ Extremely Relevant	Median Rating
	Good teammate/ play for the team	41.67%	4.5
	Team responsibility	41.67%	4.5
	Anticipation	36.36%	5
	Ability to simplify	33.33%	5
	Athletic identity	33.33%	5
	Creative	33.33%	5
	Methodical	33.33%	5
	Relaxation	33.33%	5
	Respect	33.33%	5
	Sportspersonship	33.33%	5
	Trustworthy	33.33%	5
	Perfectionism	33.33%	4.5
	Acceptability	25.00%	5
	Hope	25.00%	5
	Knowledge	25.00%	5
	Social skills/ intelligence	25.00%	5
	Energy giver	25.00%	4.5
	Not willing to accept failure	25.00%	4
	Imagery	18.18%	5
	Balanced	16.67%	5
	Inspirational	16.67%	5
	Principled	16.67%	5
	Lower levels of anxiety	16.67%	4
	Persuasive	16.67%	4
	Humble	16.67%	3.5
	Selflessness	16.67%	3
	Aggression	8.33%	4

Overall Category	Quality	Percentage of Responses as Relevant/ Extremely Relevant	Median Rating
	Focus on career development	8.33%	4
	Neuroticism	8.33%	4
	People orientation	8.33%	4
	Freedom from worry	8.33%	3
	Agreeableness	0.00%	4
	Considerate	0.00%	3
	Anger	0.00%	2

6.3.3 Round 3

Round 3 presented the qualities from Round 2 in three categories: relevant, somewhat relevant, and not relevant. Experts were asked to indicate whether they agreed or disagreed with the qualities being classed in these categories. Of the 32 qualities included in the relevant category, 27 reached the required consensus of ≥80% agreement. Of the remaining five qualities, two had 77.78% agreement, two 70% agreement, and one 60% agreement. The two qualities that reached 77.78% agreement were, however, only rated by 9, rather than 10, participants. These qualities were therefore retained to avoid a missing data point resulting in the removal of a potentially relevant quality at this stage as further studies are being conducted that will determine their inclusion in the final questionnaire. This is in line with previous research that has included terms just below the consensus level due to further studies assessing their inclusion (Lewis et al., 2017).

Of the 49 qualities included in the somewhat relevant category, 30 had a consensus of ≥80% agreement as to these qualities being only somewhat relevant. Of the remaining 19, one had agreement of 77.78%, 12 of 70% agreement, one 66.67% agreement, three 60% agreement, and two 50% agreement. In the not relevant category, 38 of the 47 qualities had a consensus of ≥80% agreement as to these qualities being not relevant. Of the remaining nine, six had 70% agreement and three 60% agreement. Within both the somewhat relevant and not relevant categories there were therefore no qualities that reached a consensus of 80% disagreement, and thus no qualities from these categories were moved into the relevant category (see Appendix H for the agreement ratings for all qualities). This resulted in

agreement on 29 qualities as relevant psychological strengths within sport (see Table 11 for the relevant psychological strengths identified and the percentage agreement).

6.4 Discussion

The primary aim of Study 2 was to specifically examine the positive qualities, traits, and characteristics of athletes that may be considered strengths, and to get a consensus as to the psychological strengths relevant within a sporting context. Through the expert panel used within this Delphi study a consensus was reached for 29 qualities as being relevant psychological strengths within sport (see Table 11). This has provided a set of sport-relevant psychological strengths that has been developed by specifically examining positive qualities of athletes in sport through the lens of a strengths-based approach. That such an approach combined qualities generated by the experts specifically from a strengths-based approach with those identified in the systematic review provides a robust evidence-base to this set of strengths. The results have therefore brought together the findings from the previous literature with the experts' views to develop a consensus on a novel set of sport-relevant psychological strengths.

Delphi methods are deemed appropriate as a way of generating information in areas of limited research where consensus is desired (Hazelbaker, 2013; Fink et al., 1984). By using a Delphi method, the current study required experts to not only generate new information but also to rate the relevance of the positive qualities of athletes identified as potential psychological strengths. The findings therefore extend those of the systematic review which identified the positive qualities in the literature, as these qualities have now been rated by experts as to their relevance within the context of sport. The overall findings therefore represent a set of sport-relevant psychological strengths that goes beyond the simple identification of qualities that may be relevant, as these qualities were also consistently agreed upon as relevant across an expert panel. As this area has not previously received attention in the sports literature, this provides an initial set of psychological strengths relevant within this context.

The opportunity for experts to reflect and revise their judgements based on the overall ratings from the group means that the final set of relevant qualities reached the required levels of agreement across two rounds. The fact that during this reconsideration process three qualities were removed (mental and physical preparation, and preparation) adds further

Table 11.

The Relevant Psychological Strengths Identified, the Number of Participant Ratings for Each Strength, and the Percentage Agreement on These, in Round 3.

Psychological Strength	No. of Participant Ratings	% Agreement
Coachability	10	100.00%
Commitment	10	100.00%
Competitiveness	10	100.00%
Dedication	10	100.00%
Desire to continually improve	10	100.00%
Determination	10	100.00%
Drive	10	100.00%
High self-motivation	10	100.00%
Mental strength	10	100.00%
Passion	10	100.00%
Perseverance	10	100.00%
Persistence	10	100.00%
Personal responsibility	10	100.00%
Professional attitude	10	100.00%
Self-awareness	10	100.00%
Willing to learn	10	100.00%
Willing to step out of comfort zone	10	100.00%
Ability to perform under pressure	10	90.00%
Adaptation	10	90.00%
Coping with setbacks	10	90.00%
Desire	10	90.00%
Discipline	10	90.00%
Emotion control	10	90.00%
Peaking under pressure	10	90.00%
Work ethic	10	90.00%
Ability to view obstacles as challenges	10	80.00%
Attentional control	10	80.00%
Goal-orientated/ task focused	9	77.78%
Love of competing	9	77.78%

weight to the relevance of the qualities that still reached a consensus at the end of Round 3, hence the overall findings. It is also worth noting that three qualities in the final list (desire to continually improve, ability to view obstacles as challenges, and love of competing) did not come from the systematic review findings. This therefore highlights the importance of the initial idea generation stage of the Delphi method, along with the final round where judgements could be amended. This is also supported by the fact that there were qualities included in Round 2 that had not been identified in the systematic review.

When comparing the current findings to those of previous strengths assessments, there is support for previously identified qualities as well as novel findings. Some qualities are consistent, such as persistence (in the VIA-IS) and discipline (in the CSF), whereas others are very similar, such as willingness to learn and the VIA-IS's love of learning (Peterson & Seligman, 2004), or adaptation and the CSF's adaptability (Hodges & Clifton, 2004). Other strengths identified in this study are different, with qualities such as coachability, passion, or peaking under pressure not identified in previous strengths assessments. Current findings suggest some strengths may therefore be relevant across context, but also highlight the importance of strengths specific to different contexts. It must be noted, however, that the findings from the current study are being compared at this stage to those included as the final set of strengths in other assessments. Any comparisons must therefore be made with a note of caution, and further comparison is deemed more appropriate once the relevant additional stages have occurred in the questionnaire development process (see Chapter 8).

It is worth noting that two terms were included in the final set of strengths despite not reaching the exact consensus level. As previously stated, these were retained to avoid a missing data point resulting in the removal of a potentially relevant quality at this stage – in line with previous research that retained terms slightly below the consensus level due to further research assessing their inclusion in a questionnaire (Lewis et al., 2017). At this stage of the thesis over-inclusion was therefore preferred to under-inclusion (Lewis et al., 2017). Further inspection of the qualities identified, however, highlights that some qualities are similar in nature. Terms such as persistence and perseverance, willing to learn and desire to continually improve, along with peaking under pressure and an ability to perform under pressure all appear to be comparable qualities. It may therefore be the case that some qualities collapse down into a smaller number of overall strengths. This may be something to consider in future research.

A potential limitation within this study is the fact that experts were not provided with definitions of terms within Round 2. It is acknowledged that doing this may have meant some

qualities were not regarded as relevant as experts may not have been clear as to what the terms referred to. This was done, however, based upon part of the lexical hypothesis principle that qualities that are most important and relevant would become part of natural language (De Raad, 1998; Hahn, Lee, & Ashton, 1999). Thus, strengths that were truly relevant would not necessarily need a specific definition as these were widely accessible terms. The fact that a lack of definitions resulted in a consensus on 29 qualities provides a level of evidence that this was indeed the case.

The drop off in participant rates within the current study must also be noted. Whilst each round had a similar number of participants, it is acknowledged that there was a drop off in participant rates, and Round 3 had a lower number of experts than the other two rounds. This may have resulted in changes to the overall levels of agreement of some qualities as it means some experts from Round 2 did not have the opportunity to revise their judgments in light of the overall group ratings (Verschuren et al., 2011). A drop in response rates across rounds, however, is unsurprising as it is reported as common in Delphi studies (Sandrey & Bulger, 2008), and the response rates in the current study are similar to others that are reported in the literature (Quartiroli et al., 2020). It is acknowledged that the reasons for participant drop out are, however, unknown, and so the possibility of attrition bias (the concept that people left the study for systematic reasons; Nunan, Aronson, & Bankhead, 2018) is noted here as a potential limitation (Sinha, Smyth, & Williamson, 2011).

When considering drop out rates, it is also important to acknowledge the overall participant numbers in this study. Within the literature, Delphi method participant numbers are reported to vary, with the majority of studies using up to 30 participants (Giannarou & Zervas, 2014). It has been proposed that 15-20 experts may be considered an optimal number to allow the Delphi method to be as effective as possible (Ludwig, 1997), however, it is also reported that samples of between 10-15 (with a minimum of 10 recommended) can produce valid results (Giannarou & Zervas, 2014; Sandrey & Bulger, 2008). It is noted here that the number of participants included in this study dropped towards the lower end of these recommendations. This is therefore acknowledged as a potential limitation, particularly as drop out rates reduced participant numbers to 10 (the minimum recommended number) in Round 3, with more participants potentially adding to the results of the research (Giannarou & Zervas, 2014). Whilst this potential limitation is acknowledged, both the overall sample size, and that of each round, were still within recommended levels (between 10-15) for a Delphi method (Giannarou & Zervas, 2014; Sandrey & Bulger, 2008). Furthermore, as mentioned previously, where a drop in participants' response rates resulted in the overall

number of participant ratings going below 10, two qualities close to the consensus level were included at this stage to ensure this did not result in potentially relevant qualities being removed.

It is also noted here that a participant was included in Round 2 who had not completed Round 1 of this research. This is a deviation from traditional Delphi procedures (Boel, Navarro-Compán, Landewé, & van der Heijde, 2021), and means the final set of results are from experts who did not take part across all three rounds. This is traditionally considered an important process in building consensus, with experts building upon previous responses from all rounds and having an opportunity to revise judgements in response to the views of the group (McKenna, 1994), and so it is acknowledged that doing this could have impacted the final results. This occurred, however, as whilst the participant was unable to generate new strengths in Round 1 (where they may have added additional qualities not generated by other experts), they were able to add to the research by providing insight into the relevance of the qualities generated in Round 1 as well as the qualities identified in the systematic review, and were still provided with an opportunity to revise these judgements in Round 3. The rating of information, and opportunity to revise judgements, without an idea generation stage is used as part of modified Delphi procedures within the literature (Sandrey & Bulger, 2008). Thus, it was deemed that inclusion of the participant in Round 2 would add to the overall findings and was in line with the purpose of this research. Furthermore, recent research evidence showed no difference on the overall topics selected in the final round between a Delphi method that only included participants who had responded to the previous round and a Delphi method that included participants in each round irrespective of their involvement in previous rounds (Boel et al., 2021). The deviation from the traditional Delphi procedure in the current study, and potential impact of this, is therefore acknowledged, but there is evidence in the literature that this approach may not have impacted the final results (Boel et al., 2021).

From a theoretical perspective, this study has provided a set of sport-relevant psychological strengths that can now be used as the base for a sport-specific strengths assessment tool. This is in line with previous strengths assessments that have conducted exploratory work to generate the relevant strengths before subsequent questionnaire development (Hodges & Clifton, 2004; Peterson & Seligman, 2004; Wright et al., 2017). The current study has therefore provided a level of conceptual clarity as to the relevant psychological strengths within this context (Wagstaff & Leach, 2015). Further work is now required to develop questions that assess these strengths before relevant statistical procedures are conducted to further explore the psychometric properties of any such questionnaire – in

line with previous questionnaire development processes (Johnston et al., 2003; Kehl et al., 2014).

In conclusion, through the expert panel used within this Delphi study the current research has gained consensus upon a set of sport-relevant psychological strengths. This has been achieved by specifically examining the positive qualities, traits, and characteristics of athletes through the lens of a strengths-based approach. As this area has not previously received attention in the sports literature, this provides an initial set of psychological strengths relevant within this context and hence a level of conceptual clarity. This set of strengths can now be used as the base for the development of a sport-specific strengths assessment tool. Further research is now required to develop such a tool, developing questions that assess these strengths, alongside relevant statistical procedures that explore the psychometric properties.

Chapter 7: Studies 3 and 4 – Development and Initial Validation of the Sport-Specific Psychological Strengths Questionnaire (SSPSQ)

7.1 Chapter Introduction

Study 2 built upon the findings from Study 1 to gain consensus upon a set of sport-relevant psychological strengths. This was achieved by utilising an expert panel to specifically examine the positive qualities, traits, and characteristics of athletes through the lens of a strengths-based approach. Studies 1 and 2 have, therefore, provided an initial exploratory phase that has examined and identified sport-relevant psychological strengths. In doing so, these studies have provided a set of psychological strengths agreed upon by an expert panel as relevant within the context of sport, and hence provided an initial level of conceptual clarity within this area. This set of strengths can now be used as the base for the development of a sport-specific strengths assessment tool.

Study 2 focused specifically on examining a strengths-based approach within sport. As highlighted in Chapter 2, there has historically been a lack of research examining such approaches within sport despite emerging evidence of the potential benefits provided in this context and calls for more work in this area (Gordon, 2012; Gordon et al., 2017; Gordon & Gucciardi, 2011; Ludlham et al., 2017; Stander et al., 2017). When considering the lack of empirical research into strengths-based approaches within sport it is possible to draw parallels with the historical development of strengths-based research in mainstream psychology. The process of developing an individual's strengths begins by identification of what these strengths are (Hodges & Clifton, 2004; Peterson & Seligman, 2004; Simmons & Lehmann, 2013). Within mainstream psychology, there was therefore a need for a level of conceptual clarity to ensure common understanding in the field before research and intervention work could increase (Hodges & Clifton, 2004; Peterson & Seligman, 2004). Such clarity occurred with the identification of relevant strengths and subsequent development of strengths-based assessment tools that then formed the foundation of further research (Hodges & Clifton, 2004; Peterson & Seligman, 2004). Of the assessment tools previously discussed, however, only the CSF is context specific (Hodges & Clifton, 2004), with others being general scales that do not capture the complexity of the strengths required in different contexts (Peterson & Seligman, 2004; Wright et al., 2017). Peterson and Seligman (2004) state context is important and needs to be considered as some strengths are relevant, and therefore some are not relevant, to different contexts, and a common criticism of the field is that a common language

specific to different contexts is often lacking (White, 2016). These tools have therefore been criticised for not being context specific, and thus not necessarily applicable within the sporting domain (Ludlham et al., 2016; 2017). It may therefore be that the lack of research into strengths-based approaches within sport stems from a lack of a common language, or conceptual clarity, and a subsequent assessment method for sport-specific psychological strengths. The development of such an assessment tool may consequently help to facilitate further research within this area.

When examining the development processes of the previously outlined strengths assessment tools (see Chapter 2), each contained multiple stages (Hodges & Clifton, 2004; Peterson & Seligman, 2004; Wright et al., 2017). These tools utilised initial exploratory stages to provide conceptual clarity and a common language by identifying the relevant strengths that could then be included in subsequent questionnaires (Hodges & Clifton, 2004; Peterson & Seligman, 2004; Wright et al., 2017). On the back of this process, items were then generated for these strengths and appropriate statistical testing was conducted to ensure adequate psychometric properties of the questionnaires (Hodges & Clifton, 2004; Peterson & Seligman, 2004; Wright et al., 2017). This consistency in approach suggests the importance in strengths assessment development of an initial exploratory stage as a precursor to subsequent item generation and statistical testing. These processes are also in line with other questionnaire development research within the literature (Corchon, Watson, Arantzamendi, & Saracíbar, 2010; Corr & Cooper, 2016; Martindale et al., 2010; Zourbanos, Hatzigeorgiadis, Chroni, Theodorakis, & Papaioannou, 2009). To develop an assessment tool relevant for the context of sport therefore requires the initial exploratory work to identify the relevant strengths in this context – strengths which are then used as the basis for a questionnaire. Studies 1 and 2 have addressed the initial exploration, with the findings from Study 2 providing a set of psychological strengths that have been agreed upon as relevant within the context of sport. Further research is therefore now required that develops a way for these strengths to be assessed and measured as well as examining the psychometric properties of any such tool.

When considering other strengths assessments, a common criticism is that the strengths included were developed a priori and did not come from research evidence (Held, 2018). Whilst Study 2 has generated sport-relevant strengths which are agreed upon by a panel of experts, it is therefore also important to ensure these strengths are further supported by additional data so that the strengths included in any questionnaire are data driven (Held, 2018). Multiple studies examining previous strengths assessments highlight the importance of

such an approach. Research by Peterson and Seligman (2004) using exploratory factor analysis found a five, rather than six, factor structure for the VIA-IS, suggesting strengths of restraint, alongside intellectual, emotional, interpersonal, and theological strengths. There is additional evidence that the VIA-IS does not support it's initially intended six-factor structure (Macdonald et al., 2007), and there is also multiple research supporting a five-factor solution, across different countries and ages (Azañedo et al., 2014; Littman-Ovadia & Lavy, 2012; Proyer et al., 2014; Ruch et al., 2014; Weber et al., 2013). Such findings offer a level of support to Held's (2018) criticism that the strengths outlined in some assessment methods were made a priori rather than based on research evidence. Whilst this may be the case, Peterson and Seligman (2004) stated that they did not consider their initial classification as fixed but expected further development and changes as a result of an increase in the knowledge and understanding from research into human strengths. Findings of different factor structures and issues with items, therefore, are not unexpected. In fact, an initial aim of both the VIA-IS and CSF was to develop a common language that brought together researchers and practitioners to facilitate further research and interventions that increased knowledge (Hodges & Clifton, 2004; Peterson & Seligman, 2004). Thus, an initial assessment method was required to facilitate research so that subsequent knowledge could then revise such an assessment tool. Nevertheless, the findings of different factor structures highlight the importance of ensuring the questionnaire structure is driven by the data and confirmed in a subsequent analysis. Thus, it is important to not only design an assessment tool but to also ensure the structure of any such tool is supported by the data.

The primary aim of Study 3 is, therefore, to develop an assessment tool of sport-specific psychological strengths. It aims to build on Studies 1 and 2 to develop questions for the strengths identified and explore the factor structure of this tool to identify the number of latent constructs underlying these items. To achieve this, the qualities agreed upon in Study 2 will first be examined to assess whether some can collapse down to ensure parsimony of the data (Gerring, 1999). Multiple questions that assess each strength will then be developed. Following this, exploratory statistical analysis will be conducted to examine whether the strengths included in the questionnaire are distinct strengths or they are related to underpinning concepts. This will provide a further exploratory stage to this thesis, thus ensuring the underlying strengths included in the final questionnaire are driven by the data (Held, 2018). This is in line with previous strengths assessment development processes (Hodges & Clifton, 2004; Peterson & Seligman, 2004) and will ensure the assessment tool is, and the strengths included are, based on clear research evidence (Held, 2018).

7.2 Study 3 Method

7.2.1 Questionnaire development

The strengths identified in Study 2 provided the basis for the development of the questionnaire. As reported in Chapter 6, initial inspection of the qualities identified suggested some were similar in nature and may collapse down. Prior to item generation, these qualities were therefore assessed to ensure parsimony of the qualities used (Morgeson & Humphrey, 2006). To achieve this, and provide consistency across the thesis, Gerring's (1999) concept formation framework was used as a basis for decision making (see section 5.2.5 for a full explanation of this framework). As with previous stages of this research, to ensure trustworthiness of the data, triangulation occurred with three researchers reviewing the qualities identified in Study 2 independently to assess if any similar concepts could collapse down (Leech & Onwuegbuzie, 2007). Detailed discussion then occurred about any groupings made and the explanations for these decisions (Lincoln & Guba, 1985). Discussions ensued until a consensus was reached. From this process, the 29 psychological strengths identified in Study 2 were collapsed down into 18 psychological strengths for which items were generated[14] (see Table 12 for a full list of these strengths and their definitions, and Appendix I for a summary of the strengths that collapsed down). The strengths included in the questionnaire were therefore the result of a multi-level process.

Guidelines within the literature suggest questionnaires should be constructed of the minimum number of items required to adequately measure the relevant constructs. This is to ensure parsimony and avoid decreased response rates from a larger number of items (Fuchs & Diamantopoulos, 2009; Hinkin, Tracey, & Enz, 1997). It is recommended that between two and six items are required per construct for the identification of a stable underlying factor structure (Ferguson & Cox, 1993). Raubenheimer (2004), however, suggested a minimum of three items per construct. There are additional recommendations stating that quality scales with internal consistency can be constructed using between four and six items (Hinkin et al., 1997), with five items per construct being recommended (Rattray & Jones, 2007). Based on all of these recommendations, the current questionnaire was therefore designed to include 5 items per strength. These items were generated through a number of different stages, in line

[14] It is important to note that where there was disagreement about collapsing qualities together over-inclusion was prioritised at this stage due to the forthcoming statistical procedure that may further reduce the qualities.

Table 12.

The Psychological Strengths, and Their Definitions, Included in the Questionnaire.

Final Strength to be Included	Definition
Commitment	A dedication to doing what is necessary and leaving no stone unturned.
Work-ethic	An ability to push oneself and work hard.
Self-motivation	An intrinsic drive that pushes one forwards.
Perseverance	One's ability to keep going and to persist in the face of obstacles and difficulties, managing setbacks.
Competitiveness	One's desire to perform better than a comparable standard - either one's own personal standard or that of other competitors.
Perform under pressure	An ability to perform and rise to the occasion and thrive when under pressure.
Openness	One's tendency to be willing to learn, try, and master new things in order to improve.
Goal-oriented/ task focused	One's ability to remain focused on one's goal.
Ability to view obstacles as challenges	One's ability to view obstacles and difficulties as challenges to accomplish rather than reasons to give up.
Discipline	One's ability to stick to the plan.
Attentional control	One's ability to focus on the right thing at the right time.
Self-awareness	One's understanding of oneself and what works for them.
Emotional control	One's ability to not allow thoughts, feelings, and physical sensations to interfere with performance.
Coachability	One's ability to be instructed, or corrected, and to act on this instruction.
Adaptation	One's ability to adapt to the demands of a situation.
Passion	One's enjoyment and love of one's sport.
Personal responsibility	One's ability to act on one's own and take responsibility for one's self.
Willing to step out of comfort zone	The courage to put oneself in situations that one is not comfortable with.

with previous questionnaire development processes (Corchon et al., 2010; Corr & Cooper, 2016; Martindale et al., 2010; Zourbanos et al., 2009).

First, existing strengths assessments, along with additional questionnaires that may have measured the concepts included here, were reviewed and relevant items were extracted (Thornton, Graham-Kevan, & Archer, 2013). To ensure items were representative of the specific strengths included, relevant items were reworded where necessary (Williams & Cumming, 2011). New items were then generated that reflected the definition of that specific strength and were distinct from the other strengths (Hinkin et al., 1997; Rattray & Jones, 2007). These were then combined with items extracted from previous questionnaires. More items than the required five were generated for each strength, however, to provide a pool of items from which the most relevant could be selected (Corr & Cooper, 2016). Items were worded so that they could be rated on a Likert scale as being *very much like me* to *very much unlike me* (see section 7.2.2 for specific details), as recommended for use in questionnaires (Hinkin et al., 1997) and used in other strengths assessments (Peterson & Seligman, 2004). No reverse worded items were included as research has suggested that such items did not prevent response bias and led to confusion and potential psychometric issues (Morgeson & Humphrey, 2006; van Sonderen, Sanderman, & Coyne, 2013).

Once a pool of items was developed, content validity was then assessed (Rattray & Jones, 2007). As an initial stage, each set of items were anonymised and sent to additional researchers who matched the item set to the strengths (Hinkin et al., 1997). This initial stage resulted in a 100% matching rate. In line with previous recommendations for assessing content validity, triangulation then occurred (Corchon et al., 2010; Johnston, Leung, Fielding, Tin, & Ho, 2003; Rattray & Jones, 2007). Three researchers reviewed the items independently to assess whether each item represented the relevant construct (Corchon et al., 2010; Johnston et al., 2003; Rattray & Jones, 2007). Detailed discussion then occurred, resulting in minor changes to the wording of some items (Williams & Cumming, 2011). Through this process, items were also reduced to five per strength, with discussions occurring around the most relevant items to include until a consensus was reached (Lincoln & Guba, 1985).

7.2.2 Questionnaire structure

Following the development of all items, the questionnaire was then developed as an online questionnaire. This method has been used previously by strengths-based, and other,

questionnaires (Corr & Cooper, 2016; Hodges & Clifton, 2004; Peterson & Seligman, 2004; Sleath, Walker, & Tramontano, 2017), with no evidence found of differences in scores between online and paper versions of questionnaires (Lonsdale, Hodge, & Rose, 2006).

The item generation process resulted in a total of 90 items which were included in the initial questionnaire (see Appendix J for a list of all the initial items). Items were rated on a 5-point Likert scale as this has been recommended for use in questionnaires (Hinkin et al., 1997; Jenn, 2006). Within the literature, there is evidence that 4, 5, 6, and 11-point Likert scales do not differ in terms of means, standard deviations, reliability, or factor loadings (Leung, 2011). A 5-point Likert scale was therefore used to provide enough response options to allow participants to rate items as either like or unlike them whilst also providing a neutral option (Leung, 2011). This is in line with the Likert scales used in both previous strengths assessments (Peterson & Seligman, 2004) and questionnaires (Costa & McCrae, 2008)[15]. The descriptors used were *very much like me* (1), *like me* (2), *neutral* (3), *unlike me* (4), and *very much unlike me* (5).

The initial version of the questionnaire began with a set of instructions, followed by questions related to demographic information. The 90 items relating to the 18 strengths were then presented, followed by a debrief and final confirmation of consent (see Appendices K and L for the initial instructions and debrief presented to participants, respectively). The 90 items were presented as five sets of 18, as items were presented in a semi-random order. Each set contained one item from each strength, with the specific item randomly assigned using a random number generator. The questions within each group were then presented in a random order, with this order generated by the online software. This was done to minimise order effects[16] (Coolican, 2004; Oldendick, 2011) and to avoid issues with the randomisation of all items potentially resulting in all those from one strength being presented in sequence.

7.2.3 Participants

Performing factor analysis procedures requires a minimum number of participants to ensure a stable factor structure (Ferguson & Cox, 1993). Previous recommendations state that the number of items dictates the sample size, with ratios of between 2-10 participants per

[15] It is acknowledged here that the use of different point Likert scales is a large area and to discuss this in detail is beyond the scope of this thesis.
[16] This is referring to both the impact of fatigue and familiarity of responding to items in a sequential order as well as to the potential for a response to an item to be impacted by the item previously presented (Coolican, 2004; Oldendick, 2011).

item suggested (Ferguson & Cox, 1993; Hinkin et al., 1997; Kline 1986). Other recommendations state that a minimum number of participants are required, with evidence suggesting a sample of 150 participants is adequate (Guadagnoli & Velicer, 1988). Despite this, more recent recommendations are a minimum of 300 participants for factor analysis (Tabachnick & Fidell, 2007).

A total of 455 participants completed the questionnaire. As the questionnaire aimed to identify strengths in sport, participants needed to regularly take part in sport, at any level, to be included in the study. Additionally, as previous strengths assessments suggest the possibility that strengths assessments need to be adapted for those below 18 years of age, participants had to be 18 years old or over (Peterson & Seligman, 2004). Four participants were removed as they reported taking part in fitness activities (two each reported yoga and strength training) and one as they reported being a sport psychologist rather than taking part in sport. Additionally, 39 participants were removed as they only provided partial responses to the questionnaire (Tabachnick & Fidell, 2007). To make sure listwise deletion was acceptable and that missing data was missing at random, Little's Missing completely at random (MCAR) test was conducted. This revealed a non-significant result (χ^2 (2811) = 2922.49, p=.070), suggesting data was missing at random and therefore applicable for listwise deletion (Tabachnick & Fidell, 2007). This resulted in 411 participants' data retained for analysis, and thus provided a ratio of 4.57 participants per item. This was both between the recommended 2-10 participants per item and above the recommended minimum 300 participants, and so was deemed appropriate for factor analytical procedures (Ferguson & Cox, 1993; Hinkin et al., 1997; Kline 1986; Tabachnick & Fidell, 2007).

The sample was comprised of 206 males, 204 females, and one participant who did not report their gender, between 18-64 years old. Participants competed at multiple competition levels, and the majority (54.26%) had nine or more years of experience taking part in their sport (see Table 13 for a summary of the participants' demographic characteristics). Of the participants included, 357 were British (89.29%), eight Irish (1.95%), seven American (1.70%), six German (1.46%), four Polish (.97%), and three Canadian (.73%). Two participants (.49%) were reported for each of the following nationalities: Australian, Dutch, French, Lithuanian, and Spanish. A single participant (.24%) was also reported for each of the following nationalities: Asian[17], Belgian, Bulgarian, Chinese,

[17] It is acknowledged that this is not a nationality, however this was reported by the participant and so is included to accurately reflect the information provided by the participants.

Table 13.

A Summary of the Participants' Demographic Characteristics from Study 3.

Demographic Characteristic	Number of Participants (Percentage)
Gender	
Male	206 (51.12%)
Female	204 (49.64%)
Not reported	1 (.24%)
Age (years)	
18-24	97 (23.60%)
25-34	126 (30.66%)
35-44	96 (23.36%)
45-54	68 (16.55%)
55-64	23 (5.60%)
Not reported	1 (.24%)
Years of experience (years)	
15+	121 (29.44%)
13-15	34 (8.27%)
9-12	68 (16.55%)
6-8	71 (17.27%)
3-5	83 (20.19%)
1-2	29 (7.06%)
Not reported	5 (1.22%)
Competition Level	
Olympic	5 (1.22%)
Paralympic	2 (.49%)
Commonwealth Games	7 (1.70%)
International	52 (12.65%)
Professional	12 (2.92%)
National	45 (10.95%)
Regional	67 (16.30%)
University	30 (7.30%)
Amateur Club	124 (30.17%)
Recreational	64 (15.57%)

Columbian, Dominican, Hungarian, Indian, Japanese, Maltese, Manx, Mexican, Russian, South African, Swiss, and Syrian. Additionally, participants came from multiple sports, including 79 from running (19.22%), 66 from triathlon (16.06%), 30 from cycling (7.30%), 29 from hockey (7.06%), 23 from soccer (5.60%), 17 from cricket (4.14%), 16 from athletics (3.89%), 14 from swimming (3.41%), and 12 from rugby (2.92%; see Appendix M for a full list of sports).

7.2.4 Procedure

Participants were recruited via multiple methods. Physical and electronic adverts for the study were placed at multiple locations, including sporting venues, training facilities, sports clubs, leisure facilities, and other relevant noticeboards. Electronic links to the research were also placed on different social media platforms (including Facebook, Twitter, Instagram, and LinkedIn). Additionally, relevant individuals known to the research team were contacted directly, and also asked to pass on the research to individuals they may know who met the inclusion criteria, providing a snowballing sampling element to the research (Coolican, 2004). Participants were offered the opportunity of entering a prize draw for taking part in the research.

All participants completed the questionnaire online (Lonsdale et al., 2006). Once accessing the questionnaire participants were presented with detailed information and instructions and asked if they consented to taking part in the research. Those who consented to taking part were then asked to supply demographic information before completing the strengths items. Following completion of these, participants were presented with a debrief and final confirmation of consent (see Appendices K and L for the initial instructions and debrief presented to participants, respectively). In total, the questionnaire took approximately 15 minutes to complete. In line with recommendations for scale development statistical procedures were then conducted on the data to examine the underpinning structure of the questionnaire (Field, 2009).

7.2.5 Data Analysis

When developing a questionnaire, exploratory factor analysis (EFA) is recommended as a method to assess the questionnaire's underlying structure (Field, 2009; Rattray & Jones, 2007). The Statistical Package for Social Sciences (SPSS, version 26) was used to conduct

this process. There are multiple different EFA extraction methods, however, there is limited information as to the best method, with little advantage found for the different methods, and multiple methods reported as appropriate (Costello & Osborne, 2005; Fabrigar et al., 1999). As reported in Chapter 4, both Maximum Likelihood (ML) and Principal Axis Factoring (PAF) have been found to provide acceptable factor solutions (Winter & Dodou, 2012). The use of either ML or PAF was dependent on the data not violating the required assumptions for EFA. ML required the data to be normally distributed, whilst both ML and PAF required that there was no multicollinearity (very high levels of correlated variables) or singularity (perfectly correlated variables) within the data (Field, 2009; Tabachnick & Fidell, 2007). As stated in Chapter 4, if these assumptions were violated then Principal Components Analysis (PCA) was deemed an appropriate alternative, with evidence of little difference between solutions generated by EFA and PCA found (Guadagnoli & Velicer, 1988). The data was therefore screened for these issues prior to factor analysis occurring to determine the appropriate extraction method.

To enhance the interpretation, and to maximise the factor loadings of variables on one factor and minimise their loadings on others, the factor solution was rotated using an oblique rotation (Field, 2009). Oblique rotations are deemed appropriate when factors are believed to be related as they allow factors to correlate with each other (Field, 2009; Tabachnick & Fidell, 2007). Orthogonal rotations are considered potentially unnaturalistic as psychological constructs are normally related to others in some way (Field, 2009; Tabachnick & Fidell, 2007). As the constructs in this research are psychological in nature an oblique rotation was used to allow factors the opportunity to correlate with each other (Field, 2009; Tabachnick & Fidell, 2007). The Direct Oblimin (DO) rotation method was used as this is recommended within the literature and has been shown to produce satisfactory results (see Chapter 4 for more detail on rotation methods; Fabrigar et al., 1999; Field, 2009; Tabachnick & Fidell, 2007). In line with recommendations, the default delta value was used in the DO rotation to regulate the degree to which the factors could correlate (Field, 2009).

7.3 Study 3 Results

7.3.1 Data Screening

In line with recommendations of assessing normal distribution in large samples (those over 200), visual inspection of histograms with normal distribution curves along with

skewness and kurtosis values occurred (Field, 2009). This revealed that the data was not normally distributed (skewness values ranging from .114 to 1.90 and kurtosis values ranging from -.79 to 5.15) and thus the ML extraction method was inappropriate. To assess for multicollinearity, visual inspection of the data occurred, and the determinant of the correlation matrix was calculated (Field, 2009). The initial visual inspection suggested no multicollinearity, with no correlations greater than the recommended value of .80 (Field, 2009). The determinant, however, was reported as 1.06E-24, and as this was lower than the recommended value of .0001 it suggested a high level of multicollinearity in the data (Field, 2009). The PAF extraction method was therefore also deemed as inappropriate and so PCA was used as the extraction method in this study (Field, 2009; Tabachnick & Fidell, 2007).

To further check that the data was suitable for PCA, the appropriateness of the sample size was checked using the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO). The KMO = .93 which is above the recommended value and classed as "superb" by Field (2009), providing evidence the sample size was appropriate for PCA. Bartlett's test of sphericity was significant (χ^2 (4005) = 20933.15, $p<.001$) indicating suitably large enough inter-item correlations for PCA. Data was therefore deemed suitable for PCA (Field, 2009).

7.3.2 Principal Component Analysis

A Principal Component Analysis with Direct Oblimin rotation was conducted. To determine the number of factors to extract in the analysis, it is suggested that a combination of eigenvalues and inspection of the scree plot are both considered (Cattell, 1966; Field, 2009). In samples larger than 200 it is, however, recommended that the scree plot is the best, primary, method to use (Field, 2009). From assessment of the scree plot (see Appendix N), it was decided that seven components would be retained in the analysis. Whilst it could be argued that only six components could be retained, inspection of the eigenvalues suggested that component seven was adding to the component structure by explaining additional variance (above 2%). This is also in line with Cattell's (1966) recommendation that factors (or components) at the point of inflection in the scree plot should be retained in the analysis.

The seven-component structure accounted for 47.71% of variance. Only items with component loadings of ≥.55 on at least one factor were retained for interpretation (Tabachnick & Fidell, 2007). This cut-off was to ensure a more interpretable solution, in line with previous recommendations, with this value suggesting an individual item explains approximately 30% of the variance in that component (Tabachnick & Fidell, 2007). This

resulted in a total of 41 items being retained, with component loadings of included items ranging from .55 to .90. Ten items were retained for Component 1, four for Component 2, six for Component 3, five each for Components 4 and 5, seven for Component 6, and four for Component 7. No items loaded onto more than one component. Table 14 shows the retained items and their component loadings after rotation. At this stage, each component was given a provisional working title only that the lead researcher felt represented the spread of the items to help facilitate the next phase of the research. Final names were decided upon in a more robust manner after the structure had been confirmed (see sections 7.6 and 7.7). These working titles were Commitment (Component 1), Emotional Control (Component 2), Perform Under Pressure (Component 3), Coachability (Component 4), Openness (Component 5), Passion (Component 6), and Personal Responsibility (Component 7).

The component correlation matrix reveals all components are interrelated to some degree. Components 3 and 5 have low correlations with all the other components ($r < .30$). All other components have low correlations with the others, but there are medium correlations ($r \geq .30$) between Components 1 and 6, 1 and 7, 2 and 7, and 4 and 6. Table 15 shows the correlations between all components[18].

[18] Correlation cut-offs are taken from Field (2009).

Table 14.

The Retained Items After PCA and Their Component Loadings After Rotation.

Item	Component						
	1	**2**	**3**	**4**	**5**	**6**	**7**
Motivation comes easily to me	0.74						
I can motivate myself well	0.64						
I work hard no matter what	0.64						
My work ethic is one of my strong points	0.63						
I am a highly disciplined person	0.60						
I persist in the face of difficulties	0.57						
I look forward to working hard	0.56						
I am focused on achieving my goals	0.56						
I do not give up	0.55						
I do not require others to motivate me	0.55						
I have control over my emotions		-0.77					
I do not let emotions interfere with my performance		-0.74					
I can clear interfering emotions quickly		-0.68					
I rarely struggle to keep my feelings under control		-0.68					
I consider my competitiveness to be one of my strong points			0.75				
I love competing against others			0.71				

Item	Component						
	1	2	3	4	5	6	7
Competing against others gets the best out of me			0.71				
I thrive when put under pressure			0.61				
I am at my best when required to perform under pressure			0.58				
Being able to deliver a performance when it matters is one of my strong points			0.57				
I value input from my coach				0.86			
I enjoy discussing how I can develop with my coach				0.79			
I regularly seek out feedback from my coach				0.78			
I make changes to my training based on feedback from my coach				0.73			
I welcome advice on how to get better				0.61			
I like to do new and different things					-0.71		
I am not afraid to do something different to what I normally do					-0.65		
I enjoy situations that stretch my comfort zone					-0.62		
I willingly put myself in situations where I am not necessarily comfortable					-0.58		
I am happy managing the uncertainty of acting outside of my comfort zone					-0.57		
I love my sport						0.90	
I am passionate about my sport						0.81	
I enjoy dedicating time to my sport						0.80	
Thinking about my sport gives me a genuine sense of enjoyment						0.80	
I enjoy discussing my sport with others						0.69	

Item	Component						
	1	2	3	4	5	6	7
I love putting all my energy into my sport						0.61	
I feel excited about all aspects of my sport						0.61	
It is important to me to be able to take responsibility for myself							0.67
I consider myself highly self-aware							0.63
I take ownership of my actions							0.59
I am able to act on my own							0.56

Table 15.

PCA Component Correlations From Study 3.

Component	1	2	3	4	5	6	7
1	-						
2	-.28	-					
3	.25	-.23	-				
4	.26	-.011	.14	-			
5	-.24	.26	-.22	-.096	-		
6	.34	-.09	.26	.30	-.15	-	
7	.36	-.34	.16	.21	-.26	.20	-

7.4 Study 3 Discussion

The primary aim of Study 3 was to develop an assessment tool of sport-specific psychological strengths and to explore the underpinning structure of this tool to identify the number of latent constructs underlying these items. After an initial set of items was developed, a principal component analysis identified a seven-component structure, retaining 41 of these items. The provisional working titles of these components were Commitment, Emotional Control, Perform Under Pressure, Coachability, Openness, Passion, and Personal Responsibility[19]. The high component loadings suggest all items load on to the relevant components and are therefore assessing these concepts. The fact that the component correlations suggest some components are interrelated to a degree is unsurprising as psychological constructs are normally related to others in some way (Field, 2009; Tabachnick & Fidell, 2007). It is consequently not a surprise that some components display low and moderate correlations with each other in the initially identified component structure. This study therefore provides an initial component structure for a sport-specific psychological strengths questionnaire that can be used as the foundation for further analysis.

The exploratory processes used in Study 3 were in line with previous questionnaire development recommendations (Field, 2009). It is recommended, however, that questionnaires should be developed through an initial exploratory factor analysis (as conducted in Study 3) followed by a confirmatory factor analysis (Anderson & Gerbing, 1988). This is also in line with previous questionnaire development procedures within the literature (Kehl et al., 2014; Thornton et al., 2013; Williams & Cumming, 2011; Zourbanos et al., 2009). Furthermore, it is recommended that additional confirmation of the identified component structure is required when using principal component analysis, as this extraction method includes all variance within a sample and so becomes more of a unique solution to that specific data set (Field, 2009). For the component structure to be able to be generalised beyond this data, therefore, research confirming this structure with a new sample is required (Field, 2009). Once this has occurred, the internal reliability of the confirmed questionnaire can also be examined. Study 3 therefore provides an initial questionnaire that can be used as a foundation, however further work is required that confirms this structure with an independent sample.

[19] It is worth noting again here that these were provisional working titles only, given to help facilitate the next phase of the research. Final names were decided upon in a more robust manner after the structure of the questionnaire had been confirmed (see sections 7.6 and 7.7).

7.5 Study 4 Introduction

After identifying a seven-component structure in Study 3, the primary aim of Study 4 is to confirm this structure using a new, independent, sample. To achieve this, confirmatory factor analysis (CFA) will be conducted to examine whether the seven-component structure is replicable. Additionally, the internal reliability of the confirmed questionnaire will be examined. This will provide further evidence of the underpinning strengths identified in Study 3, thus ensuring the strengths included in the final questionnaire are driven by the data (Held, 2018). It will also ensure the final questionnaire has adequate psychometric properties (Field, 2009). This process is in line with recommended, and previously used, questionnaire development processes (Anderson & Gerbing, 1988; Kehl et al., 2014; Thornton et al., 2013; Williams & Cumming, 2011; Zourbanos et al., 2009).

7.6 Study 4 Method

7.6.1 Participants

The new sample for this study was comprised of a total of 376 participants who completed the questionnaire. The inclusion criteria were the same as for Study 3 (see section 7.2.3). Nine participants were removed as they reported taking part in fitness rather than sporting activities (four participants reported taking part in weight training, two hiking, and one each reported jogging, Pilates, and power-walking). Additionally, 19 participants were removed as they only provided partial responses to the questionnaire (Tabachnick & Fidell, 2007). As with Study 3, to make sure listwise deletion was acceptable and that missing data was missing at random, Little's MCAR test was conducted. This revealed a non-significant result (χ^2 (650) = 673.64, p=.25), suggesting data was missing at random and therefore applicable for listwise deletion (Tabachnick & Fidell, 2007). This resulted in 348 participants' data retained for analysis, and thus provided a ratio of 8.49 participants per item. As with Study 3, this was both between the recommended 2-10 participants per item and above the recommended minimum 300 participants, and so was deemed appropriate for factor analysis (see section 7.2.3 for the previously cited sample size recommendations; Ferguson & Cox, 1993; Hinkin et al., 1997; Kline 1986; Tabachnick & Fidell, 2007).

The sample was comprised of 167 males, 178 females, and one transgender female, between 18-64 years old. Participants competed at multiple competition levels, and the

majority (58.34%) had nine or more years of experience taking part in their sport (see Table 16 for a summary of the participants' demographic characteristics). Of the participants included, 299 were British (85.92%), seven Irish (2.01%), six American (1.72%) and six French, (1.72%), five Indian (1.44%), and three German (.86%). Two participants (.57%) were reported for each of the following nationalities: Austrian, Canadian, Dutch, and South African. A single participant (.29%) was also reported for each of the following nationalities: Australian, Barbadian, Chinese, Cypriot, Iranian, Italian, Japanese, Polish, Singaporean, South Korean, Sri Lankan, and Swiss. Two participants (.57%) did not report their nationality. Additionally, participants came from multiple sports, including 47 from running (13.51%), 33 from triathlon (9.48%), 28 from cycling (8.05%), 27 from cricket (7.76%), 26 from soccer (7.47%), 20 from netball (5.75%), 18 each from hockey and rugby (5.17%), and 13 from athletics (3.74%; see Appendix O for a full list of sports).

7.6.2 Procedure

The procedure was identical to that of Study 3.

7.6.3 Measures

Participants were asked to complete the questionnaire that resulted from Study 3. The questionnaire contained 41 items that had been found to have high loadings onto seven underlying components. The questionnaire therefore assessed seven different components, or strengths, which had been given the provisional working titles of Commitment (10 items), Emotional Control (four items), Perform Under Pressure (six items), Coachability (five items), Openness (five items), Passion (seven items), and Personal Responsibility (four items). This questionnaire was only available online (Lonsdale et al., 2006). Items were rated on a 5-point Likert scale as this has been recommended for use in questionnaires (see section 7.2.2 for rationale; Hinkin et al., 1997; Jenn, 2006). The questionnaire began with a set of instructions, followed by questions related to demographic information. The 41 items relating to the seven strengths were then presented, followed by a debrief and final confirmation of consent (see Appendices P and L for the initial instructions and debrief presented to participants, respectively).

The 41 items were presented as five sets, four groups of eight and one of nine, as items were presented in a semi-random order. This was done to minimise order effects

Table 16.

A Summary of the Participants' Demographic Characteristics From Study 4.

Demographic Characteristic	Number of Participants (Percentage)
Gender	
Male	167 (47.99%)
Female	178 (51.15%)
Transgender Female	1 (.29%)
Not reported	2 (.57%)
Age (years)	
18-24	139 (39.94%)
25-34	97 (27.87%)
35-44	54 (15.52%)
45-54	39 (11.21%)
55-64	19 (5.46%)
Years of experience (years)	
15+	96 (27.59%)
13-15	39 (11.21%)
9-12	68 (19.54%)
6-8	43 (12.36%)
3-5	69 (19.83%)
1-2	32 (9.20%)
Not reported	1 (.29%)
Competition Level	
World Championship	1 (.29%)
European	1 (.29%)
Paralympic	1 (.29%)
Commonwealth Games	6 (1.72%)
International	43 (12.36%)
Professional	13 (3.74%)
National	38 (10.92%)
Regional	61 (17.53%)
University	67 (19.25%)
Amateur Club	68 (19.54%)
Recreational	49 (14.08%)

(Coolican, 2004; Oldendick, 2011) and to avoid issues with the randomisation of all items potentially resulting in all those from one strength being presented in sequence. As there were

an uneven number of items for each strength, each set contained a marginally different number of items from each strength. To ensure an initial even distribution of items, for each strength with five or more items, one item was randomly assigned to the five groups. The remaining five items from the first strength (Commitment) were then randomly assigned to each group. The items from the two strengths with four items were then randomly assigned to four of the five groups. This resulted in three items that had not been grouped (two from the Passion strength and one from the Perform Under Pressure strength), which were then randomly assigned to each of the groups, with a maximum of nine items allowed in only one group. The questions within each group were then presented in a random order, with this order generated by the online software.

7.6.4 Model Testing

Confirmatory factor analysis (CFA) is recommended as an important step in questionnaire development, especially after exploratory factor analysis procedures have been used (Anderson & Gerbing, 1988). CFA is used as a statistical technique to examine a hypothesised factor structure, testing a pre-specified model to confirm the number of underlying concepts (latent variables) and the relationship between these and the questionnaire items (indicator variables; Brown, 2015). This approach was therefore used in the current study, with the statistical software package Mplus (version 8.0) utilised to conduct the analysis. As reported in Chapter 4, model parameters will be estimated using the Maximum Likelihood estimation method (Brown, 2015). It is, however, recommended that if data is not normally distributed then an alternative method should be used (Brown, 2015). The data will therefore be screened prior to CFA to determine if the data is normally distributed. If this assumption is violated, then Robust ML will be used as the estimation method, as this has been shown as a reliable estimation method that provides statistics that are robust to non-normality within the data (see Chapter 4 for more detail; Brown, 2015).

It is recommended that multiple fit indices beyond the traditional chi-square statistic (χ^2) are used as the basis to evaluate model fit (see Chapter 4 for more detail; Brown, 2015). In line with this, the Standardised Root Mean Square Residual (SRMR), Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI), and the Tucker-Lewis Index (TLI) were used to assess goodness of fit (Brown, 2015; Hu & Bentler, 1999). To assess good model fit, it is recommended that SRMR and RMSEA values close to or below .05 and .06, respectively, along with CFI and TLI values close to or greater than .95 are used

(Brown, 2015; Hu & Bentler, 1999). There is a lack of consensus on the exact interpretation of these in the literature, but within the current study these were used as guidelines for decision making rather than cut-off points (see Chapter 4 for more detail; Brown, 2015). Standardised residuals (SR), modification indices (MI), and expected parameter change (EPC) statistics were also used to help identify more localised areas of misspecification (Brown, 2015). Where necessary, to help make decisions about re-specification, standardised factor loadings were considered, in line with recommendations and previous research (Arnold & Fletcher, 2015; Brown, 2015).

As CFA aims to confirm a hypothesised factor structure, the model being tested needs to be pre-specified and driven by theory (Brown, 2015). Based on the results from Study 3, a seven-factor model was therefore specified within this CFA. The 41 items identified previously were specified to load onto the same factor found in Study 3. This resulted in 10 items specified as loading onto Factor 1, four on Factor 2, six on Factor 3, five on both Factor 4 and Factor 5, seven on Factor 6, and four on Factor 7 (see Table 17 for the factors, their items, and the abbreviations used during the CFA). As there was no theoretical reason to do so, no correlations were originally set between indicator errors[20], or between factors (Brown, 2015). In order to scale the factor, the variable with the highest component loading from Study 3 was selected as a marker variable for each factor (see Chapter 4 for more detail; Brown, 2015).

Once a final model had been established, the factors were named. To achieve this, and provide consistency across the thesis, Gerring's (1999) framework of concept formation was used as a basis for decision making (see section 5.2.5 for a full explanation of this framework). As with previous stages of this research, to ensure trustworthiness of the data, triangulation occurred with three researchers reviewing the items that loaded on to each factor independently and generated a name and definition for this factor (Leech & Onwuegbuzie, 2007). Detailed discussion then occurred about factor names and definitions, alongside explanations for these decisions (Lincoln & Guba, 1985). Discussions occurred until a consensus was reached.

To assess internal consistency of each factor (or sub-scale), Cronbach's Alpha (α) was calculated using SPSS (version 26). This is in line with both recommendations for questionnaire development to ensure internal reliability (Field, 2009; Rattray & Jones, 2007)

[20] This refers to the unique variance of an indicator. In CFA, it is possible to correlate these if there is a reason to do so (see Brown, 2015).

Table 17.

The Factors (Including Provisional Titles in Parentheses), Their Items, and the Item Reference Number Used for the Initial CFA Model.

Factor (Provisional Title)	Item	Reference Used for CFA Analysis
1 (Commitment)	Motivation comes easily to me	Comm 1
	I can motivate myself well	Comm 2
	I work hard no matter what	Comm 3
	My work ethic is one of my strong points	Comm 4
	I am a highly disciplined person	Comm 5
	I persist in the face of difficulties	Comm 6
	I look forward to working hard	Comm 7
	I am focused on achieving my goals	Comm 8
	I do not give up	Comm 9
	I do not require others to motivate me	Comm 10
2 (Emotional Control)	I have control over my emotions	Control 1
	I do not let emotions interfere with my performance	Control 2
	I can clear interfering emotions quickly	Control 3
	I rarely struggle to keep my feelings under control	Control 4
3 (Perform Under Pressure)	I consider my competitiveness to be one of my strong points	Press 1
	I love competing against others	Press 2
	Competing against others gets the best out of me	Press 3
	I thrive when put under pressure	Press 4
	I am at my best when required to perform under pressure	Press 5
	Being able to deliver a performance when it matters is one of my strong points	Press 6
4 (Coachability)	I value input from my coach	Coach 1

Factor (Provisional Title)	Item	Reference Used for CFA Analysis
	I enjoy discussing how I can develop with my coach	Coach 2
	I regularly seek out feedback from my coach	Coach 3
	I make changes to my training based on feedback from my coach	Coach 4
	I welcome advice on how to get better	Coach 5
5 (Openness)	I like to do new and different things	Open 1
	I am not afraid to do something different to what I normally do	Open 2
	I enjoy situations that stretch my comfort zone	Open 3
	I willingly put myself in situations where I am not necessarily comfortable	Open 4
	I am happy managing the uncertainty of acting outside of my comfort zone	Open 5
6 (Passion)	I love my sport	Pass 1
	I am passionate about my sport	Pass 2
	I enjoy dedicating time to my sport	Pass 3
	Thinking about my sport gives me a genuine sense of enjoyment	Pass 4
	I enjoy discussing my sport with others	Pass 5
	I love putting all my energy into my sport	Pass 6
	I feel excited about all aspects of my sport	Pass 7
7 (Personal Responsibility)	It is important to me to be able to take responsibility for myself	Pers 1
	I consider myself highly self-aware	Pers 2
	I take ownership of my actions	Pers 3
	I am able to act on my own	Pers 4

and approaches adopted within the literature (Arnold & Fletcher, 2015; Lane et al., 2005; Ramos, Muñoz, Navarro-Pardo, & Murphy, 2017; Thornton et al., 2013).

7.7 Study 4 Results

7.7.1 Data Screening

As with Study 3, and in line with recommendations of assessing normal distribution in large samples (those over 200), visual inspection of histograms with normal distribution curves along with skewness and kurtosis values occurred (Field, 2009). This revealed that the data was not normally distributed, (skewness values ranging from .051 to 2.11 and kurtosis values ranging from -.751 to 5.42) and thus the ML estimation method was inappropriate and Robust ML was used (Brown, 2015).

7.7.2 Confirmatory Factor Analysis and Reliability

The initial model fit indices were χ^2 (758) = 1698.97, p<.001, SRMR = .065, RMSEA = .060, CFI = .84, TLI = .83. These indicated that changes needed to be made to the originally specified model. As changing one parameter can impact the relationships within the model, and thus address multiple issues, only small changes were made to the model at any one time and fit indices re-assessed at each stage (Brown, 2015). If further changes were required, this process was then repeated. The changes made, rationale for these changes, and model fit indices for each model re-specification can be found in Table 18.

Following re-specification, 16 items were removed and two sets of indicator errors were correlated. The re-specified model fit indices were χ^2 (252) = 356.78, p<.001, SRMR = .046, RMSEA = .035, CFI = .96, TLI = .96. These indicate a good fit of the re-specified model (SRMR <.05, RMSEA <.06, CFI >.95, TLI >.95). Standardised factor loadings ranged from .59-.93, suggesting all items load on to their purported factors as they were above the recommended cut-off value of .55 (Tabachnick & Fidell, 2007; see Table 19 for standardised factor loadings and error variances for each item, along with their standard errors). This resulted in four items loading on to Factors 1 and 2, three onto Factors 3, 4, 5, and 7, and five loading on to Factor 6 (see Table 19). Through the previously outlined process (see section 7.6.4), these factors were named as Commitment (Factor 1), Emotional Control (Factor 2), Competitiveness (Factor 3), Coachability (Factor 4), Embrace New Experiences (Factor 5), Passion (Factor 6), and Personal Responsibility (Factor 7; see Table 20 for the factor numbers, their names, and their definitions).

Table 18.

Model Re-Specifications Made, Including Rationale for Change and Fit Statistics.

Model Number	Changes Made (v = Variable)	Rationale for Change[a]	Goodness of Fit Statistics[b]				
			χ^2	SRMR	RMSEA	CFI[c]	TLI[c]
1	41 variables included	-	χ^2 (758) = 1698.97, p<.001	0.065	0.060	0.844	0.832
2	Removed vPress 5	High MI with vPress 4, vPress2, vPress3, vPress6.	χ^2 (719) = 1498.90, p<.001	0.064	0.056	0.863	0.852
3	Removed vPress 6	High MI with Factor 5 (Openness), Factor 2 (Emotional Control), vPress 2 and vPress 4.	χ^2 (681) = 1373.59, p<.001	0.062	0.054	0.875	0.864
4	Removed vPass 1	High MI with vPass 2 and vPass 3, and Factor 1 (Commitment); similarly worded to vPass 2.	χ^2 (644) = 1250.95, p<.001	0.061	0.052	0.882	0.872
5	Removed vComm 10	High MI with vPers 4 and with Factor 4 (Coachability).	χ^2 (608) = 1152.53, p<.001	0.060	0.051	0.891	0.880
6	Removed vComm 4	High MI with vComm 3, vComm5, vComm 6.	χ^2 (573) = 1079.39, p<.001	0.059	0.050	0.894	0.883
7	vCoach 3 correlated with vCoach 4	High MI but as both are asking about feedback there is a clear reason for correlating.	χ^2 (572) = 1061.85, p<.001	0.059	0.050	0.897	0.887

Model Number	Changes Made (v = Variable)	Rationale for Change[a]	Goodness of Fit Statistics[b]				
			χ^2	SRMR	RMSEA	CFI[c]	TLI[c]
8	Removed vPers 2	MI all dropped, vPers 2 had the lowest factor loading (0.46) so was removed.	χ^2 (538) = 978.68, p<.001	0.058	0.049	0.905	0.895
9	Removed vComm 6	High MI with Factors 5 (Openness) and 7 (Personal Responsibility), vComm 9, vPass 7, and vPers 4.	χ^2 (505) = 889.08, p<.001	0.056	0.047	0.915	0.905
10	Removed vOpen 2	High MI and EPC with vOpen 1 and similarly worded to this item.	χ^2 (473) = 842.22, p<.001	0.056	0.047	0.916	0.906
11	Removed vOpen 1	MI all dropped, vOpen 1 had the lowest factor loading (0.49) so was removed.	χ^2 (442) = 788.57, p<.001	0.056	0.047	0.919	0.909
12	Removed vComm 1	High MI with vComm 2 and similarly worded to this item.	χ^2 (412) = 741.34, p<.001	0.056	0.048	0.920	0.910
13	Removed vPress 4	High MI with Factor 5 (Openness) and vOpen 3.	χ^2 (383) = 656.51, p<.001	0.053	0.045	0.931	0.922
14	Removed vPass 6	High MI with Factor 3 (Perform Under Pressure), vPass 4, and vPass 6.	χ^2 (355) = 574.05, p<.001	0.053	0.042	0.941	0.932
15	vPers 3 correlated with vCoach 4 and vPers 3 correlated with vComm 7	High MI for both pairs of items, but all items related to concept of ownership so clear reason for correlating.	χ^2 (353) = 553.37, p<.001	0.052	0.040	0.946	0.938

Model Number	Changes Made (v = Variable)	Rationale for Change[a]	Goodness of Fit Statistics[b]				
			χ^2	SRMR	RMSEA	CFI[c]	TLI[c]
16	Removed vCoach 5	High MI and EPCs with Factors 6 (Passion) and 7 (Personal Responsibility).	χ^2 (326) = 502.71, p<.001	0.050	0.039	0.950	0.942
17	Removed vCoach 4	High MI with vCoach 1 and vComm 7.	χ^2 (302) = 459.30, p<.001	0.049	0.039	0.951	0.943
18	Removed vComm 8	High MI with Factor 4 (Coachability) and vCoach 2.	χ^2 (277) = 417.93, p<.001	0.048	0.038	0.954	0.946
19	vPress 3 correlated with vOpen 3	High MI but clear reason for correlating as competing against others requires you to stretch your comfort zone.	χ^2 (276) = 404.22, p<.001	0.048	0.037	0.958	0.951
20	Removed vComm 2	High MI with Factor 6 (Passion).	χ^2 (252) = 356.78, p<.001	0.046	0.035	0.964	0.957

[a] It is worth noting here that outlying MI's were used to assess areas of misspecification rather than a specific cut-off value, in line with Brown's (2015) recommendations (see Chapter 4). Specific values are therefore not included, as the high MI's were relative to the other values.

[b] It is important to note here that the degrees of freedom for all models indicate an over-identified model which is a requirement in order for CFA to estimate the model's parameters (Brown, 2015).

[c] Three decimal places are used here to highlight the incremental changes from model to model.

Table 19.

CFA Standardised Factor Loadings and Error Variances for Each Item, Along With Their Standard Errors (S.E.).

Factor	**Item Reference**	**Item**	**Factor Loading***	**S.E.**	**Error Variance**	**S.E.**
1 Commitment	C1	I work hard no matter what	.74	.041	.46	.061
	C2	I look forward to working hard	.69	.044	.52	.060
	C3	I am a highly disciplined person	.62	.044	.61	.055
	C4	I do not give up	.59	.055	.65	.065
2 Emotional Control	EC1	I can clear interfering emotions quickly	.82	.031	.32	.052
	EC2	I do not let emotions interfere with my performance	.73	.038	.46	.056
	EC3	I have control over my emotions	.73	.039	.47	.056
	EC4	I rarely struggle to keep my feelings under control	.63	.055	.60	.070
3 Competitiveness	CP1	I love competing against others	.93	.023	.13	.044
	CP2	Competing against others gets the best out of me	.82	.031	.33	.051
	CP3	I consider my competitiveness to be one of my strong points	.77	.045	.48	.064
4 Coachability	COA1	I enjoy discussing how I can develop with my coach	.88	.029	.24	.050
	COA2	I value input from my coach	.81	.032	.34	.051
	COA3	I regularly seek out feedback from my coach	.75	.034	.44	.052
5 Embrace New Experiences	ENE1	I am happy managing the uncertainty of acting outside of my comfort zone	.85	.035	.28	.060

	ENE2	I willingly put myself in situations where I am not necessarily comfortable	.69	.043	.52	.060
	ENE3	I enjoy situations that stretch my comfort zone	.66	.045	.56	.060
6 Passion	PAS1	I enjoy dedicating time to my sport	.83	.026	.31	.043
	PAS2	I am passionate about my sport	.79	.032	.38	.051
	PAS3	Thinking about my sport gives me a genuine sense of enjoyment	.73	.039	.47	.057
	PAS4	I enjoy discussing my sport with others	.69	.053	.53	.073
	PAS5	I feel excited about all aspects of my sport	.60	.046	.64	.056
7 Personal Responsibility	PR1	It is important to me to be able to take responsibility for myself	.74	.044	.45	.065
	PR2	I take ownership of my actions	.74	.047	.46	.070
	PR3	I am able to act on my own	.62	.053	.62	.066

[a]All standardised factor loadings were significant ($p<.001$).

Table 20.

Factor Numbers, Their Names, and Their Definitions.

Factor	Name (Abbreviation)	Definition
1	Commitment (Comm)	An individual is dedicated to working hard.
2	Emotional Control (EC)	An individual is able to control their emotions and not let them interfere with their performance.
3	Competitiveness (Comp)	An individual has a strong desire to outperform others.
4	Coachability (Coach)	An individual is open to feedback and input from their coach.
5	Embrace New Experiences (ENE)	An individual is willing to go outside of their comfort zone.
6	Passion (Pas)	An individual has an intense level of love and enjoyment for their sport.
7	Personal Responsibility (PRes)	An individual can act on their own and take ownership for themselves and their behaviour.

The correlated errors between items were both low (r <.3) and can be found in Table 21. Whilst not specified, Mplus calculated factor correlations. This revealed all factors are interrelated to some degree. There were high (r >.5) correlations between Factor 1 and Factors 6 and 7. Moderate correlations (r >.3) were found between Factor 2 and Factors 1 and 7, between Factor 5 and Factors 3 and 7, and between Factor 6 and Factors 3, 4, 5, and 7. All other factor correlations were low (r<.3; see Table 22 for all factor correlations). The final CFA model is shown in Figure 3.

All factors demonstrated high reliability, with Cronbach's alpha (α) greater than the recommended .7 (Field, 2009; Tabachnick & Fidell, 2007): Commitment (Factor 1) α = .75, Emotional Control (Factor 2) α = .82, Competitiveness (Factor 3) α = .87, Coachability (Factor 4) α = .85, Embrace New Experiences (Factor 5) α = .77, Passion (Factor 6) α = .84, and Personal Responsibility (Factor 7) α = .74.

Table 21.

Standardised Correlated Errors.

Item Pair	Correlation
I take ownership of my actions – I look forward to working hard	**-.24***
Competing against others gets the best out of me – I enjoy situations that stretch my comfort zone	**.26***

*p<.01

Table 22.

Standardised Factor Correlations.

Factor	1	2	3	4	5	6	7
1	-						
2	.42**	-					
3	.12	.12	-				
4	.28**	.018	.26**	-			
5	.25*	.28**	.32**	.22*	-		
6	.53**	.14	.45**	.36**	.37**	-	
7	.70**	.34**	.064	.29**	.33**	.37**	-

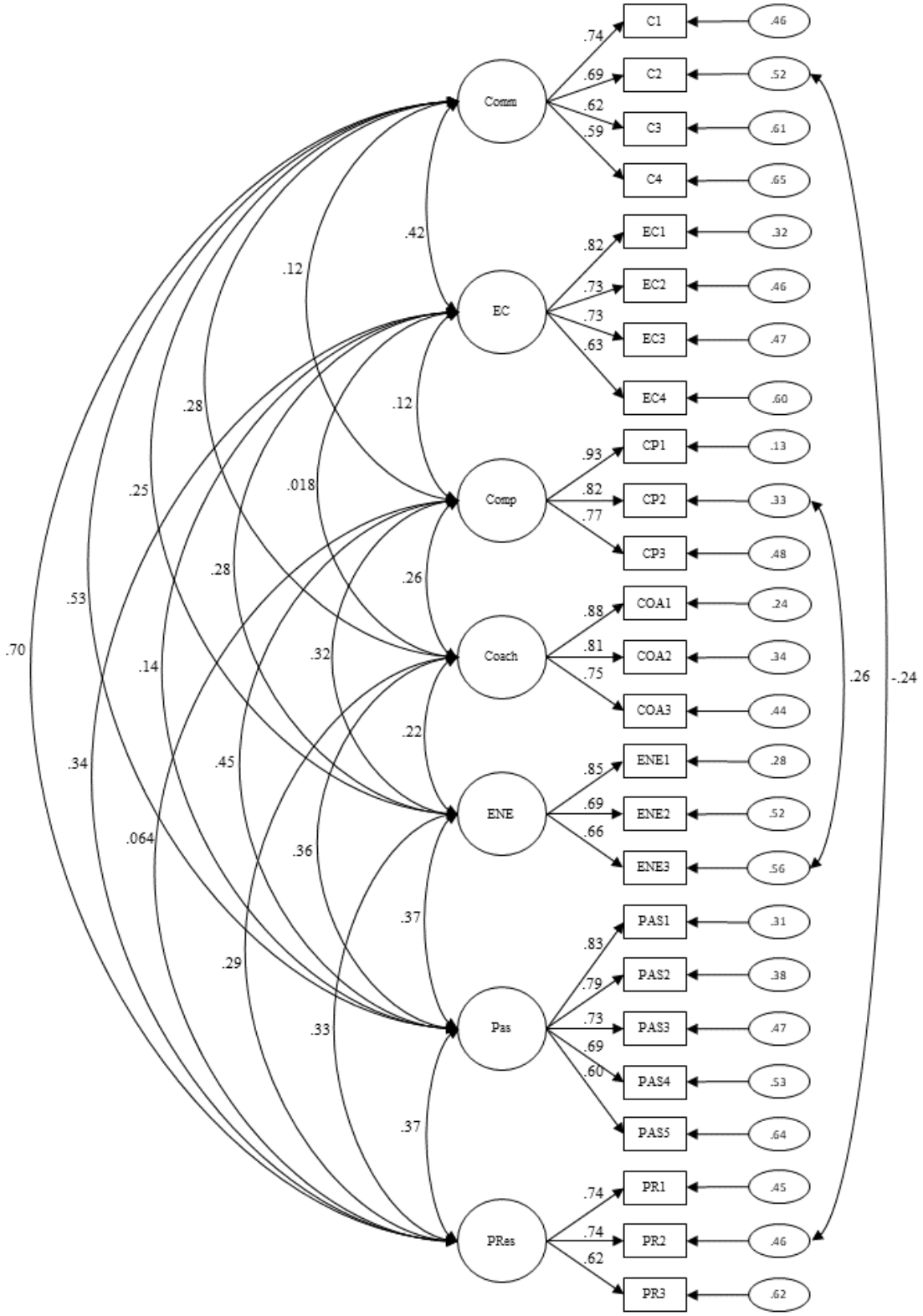
*p<.01. **p<.001

7.8 Study 4 Discussion

The primary aim of Study 4 was to confirm the factor structure of the questionnaire identified in Study 3 with a new, independent, sample. It also aimed to explore the internal reliability of the sub-scales, or factors, of the questionnaire. A confirmatory factor analysis verified the proposed seven-factor model, with a 25-item questionnaire showing acceptable fit indices. These factors were named as Commitment, Emotional Control, Competitiveness, Coachability, Embrace New Experiences, Passion, and Personal Responsibility. Whilst factor analysis can identify underlying latent constructs it cannot interpret or make sense of them (Brown, 2015) and so, based on the work conducted throughout this thesis, these factors were interpreted to relate to psychological strengths that are relevant in the context of sport. This interpretation led to definitions for the psychological strengths being established. Each sub-

Figure 3.

The Standardised Parameter Estimates for the Final Seven-Factor CFA Model.



scale assessing the individual strengths were then also found to have acceptable levels of internal reliability. Study 4 has, therefore, provided confirmation of the structure, and internal reliability, of a sport-specific psychological strengths assessment tool – named as the Sport-Specific Psychological Strengths Questionnaire (SSPSQ; see Appendix Q).

Conducting a confirmatory factor analysis is recommended as an important stage of questionnaire development (Anderson & Gerbing, 1988). It is also highlighted as important after using principal component analysis to initially explore the underlying latent constructs (as used in Study 3), to allow the underlying structure to be generalised further than the initial data set (Field, 2009). The findings from the current study have confirmed the initial structure using an independent sample, supporting the initial seven-factor structure, and thus suggesting this is applicable more broadly than only to the initial sample from Study 3. The high factor loadings suggest all items within the final questionnaire load on to the relevant factors, and, in conjunction with the high internal reliability scores, are therefore assessing these concepts. The fact that the factor correlations suggest some factors are interrelated to a degree is unsurprising as psychological constructs are normally related to others in some way (Field, 2009; Tabachnick & Fidell, 2007). It is therefore not a surprise that some factors display low and moderate correlations with each other – a finding that replicates the results from Study 3. Furthermore, it is not a surprise that the factor Commitment would be highly correlated to the factors of Passion and Personal Responsibility as it theoretically makes sense for those with higher levels of commitment to take more personal responsibility, and for levels of passion and commitment towards an individual's sport to be related. It is important to note, however, that no factor correlations were above .80. Taken alongside the high factor loadings, this indicates that the items in the model are still assessing independent factors despite these higher correlations (Brown, 2015). Also, the low correlations found between correlated item errors suggest these items still independently added to the model (Brown, 2015). The findings from Study 4 therefore support the underpinning psychometric properties of the questionnaire, demonstrating initial validity and reliability of a questionnaire assessing sport-specific psychological strengths (Anderson & Gerbing, 1988; Brown, 2015).

7.9 General Discussion

The primary aims of Studies 3 and 4 were to develop an assessment tool of sport-specific psychological strengths, explore the underpinning structure of this tool to identify the number of latent constructs, and to confirm this structure in an independent sample. It is

recommended that questionnaire development contains an initial exploratory factor analysis stage followed by a confirmatory factor analysis stage (Anderson & Gerbing, 1988). The current chapter outlines both of these processes, which have resulted in a sport-specific psychological strengths questionnaire being developed that demonstrates initial validity and internal reliability – the SSPSQ. This takes the form of a 25-item questionnaire that assesses seven different psychological strengths (see Table 20 for a list of these strengths and their definitions).

It is worth noting that across the two studies outlined in this chapter, the structure of the proposed questionnaire has changed. The initial questionnaire contained 90 items which represented 18 different psychological strengths. This was reduced as a result of the principal component analysis to 41 items that loaded onto seven factors (or underpinning psychological strengths). This seven-factor structure was then confirmed using an independent sample, however, this was for a 25-item questionnaire, which now comprises the final structure. Such changes highlight the importance of including both an exploratory and confirmatory stage in questionnaire design (Anderson & Gerbing, 1988) as these processes have identified the relevant underpinning factors. Previous strengths assessments have been criticised for using strengths that were not based on research evidence but outlined a priori (Held, 2018). Multiple studies have then found different factor structures to the initially proposed structure (Azañedo et al., 2014; Littman-Ovadia & Lavy, 2012; Macdonald et al., 2007; Proyer et al., 2014; Ruch et al., 2014; Weber et al., 2013), highlighting the importance of ensuring that underpinning strengths are data driven and confirmed in subsequent analysis (Held, 2018). The fact that changes were made to the initial structure in the current study, and the seven-factor structure confirmed, therefore means that the seven psychological strengths included in the final questionnaire have emerged from the data and research, in line with recommendations for the development of strengths (Held, 2018). Moreover, as highlighted in the previous discussion section, the factor loadings and internal consistencies of the items and subscales in the confirmed model suggest all items are representative of the relevant factors and the sub-scales are reliable (Brown, 2015; Field, 2009). These processes have therefore resulted in a more parsimonious questionnaire, based on the data and research evidence, that demonstrates an initial level of validity and reliability.

In both Studies 3 and 4, it is also worth noting that the highest factor correlations were between the factors of Commitment and Personal Responsibility (.36 and .70, respectively), as well as Commitment and Passion (.34 and .53, respectively). Whilst the evidence does not suggest these need to be collapsed together, especially as these correlations were only

moderate in Study 3, the consistency of these findings suggests a potential pattern to the relationships. When considering these correlations, it is also important to note here that there is potential for CFA to generate higher factor correlations compared to EFA/ PCA (Brown, 2015). As items are specified to only load on one factor, the CFA model can only explain any relationship between items in terms of the relationship between the factors. Factor correlations can, therefore, sometimes adjust for potential, even extremely small, cross-loading of items, potentially causing higher factor correlations (Brown, 2015). Thus, this may have resulted in the slightly higher factor correlations in Study 4 compared to Study 3. As mentioned previously (see section 7.8), however, it is not unsurprising that these strengths may be related. Indeed, as psychological constructs are normally related to others in some way, both the higher and moderate correlations found across both studies are not a surprise (Field, 2009; Tabachnick & Fidell, 2007). Nevertheless, it may be that additional research can investigate the relationships between these psychological strengths to gain further understanding as to the nature of any potential relationships.

The studies presented within this chapter provide an initial level of both validity and reliability for the current questionnaire. Each sub-scale within the questionnaire has been found to have acceptable levels of internal reliability, suggesting the questionnaire has a good level of internal consistency. The current research has also established a level of both content and construct validity (Rattray & Jones, 2007). As reported previously, content validity was established through a two-stage process (see section 7.2.1) in line with recommendations (Corchon et al., 2010; Johnston et al., 2003; Rattray & Jones, 2007). Factor analysis is suggested as a good way to establish construct validity, highlighting how well the items within a questionnaire represent the underlying factors, or constructs (Rattray & Jones, 2007). The high factor loadings within the current research, along with a lack of cross-factor loadings in Study 3, demonstrate that the items within the questionnaire are representative of the factors. It can therefore be said that the current research supports the construct validity of the questionnaire at this stage.

It is, however, recommended that additional processes occur to further demonstrate the validity and reliability of the current questionnaire. Further work should examine the test-retest reliability of the questionnaire to assess its stability over time, in line with recommendations (Rattray & Jones, 2007). As strengths are defined as constructs that are stable but also malleable (see section 2.6), test-retest reliability needs to be established before further work can examine potential changes or developments in the identified strengths over-time. Additional work also needs to be conducted to demonstrate both convergent and

discriminant validity (Rattray & Jones, 2007). Brown (2015) argues that both of these concepts can be shown through confirmatory factor analysis. It is argued that convergent validity is indicated as multiple, different, items load on to the same factor as they are theoretically similar, and thus converge onto that factor (Brown, 2015). Equally, discriminant validity is argued as items that are specified as being distinct from each other do not relate to each other or load on to the same factor (Brown, 2015). Similarly, these distinct factors are not then correlated to an extent that it suggests they need to be collapsed together (Brown, 2015). Whilst this may be the case, it is recommended within other areas of the literature that convergent and discriminant validity need to establish whether the questionnaire relates to theoretically similar constructs, and does not relate to dissimilar constructs, in already established, valid, questionnaires (Rattray & Jones, 2007). Brown's (2015) assertion may therefore suggest a level of convergent and discriminant validity amongst the items and factors in the current questionnaire – thus, within the questionnaire itself. Further work is needed, however, in order to compare the psychological strengths identified in the current study with similar and dissimilar constructs from other measures in order to establish the convergent and discriminant validity of the questionnaire. It is acknowledged that this work is important, however conducting this would have required multiple further studies that extend beyond the scope of this thesis. It is recommended, however, that such work be carried out to build on the current findings. Doing this, along with demonstrating test-retest reliability, is in line with recommended questionnaire development procedures and will provide further evidence for the psychometric properties of the current questionnaire (Rattray & Jones, 2007).

Further research that builds on the psychometric properties identified in the current study is also recommended as the model in Study 4 had to be re-specified multiple times. Although model re-specification is an important part of confirmatory factor analysis and is reported within multiple studies (Jackson, Gillaspy, & Purc-Stephenson, 2009), it is suggested that large re-specification of a model moves from confirmatory to exploratory practices and therefore requires a further confirmatory stage (Brown, 2015)[21]. Whilst re-specifications made in Study 4 were small, it is acknowledged that the model was re-specified multiple times in the process of confirming the pre-defined structure and therefore a further study that confirms the final structure would be beneficial and add to the literature. There is potential that the model could have been re-specified less had larger changes been

[21] Going into depth on this argument is beyond the scope of this thesis.

made to each re-specified model, however, this was not in line with recommendations and could have resulted in a poor fitting model (Brown, 2015). This also highlights the challenges of conducting a principal component analysis prior to a confirmatory factor analysis, as information such as error correlations that may have reduced the re-specifications required is not produced (Brown, 2015). The final model from Study 4, however, has provided more detailed information and knowledge about the relationships within the questionnaire. Further research can therefore provide a more detailed initial model specification, and confirmation of this structure would then add more weight to the seven-factor structure identified in Studies 3 and 4.

Across both Studies 3 and 4, all participants were over the age of 18 and most were from Westernised, or individualistic, cultures. It is therefore important to note that the final questionnaire structure may only be relevant to adults from a Westernised, or individualistic, culture, with previous research suggesting differences between adults and those under 18 years old for strengths (Peterson & Seligman, 2004). Further research that examines both this questionnaire and sport-specific psychological strengths in those under 18 years old and to non-Western cultures may therefore build upon the findings from the current research.

The findings from the current study have both theoretical and applied implications. A questionnaire examining sport-specific psychological strengths has been lacking from the sports literature (see Chapter 2). The development of this questionnaire therefore adds to the literature by providing an initially validated and reliable questionnaire that will allow individuals in sport to explore sport-specific psychological strengths. This can provide a starting point for further research and discussion within this area, as seen within mainstream psychology where the development of strengths assessments led to further advancement and understanding (Peterson & Seligman, 2004; Hodges & Clifton, 2004). The current questionnaire may therefore provide an opportunity for further research that enhances our knowledge of strengths within this context. Research could examine the relationships not only between the identified strengths but between these strengths and other variables such as levels of wellbeing, confidence, or stress. Additionally, having such a questionnaire provides a method for strengths to be identified and used as the basis for strengths-based intervention studies within sport. From a practical perspective, the current findings may help provide applied practitioners with a starting point to identify strengths within individuals in sport. This could help support the development of applied strengths-based interventions, or help individuals raise self-awareness, to positively impact performance.

In conclusion, the studies presented within this chapter have developed and provided initial validity and reliability for a sport-specific psychological strengths questionnaire – something that has been lacking within the sports literature. This was achieved through a robust process of conducting an initial exploratory principal component analysis in the first study, followed by a confirmatory factor analysis in the next. The seven psychological strengths that were identified, and were confirmed, through this process have emerged from the data and research, in line with recommendations for the development of strengths (Held, 2018). Further research is recommended that builds on the current findings to provide additional evidence for the reliability and validity of the questionnaire, specifically examining test-retest reliability as well as convergent and divergent validity. Despite these suggestions, the findings from these studies have theoretical and applied implications by providing a questionnaire than can form the basis of further research and intervention work in this area. This is in line with advancements in mainstream psychology (Peterson & Seligman, 2004; Hodges & Clifton, 2004), and thus the findings from the current studies have the potential to further enhance knowledge and understanding of strengths in sport.

Chapter 8: General Discussion

8.1 Chapter Introduction

The following chapter aims to conclude this thesis. It provides a brief summary of the initial aims and purpose of the thesis, along with the key findings from each study. The research findings are considered in relation to the previous literature before a critical evaluation of the thesis is presented. Applied and methodological implications are then discussed before potential future research directions are outlined. The chapter is then brought to a close with final concluding remarks.

8.2 Summary of Findings

The overarching purpose of this thesis was to identify sport-specific psychological strengths and to then develop, and provide initial validation for, a sport-specific psychological strengths assessment tool. First, it aimed to investigate the potential relevant psychological strengths within the context of sport. Secondly, it aimed to use these as the basis for the development of a questionnaire and to explore, and confirm, the underlying structure of this questionnaire.

Study 1 utilised a systematic review to identify the positive qualities, traits, or characteristics that could potentially be classed as psychological strengths within the current sport psychology literature. Through a pre-defined search strategy, 78 full-text articles were identified and analysed. After synthesizing the information identified in the review, 13 overarching psychological strengths emerged that represented the 115 terms extracted from the literature. These findings highlighted that there are multiple positive qualities, traits, and characteristics that have been identified as important for athletes in relation to different outcomes within the existing literature. The overarching strengths identified suggested new strengths that were not part of previous classifications (Hodges & Clifton, 2004; Peterson & Seligman, 2004), thus potential psychological strengths specific to the sporting domain. These findings highlighted the importance of examining strengths within the context of sport and that additional research into this area was warranted as the qualities identified were from papers examining different research areas, and thus not specifically through the lens of a strengths-based approach.

Study 2 used a Delphi method to review the qualities identified in Study 1 and to specifically examine the positive qualities, traits, and characteristics of athletes through the lens of a strengths-based approach. An expert panel took part in a three-round Delphi method that generated qualities that were considered relevant psychological strengths, rated the relevance of these qualities along with those from Study 1, and then agreed upon a set of sport-relevant psychological strengths. This resulted in a consensus from the panel on 29 qualities as being relevant psychological strengths within sport. This provided a set of sport-relevant psychological strengths that was developed by specifically examining positive qualities of athletes in sport through the lens of a strengths-based approach, in conjunction with rating the qualities identified in Study 1.

The findings from Studies 1 and 2 therefore brought together the findings from the existing literature with experts' views. This resulted in a consensus on a set of sport-relevant psychological strengths. The findings from this exploratory process were then used as the basis for the development for a sport-specific psychological strengths questionnaire.

Based on the findings from Studies 1 and 2, Study 3 developed a questionnaire to assess sport-specific psychological strengths in athletes and explored the underpinning structure of this tool. Initially, the strengths identified in Study 2 were analysed and collapsed down to 18 psychological strengths. To assess these, a set of 90 items were developed and made into an online questionnaire. Content validity was established at this point through a two-stage process. A principal component analysis then explored the underpinning structure of this questionnaire and identified a seven-component structure. This structure retained 41 of the initial items, with no cross-loading of items found. Some moderate factor correlations were found, but as psychological constructs are normally related to others in some way these were not surprising (Field, 2009; Tabachnick & Fidell, 2007). The seven-components were given provisional titles at this stage as further work needed to be conducted to confirm the underpinning structure, in line with questionnaire development recommendations (Anderson & Gerbing, 1988).

Study 4 then built upon the findings from Study 3 as it assessed the factor structure of the questionnaire with a new, independent, sample. A confirmatory factor analysis was conducted and verified the proposed seven-factor model, with a 25-item questionnaire showing acceptable fit. High factor loadings were found for all items, suggesting the items were representative of the relevant factors (Brown, 2015) and, in conjunction with the lack of cross-factor loadings in Study 3, it can be said there is evidence for construct validity of the questionnaire. The seven factors were interpreted to relate to psychological strengths relevant

in the context of sport, and were named as Commitment, Emotional Control, Competitiveness, Coachability, Embrace New Experiences, Passion, and Personal Responsibility. These psychological strengths emerged from the data and research, in line with recommendations for the development of strengths (Held, 2018). High factor correlations were found between the Commitment factor and the Personal Responsibility and Passion factors, along with other moderate and low factor correlations. As in Study 3, these were not surprising as psychological constructs are normally related to others in some way (Field, 2009; Tabachnick & Fidell, 2007). None of these correlations, however, were above .8 and taken together with the high factor loadings indicate that the items are still assessing independent factors (Brown, 2015). Two pairs of item errors were found to correlate in the final model, but the low correlations suggest these items still independently added to the model (Brown, 2015). Each sub-scale assessing the individual strengths was then also found to have acceptable levels of internal reliability. Study 4 therefore supported the underpinning structure and psychometric properties of the questionnaire and demonstrated initial validity and reliability of a questionnaire assessing sport-specific psychological strengths in athletes (Anderson & Gerbing, 1988; Brown, 2015) – known as the Sport-Specific Psychological Strengths Questionnaire (SSPSQ).

8.3 Contribution to Existing Literature

Research in mainstream psychology has identified multiple benefits of adopting strengths-based approaches (see Chapter 2). Within the existing sport psychology literature, however, there is limited research using such approaches, and there are, therefore, calls for further research into strengths in the sporting context (Gordon et al., 2017; Gordon & Gucciardi, 2011; Ludlham et al., 2016, 2017; Stander et al., 2017; Wagstaff & Leach, 2015). Indeed, Peterson and Seligman (2004) state context is important and needs to be considered in strengths research, as some strengths are relevant, and therefore some are not relevant, to different contexts. Of the strength assessments reported previously, however, only the Clifton StrengthsFinder (CSF) is context specific, assessing strengths within a workplace setting (Hodges & Clifton, 2004). The context specific nature of this assessment tool might account for the different attributes it assesses compared to other questionnaires. In fact, a common criticism of the field is that a common language specific to different contexts is often lacking (White, 2016). Ludlham et al. (2016, 2017) also criticise assessment methods such as the VIA-IS for not being context specific, and thus, not necessarily being applicable within the

sporting domain. Further to this, a shared, common, language alongside clear assessment strategies have been cited as important tools when looking to evaluate strengths-based approaches (Peterson & Park, 2004). It may therefore be that the lack of research into strengths-based approaches within sport stems for a lack of a common language, or conceptual clarity, and an assessment method for sport-specific strengths. Throughout this thesis work identified and developed a set of psychological strengths specific to the context of sport and a new questionnaire to assess these strengths – a gap within the sports literature. The findings from this thesis therefore make a significant and original contribution to the literature by addressing this gap, providing additional research evidence examining the concept of strengths within the sporting context, adding a set of sport-specific psychological strengths, and a subsequent new, initially validated, questionnaire to assess these – in line with recommendations in the literature (Peterson & Seligman, 2004). Such an addition to the research provides an opportunity to explore this area further within the context of sport, providing information as to psychological strengths relevant to the context of sport along with a way to help individuals identify their own strengths.

The findings from this thesis highlight both the similarities and differences between strengths identified for the context of sport and those within the existing literature. Of the strengths identified in the current thesis, only two were found to be very similar across the two contexts of sport and the workplace – the Competitiveness and Personal Responsibility strengths from the current research and the Competition and Responsibility themes in the CSF (Hodges & Clifton, 2004). Some of the other strengths identified may have analogous counterparts such as Commitment and the theme of Achiever (individuals take satisfaction from productivity, have high levels of stamina and work hard) as well as Passion and Positivity (individuals have a high level of excitement and enthusiasm that is often infectious) – although the latter may only be analogous if considering the Passion psychological strength as a context specific (sport) version of the Positivity theme (Hodges & Clifton, 2004). The other psychological strengths identified in this thesis, however, do not relate back to those in the CSF. This suggests that there may be certain strengths[22], or types of strengths (such as those related to working hard or passion), that may be relevant across multiple contexts. Equally, however, this suggests psychological strengths that are relevant within the sporting domain that have not been identified as important in the workplace. The current findings

[22] It is acknowledged at this stage that the CSF refers to themes of talent and not to strengths but for ease of discussion the term strengths is being used. Please refer to Chapter 2 for the definitions of the different concepts, along with the similarities between them.

therefore highlight the importance of looking at strengths within specific contexts, suggesting that the strengths relevant in one context may not necessarily be applicable to another. This supports previous suggestions in the literature that specific context needs to be considered when looking at strengths (Lazarus, 2003; McNulty & Fincham, 2011; Peterson & Seligman, 2004; White, 2016). It also highlights the importance of examining strengths specific to sport.

A similar pattern also emerges when the findings of the current thesis are considered in relation to more general strengths assessments. Some strengths identified by the current research are consistent with those in the VIA-IS and CSI (Peterson & Seligman, 2004; Wright et al., 2017). The strength of Emotional Control from this thesis can be said to be very similar to the Self-Regulation strength from both the VIA-IS (Peterson & Seligman, 2004) and the CSI (Wright et al., 2017). Additionally, the strengths of Personal Responsibility and Commitment can be said to be very similar to the CSI strengths of Integrity and Industry, respectively (Wright et al., 2017). The findings of these strengths as relevant in sport, as well as within the existing literature in general scales (and some in the workplace setting), provides a level of support to such strengths potentially being more general and applicable across contexts. It therefore provides more robust evidence to these specific strengths, evidence emerging from the research (Held, 2018). It is, however, suggested that further work is required in this area and caution is warranted. This is because the strengths found in the current thesis as being similar to those of previously established questionnaires differ depending on the comparison. That is to say, Personal Responsibility is similar to strengths on both the CSI and CSF, but not the VIA-IS (Hodges & Clifton, 2004; Peterson & Seligman, 2004; Wright et al., 2017). Equally, Emotional Control is similar to strengths on the VIA-IS and CSI but not the CSF (Hodges & Clifton, 2004; Peterson & Seligman, 2004; Wright et al., 2017). Caution is therefore required as it appears there is evidence for some strengths that are applicable across contexts but not necessarily agreement on the specific constructs. Further research may therefore be needed that examines the relationships between certain strengths across questionnaires to identify the specific strengths that may be applicable more broadly. Such work may highlight strengths that are relevant across contexts that is driven from the data and research evidence, in line with recommendations for the development of strengths (Held, 2018). It may also be important to examine strengths specific to other contexts through a bottom-up process and then examining the strengths that emerge in these contexts. Doing so would also provide more robust evidence for the strengths that may be applicable across contexts, and thus provide general strengths driven from the research (Held, 2018).

Alongside suggesting certain strengths may apply across contexts, there are areas identified throughout this thesis not identified within the existing literature as strengths. The current findings therefore provide evidence for sport-specific psychological strengths. Emotional Regulation, Personal Responsibility, and Commitment were the only strengths that appear to be very similar to strengths in the VIA-IS and CSI (Peterson & Seligman, 2004; Wright et al., 2017). In fact, no strengths other than Emotional Regulation from this thesis appear to be very similar to any of the other 23 strengths in the VIA-IS (Peterson & Seligman, 2004). Strengths identified in this thesis such as Embrace New Experiences and Passion do not appear to relate back to those in either the VIA-IS (Peterson & Seligman, 2004) or CSI, with Coachability also not explicitly relating back to strengths in the CSI (Wright et al., 2017). This highlights strengths that are novel and specific for the context of sport, adding to a previously overlooked area of the literature. Furthermore, it also highlights the importance of being able to identify and measure strengths relevant to specific contexts. This is consistent with previous literature, with some strengths identified as relevant in a workplace setting similar to those addressed by more general scales, but others appearing unique to that context (see Chapter 2; Hodges & Clifton, 2004; Peterson & Seligman, 2004; Wright et al., 2017).

Moreover, some strengths identified in the current thesis can be said to be somewhat analogous to those in the previous literature, however such comparisons only further highlight the importance of a psychological strengths assessment specific to the context of sport. Strengths such as Competitiveness or Coachability, for example, have no direct counterparts in the VIA-IS but may be analogous to the strengths of Bravery (not shrinking from threat, challenge, difficulty, or pain) and Love of Learning (mastering new skills, topics, bodies of knowledge), respectively (Peterson & Seligman, 2004). Equally, Competitiveness may be analogous to the strength of Valour (an individual is capable of handling difficulty and threat, acting positively despite facing hostility) in the CSI (Wright et al., 2017). Whilst these are similar concepts, they are, however, not identical, with Competitiveness focusing on performing against others and Coachability referring to being open to feedback and input from an individual's coach. Neither Bravery nor Valour refer specifically to the need to compete against others, and items relating to an overall willingness to learn failed to load on any factors across Studies 3 and 4 (see Chapter 7). Thus, some strengths may be analogous but are not identical. The subtle and nuanced differences highlight that the current literature has not historically captured the strengths required for this context. Such differences therefore highlight how the findings from this thesis add to the existing literature as they have

identified the relevant strengths within the context of sport. Additionally, such comparisons highlight the importance of identifying, and assessing, the specific strengths relevant to the context in order to capture the complexity of these strengths (Lazarus, 2003; McNulty & Fincham, 2011; Peterson & Seligman, 2004; White, 2016). The fact that the strengths identified in this thesis do not clearly fit under those identified in more general strengths assessments also supports criticisms that these tools may not be applicable to the context of sport (Ludlham et al., 2016, 2017). Findings from the current thesis therefore highlight that certain strengths are more relevant to specific contexts, in this instance identifying specific strengths that are relevant to the context of sport. This supports the assertion that context needs to be considered when looking at strengths (Lazarus, 2003; McNulty & Fincham, 2011; Peterson & Seligman, 2004; White, 2016) and highlights the importance of a set of strengths, and assessment, that are specific to the context of sport.

When considering the findings of the current thesis in direct relation to the context of sport, these findings offer support to previous research that has suggested the presence of potential strengths-based concepts within the existing literature (Wagstaff & Leach, 2015). Six potential overarching strengths-based concepts were previously identified, including mental toughness, positive affect, learned optimism, resilience, post-traumatic growth, and self-and-emotion regulation (Wagstaff & Leach, 2015). These concepts were, however, identified in relation to both the areas of sport and the military as combined performance domains, with calls for further research to provide clarity and ensure an evidence-base of strengths-based approaches within sport (Wagstaff & Leach, 2015). The findings from Study 1 highlighted that multiple positive qualities, traits, or characteristics that could be classed as potential psychological strengths have been identified within the existing sport literature, but in relation to multiple outcomes. This therefore supports the concept that potential strengths could be found in the literature. It does, however, also highlight that these concepts had not previously been studied, and brought together, from a strengths-based perspective. Where the previous research identified overarching concepts within the literature (Wagstaff & Leach, 2015), by adopting the systematic review methodology Study 1 went further by identifying the constituent parts of relevant overarching concepts and synthesising these together with other positive qualities extracted from the literature. Terms such as mental toughness and resilience were identified previously as potential strengths-based concepts (Wagstaff & Leach, 2015) but were excluded as qualities from Study 1 as they were shown to be comprised of other attributes (see section 5.3.2) – an exclusion supported by previous research (Johnston et al., 2013; Peterson & Seligman, 2004). The findings from Study 1

therefore not only provide evidence strengths-based concepts have been studied previously but add clarity to the existing literature by bringing these concepts together in one place and reconceptualising them through the lens of a strengths-based perspective. Additionally, from examining strengths specific to sport, both Study 1 and the findings from the final thesis support the previously identified concept of emotion regulation as a sport-relevant strength (Wagstaff & Leach, 2015), providing further evidence that this strength may be relevant in both sporting and military domains. The other strengths identified through both Study 1 and the overall thesis highlight additional psychological strengths relevant within the sporting domain, beyond those identified previously – strengths that have been identified through a systematic process and from a robust evidence base.

Previous research within sport (see Chapter 2) also identified that a super-strengths approach may be beneficial within the context of sport (Ludlham et al., 2016, 2017), with super-strengths made from a combination of underlying resources such as athletic, physical, qualities and more trait-like personal qualities (Ludlham et al., 2016). A barrier to such an approach being successful was identified, however, with athletes highlighting that individuals may struggle to articulate their super-strengths due to discomfort and unfamiliarity with focusing on, and discussing, these concepts (Ludlham et al., 2017). Ludlham et al. (2016; 2017) argue that current strengths assessments, such as the VIA-IS, are not context specific and thus they are not applicable to the identification of the specific super-strengths approach. The findings from the current thesis therefore add to the literature by providing a context-specific, sport-relevant, set of psychological strengths and an assessment that can be used in conjunction with this approach. This may help reduce the barriers and aid in the identification process of super-strengths, helping to facilitate discussions and provide a starting point for athletes to identify psychological strengths – the potential trait-like personal qualities of super-strengths (Ludlham et al., 2016) – as was the case in previous contexts (Hodges & Clifton, 2004). The provision of a new set of sport-specific strengths, and subsequent assessment method, may therefore support further research in this area.

Within the sport psychology literature, there has been some initial research suggesting strengths-based approaches are relevant, and beneficial within sport (Gordon et al., 2017; Gordon & Gucciardi, 2011; Ludlham et al., 2016, 2017; Stander et al., 2017; Wagstaff & Leach, 2015). Some such evidence has, however, emerged from research looking at other factors and not specifically looking at strengths (Beaumont et al., 2015; Gucciardi et al., 2009). In fact, the number of research studies specifically examining strengths-based approaches within a sporting context are limited (Gordon et al., 2017; Ludlham et al., 2016,

2017; Stander et al., 2017). The findings from Studies 2, 3, and 4, therefore add to the literature by providing research evidence from work specifically looking at strengths in a sporting context. Such findings are limited within the existing research, and thus the findings of sport-specific psychological strengths from work specifically adopting a strengths-based approach are new within this area. Whilst additional research is needed, such research provides a starting point and platform for future research that can build upon current findings to further knowledge within this area in the context of sport.

As well as considering the findings in relation to previous literature, it is also important to consider the findings across the four studies in relation to each other. It is unsurprising that the final findings are congruent with those identified in Studies 1 and 2 as these formed the basis of the questionnaire. All of the final strengths received 90% or higher levels of agreement from the experts in Study 2. Four of the final seven strengths identified emerged as overarching strengths from the systematic review, with two others emerging as terms that were extracted from the literature. The systematic review identified a high number of previously studied positive qualities, traits, and abilities and, as stated previously, it adds to the existing knowledge by bringing these positive qualities together and conceptualising them as potentially relevant psychological strengths. The current thesis has therefore identified psychological strengths relevant to the sporting context by identifying previously studied positive qualities, rating these as relevant alongside newly generated qualities, and then conducting statistical procedures to examine the independence of these constructs. It has done this through the lens of a strengths-based approach. Such research looking at positive qualities through the lens of a strengths-based approach had not been conducted within the sports literature previously. The fact that some of these concepts have been studied previously but in isolation highlights the importance of pulling together previous findings in the current thesis – in line with the positive psychology principle of building on existing knowledge but through the lens of a strengths-based approach (Gable & Haidt, 2005; Seligman & Csikszentmihalyi, 2000). The current research highlights potential strengths-based concepts that may therefore warrant further investigation through this lens. Furthermore, the strength identified in Study 4 of Embrace New Experiences has not been identified previously. This is akin to being willing to step out of your comfort zone, which was only identified in the systematic review from one paper. The fact that this received 100% agreement in Study 2 as relevant, and that it emerged through Studies 3 and 4, highlights this is especially an area worth further exploration in the literature.

The findings from this thesis therefore make an original contribution to the literature. The work throughout this thesis has identified, and developed, a set of psychological strengths specific to the context of sport, and a new questionnaire to assess these strengths – a gap within the sports literature. The findings therefore make a significant contribution to the literature by addressing this gap, providing additional research evidence examining the concept of strengths specifically within the sporting context, adding a set of sport-specific strengths, and a subsequent new, initially validated, questionnaire to assess these. Additionally, findings have highlighted some strengths that may be applicable across contexts. It is also important to note, that all of these findings have emerged from research evidence and have been driven by the data – in line with recommendations for the development of strengths (Held, 2018).

8.4 Critical Evaluation of the Thesis

The work conducted throughout this thesis has both numerous strengths and limitations that must be acknowledged. This thesis represents an exploration into psychological strengths within sport using systematic, robust, processes – something lacking in the literature. Traditionally, sport psychology has focused on fixing problems and weaknesses rather than focusing on strengths (Enright et al., 2014; Gordon, 2012; Ludlham et al., 2016). Considering the benefits of strengths-based approaches in other contexts (see Chapter 2), there has been limited research specifically examining strengths-based approaches within the sport psychology literature, with calls for more work to be done in this area to develop a robust evidence-base for strengths in sport (Gordon, 2012; Gordon & Gucciardi, 2011; Ludlham et al., 2016). Exploring the existing literature for potential psychological strengths, as well as having a panel of experts generate strengths they perceived as relevant and then evaluate the relevance of these in conjunction with the review findings, Studies 1 and 2 provided a robust, research-driven, evidence basis for the qualities included in the initial questionnaire. Conducting a two-stage exploration and confirmatory statistical process then provided further robustness to the identification of the final set of strengths, along with the initial validation of the final questionnaire. Such rigorous processes provide a level of strength to the work conducted throughout this thesis. Held (2018) has criticised strengths research, stating the qualities and strengths used were decided a priori rather than emerging from research evidence. The strengths identified in this thesis, through

the processes outlined, have, however, emerged from the research and are driven by the data – thus highlighting a strong point of the current thesis.

Positive psychology and strengths-based approaches are also often criticised for lacking clarity and a common language that is context specific (Kristjansson, 2010; White, 2016). By providing research evidence for psychological strengths relevant to the context of sport, this thesis aims to bring a level of clarity to this context. It is acknowledged that in doing so, additional strengths to those in the existing literature have been identified which could be said to provide less general clarity in some way. It is, however, hoped that the current research brings more contextual clarity within the sporting domain and provides opportunities for additional research to examine strengths relevant across contexts – research that is then driven by data from multiple settings. By exploring sport-specific strengths, the current research has therefore begun to address this criticism of strengths-based approaches.

When considering the data driven nature of this research, it must also be noted that some of the qualities outlined throughout parts of this thesis do not meet the definition of a psychological strength outlined. Chapter 2 defined psychological strengths as internal positive qualities, traits, or characteristics that are authentic and energising and lead to an individual's optimal level of performance. Study 1 identified some qualities that could be considered as more skills, abilities, or emotions (such as goal-setting or anger). To make sure the systematic review in Study 1 was thorough, there was an over-inclusion of qualities at this stage as subsequent stages may have removed irrelevant qualities. The information sent to participants in Round 2 of the Delphi method was a combination of the review findings and the qualities identified by the experts. Thus, both Studies 1 and 2 included qualities that may not have been psychological strengths. Had these qualities been screened, and this information removed, however, it would have been through individual subjective judgment rather than consensus from a group of experts. This therefore meant that some qualities that may not have met the definition of a psychological strength were included across the two studies. Such qualities, however, were removed by the experts and did not progress through to the final questionnaire. This highlights another strong point of the research methodology as the findings from each stage drove the process. Having a multi-stage process therefore resulted in qualities that did not meet the criteria being removed by consensus – a process with a higher level of objectivity.

The multi-stage process used within this thesis is also a strong point of the research due to the nature of the statistical procedures used in Studies 3 and 4. Whilst factor analysis can identify underlying latent constructs it cannot interpret or make sense of them (Brown,

2015). Studies 1 and 2 were therefore important to allow sense to be made of the results from Studies 3 and 4. The results from these studies allowed the underlying latent constructs that were identified to be interpreted (see Chapter 7) and defined based on research evidence. Without the multi-staged approach, such interpretations would have been more subjective and not data driven.

Despite the strengths of the methodology used in the development of the Sport-Specific Psychological Strengths Questionnaire, it is acknowledged that further work is required to provide additional evidence as to the validity and reliability of the final questionnaire. Throughout this thesis, work has identified sport-relevant strengths, used these as the basis of a new questionnaire, and then provided initial evidence of validity and reliability. As mentioned in Chapter 7, however, further work examining test-retest reliability along with convergent and discriminant validity is required (Rattray & Jones, 2007). As strengths are defined as constructs that are stable but also malleable (see section 2.6), test-retest reliability needs to be established before further work can examine potential changes or developments in the identified strengths over-time. Additionally, convergent and discriminant validity need to be examined to establish whether the psychological strengths in this questionnaire relate to theoretically similar constructs, and do not relate to dissimilar constructs, in already established, valid, questionnaires (Rattray & Jones, 2007). Such work is acknowledged as important but conducting this would require multiple further studies that extend beyond the scope of this thesis. It is recommended, however, that this work be carried out to build on the current findings. It is also acknowledged that the re-specifications made in Study 4 may have resulted in the research being more exploratory, than confirmatory, in nature (Brown, 2015). It is, therefore, recommended that a further confirmatory stage is conducted utilising the detailed model specification identified in this thesis (Brown, 2015). Re-confirming this structure would then add more weight to the seven-factor structure identified in Studies 3 and 4, especially in conjunction with evidence of convergent and divergent validity. Conducting such studies would provide further evidence for the psychometric properties of the current questionnaire (Rattray & Jones, 2007).

Furthermore, it must be noted that a limitation across this thesis is that work has focused on athletes over the age of 18 from Westernised, individualistic, cultures that speak English. Study 1 only included research evidence with a mean age of 18 years old or higher, that examined, or focused on, athletes, was written in English and pertained to such cultures. Study 2 contained only experts from Westernised cultures and all participants in Studies 3 and 4 were adult athletes, the vast majority of which were also from such cultures. It is

therefore acknowledged that the set of strengths identified, and the final questionnaire, are limited in their applicability to adult athletes from Westernised, individualistic, English speaking cultures. This also means that the final questionnaire is limited in its use with coaches as well as in early specialisation sports such as gymnastics and swimming, with further research examining psychological strengths with these athletes recommended (Mostafavifar, Best, & Myer, 2013). Additionally, it must be noted that there is the potential for bias within the participants in this thesis based on socio-economic status and background. Studies 2, 3, and 4 were all conducted online. Whilst evidence suggests this is acceptable (Asplund et al., 2007; Lewis et al., 2017), and technology is widely available, only those with access to a device that can connect to the internet could participate. It is acknowledged, therefore, that there is a possibility those from lower socio-economic backgrounds may have been unable to participate, resulting in a potential bias across studies. Indeed, socio-economic status was not requested throughout this thesis. Further research examining both this questionnaire, along with sport-specific psychological strengths, may therefore be required in those under 18 years old, those from non-Western cultures, and those from different socio-economic backgrounds to build upon the findings from the current thesis. Research could also examine all these factors to assess if certain strengths were related to different demographic characteristics (Peterson & Seligman, 2004).

When considering the participants throughout this thesis, it must also be noted that participants within Studies 3 and 4 come from a variety of competition levels. Within these studies, a broad demographic of sport participation levels were included, ranging from Olympic and World Championship level to amateur and recreational level, with a smaller number coming from the higher competition levels. It may be argued that this limits the applicability of the findings to athletes at an elite level only. Whilst athletes of this nature (Swann, Moran, & Piggott, 2015) were included throughout these studies, it is acknowledged that the research did not specifically examine the factor structure by competition level. Further research could therefore build on the current findings by examining the prevalence of these strengths within groups of athletes operating at different competition levels, along with confirming the factor structure within these different groups, individually. It must be noted, however, that the spread of participants across competition levels might actually reflect wider participation levels across sport. During the 2019-20 season, for example, 336,100 individuals participated in climbing in the UK but there are only four Olympic places (.0012% of those competing in this sport; Lange, 2020). Equally, within collegiate sport in the United States it is reported that only 1.06% of collegiate basketball players, and 1.60% of

American Footballers, become Major League professionals (Irick, 2019)[23]. Thus, the lower percentage of participants at the higher level within Studies 3 and 4 may reflect the wider spread of individuals operating at different competition levels. Equally, this spread of competition levels is similar to those found within the quantitative sport psychology literature included in the systematic review (see Chapter 5). The spread of participants used in Studies 3 and 4 may therefore be in line with those used within the sport psychology literature to examine the positive qualities, traits, and characteristics of athletes. It can therefore be said that the final questionnaire developed in this thesis may be applicable across sport competition levels more broadly. To further enhance the knowledge developed in this thesis, however, work investigating differences in psychological strengths across varied competition levels is still recommended. Such research may further enhance knowledge of the impact of competition level on psychological strengths, investigate whether any differences exist, and build upon the research evidence for the questionnaire developed throughout this thesis.

Alongside considerations of competition level are also considerations of context. The current thesis aimed to examine psychological strengths within the overall context of sport. It is noted, however, that within sport psychology research are some individual sport-specific measures, such as the Cricket Mental Toughness Inventory (Gucciardi & Gordon, 2009) and the Mental Toughness Inventory for Australian Football (Gucciardi, Gordon, & Dimmock, 2009). The questionnaire developed in the current thesis aimed to be applicable across sports, identifying psychological strengths that are common to the overall context of sport rather than individual sports. It is possible, therefore, that the strengths identified in this thesis could be examined across sports to assess if the levels of the psychological strengths identified here vary between sports. Equally, research could examine the psychometric properties of the current questionnaire in different sport settings. Findings from such research could then be compared with those from this thesis to provide either additional support to the identified strengths or whether further additional context needs to be considered. The current research has developed, and provided initial validity, for a sport-specific psychological strengths questionnaire, however such additional research is welcomed to provide further evidence for the validity of such a measure, as well as further evidence for the theoretical and applied utility.

[23] It is acknowledged that these are examples, and the reader is encouraged to look for similar statistics for other sports if they wish to do so. Providing all this detailed information is beyond the scope of this thesis.

The concepts of theoretical and applied utility also require further consideration. Within concept formation there is a trade-off between these two areas (Gerring, 1999). Such a trade-off is a potential limitation of this thesis. It is acknowledged that a questionnaire assessing seven psychological strengths may find it harder to address small, subtle, differences in psychological strengths compared to those assessing a larger number such as the VIA-IS or CSF (Hodges & Clifton, 2004; Peterson & Seligman, 2004). From a practical perspective, a larger number of strengths may allow more nuanced psychological strengths to be highlighted for specific individuals. The questionnaire developed here, however, followed recommended theoretical guidelines (Anderson & Gerbing, 1988; Rattray & Jones, 2007). Thus, the thesis followed the research evidence and was data driven in the identification of the strengths included (Held, 2018). The trade-off between a larger scale that may be slightly more practical and a parsimonious scale driven by the research, methodologies, and data is therefore acknowledged as a possible limitation. With suggestions in the literature that instrument validation should be ongoing (Carron, Brawley, & Widmeyer, 1998), it is hoped that as knowledge of psychological strengths in sport increases, particularly in applied settings, such a potential limitation can be explored further.

It must also be acknowledged that the current questionnaire only has the capacity to assess psychological strengths. It is suggested in the literature that the concept of a super-strength in sport may be constructed from a combination of underlying resources such as athletic, physical, qualities as well as more trait-like personal qualities (Ludlham et al., 2016). The current questionnaire may be able to measure the more trait-like personal qualities within such an approach but cannot assess any physical, athletic, or technical strengths that may compose a super-strength. Due to the benefits identified in other contexts, however (see Chapter 2), it was deemed that examining only psychological strengths in sport was warranted. Nevertheless, it is recommended that further research is conducted in this area, examining any potential links between psychological strengths and possible technical, physical, or athletic strengths that may also exist. This would help further our knowledge of psychological strengths as well as the potential impact they may have when considered from a super-strengths perspective.

A potential further limitation of the current research is in the application and use of the questionnaire. It is intended to allow individuals to identify their psychological strengths, thus the psychological strengths they score highest on, to then facilitate further interventions (Simmons & Lehmann, 2013). It is possible, however, that individuals may look at the psychological strengths they score lowest on and, rather than focusing on developing and

using their strengths, focus on these areas instead. Consequently, caution is advised here to ensure the questionnaire is used for its intended purpose. It is hoped that, in line with the use of the CSF, this tool can provide the foundation for conversations as the basis of strengths-based interventions (Asplund et al., 2007) but the possibility that this may not occur is acknowledged.

Whilst it is mentioned previously, the issue of reflexivity throughout this entire thesis must be noted again here. As the research involved multiple points of interpretation and reconceptualization of large amounts of data across the four studies, reflexivity must be highlighted as a potential issue (Coolican, 2004). At every stage throughout this thesis, however, triangulation occurred to minimise the potential impact of this and to reduce potential bias that may occur through the use of only one researcher (Leech & Onwuegbuzie, 2007). Not only did this occur, but a guiding framework was used at all stages (Gerring, 1999) to also help provide consistency in decision-making across all researchers. Additionally, the overall structure of this thesis aimed to remove as much subjectivity as was feasible, where possible allowing subsequent studies to remove or condense information. It is hoped that through such robust processes this research has addressed this issue, however it is still important to highlight to the reader that reflexivity may have influenced stages of the research.

It should be noted that the intention of this thesis was to provide an initial exploration of the relevant psychological strengths within the sporting context and to develop an initially validated measure of these constructs. Part of the aim of the thesis was to help progress research in this area, and so the current thesis makes no claims as to provide a final, exhaustive, set of psychological strengths in this domain. Indeed, the initial VIA-IS was not considered to be fixed, with changes and developments expected as knowledge and understanding of human strengths increased (Peterson & Seligman, 2004). The same can be said of the current questionnaire, with more additional research required to build further robust evidence around psychological strengths in sport. As this area had received little research attention before, it is acknowledged that findings of any nature need to be replicated. Through this process, and with this additional knowledge, it may be that the current structure is revised, in line with Peterson and Seligman's (2004) approach to the development of the VIA-IS. This is also in line with suggestions in the literature that instrument validation should be ongoing (Carron et al., 1998). Any such changes and revisions will be welcomed as they are an important part of progress and development of the field. The current research, however, may provide a platform for this to occur, for research and interventions to progress,

so that knowledge of strengths in sport can grow and, ultimately, be used to positively impact performance. It is therefore hoped that, whilst adding to the current literature, this research can provide the foundations on which further work can build.

When critically evaluating this thesis, it is, however, important to note the overall contribution and added value of the work as, despite potential limitations, this is a key strength of the thesis. The thesis provides a detailed exploration of the relevant psychological strengths in sport, which adds to the literature as this was yet to receive research attention. In doing this, a new set of sport-specific psychological strengths has been developed – a previous gap in the research. The thesis therefore helps to progress strengths research within a sporting context. Additionally, the identification of relevant strengths within this context occurred through a bottom-up process, avoiding previous criticisms of strengths being decided upon a priori and instead ensuring the strengths emerged from the data (Held, 2018). Resultantly, more is now known about sport-relevant psychological strengths, and thus the thesis increases conceptual clarity in this area. It also enhances conceptual clarity where the current findings support previous strengths (see section 8.3), adding value to the literature by providing support for these that has emerged from the data. It is important to highlight here that this conceptual clarity comes from rigorous, robust, research methods (as discussed earlier in this section). Additionally, studies within this thesis were conducted based on the high standards within other areas of psychology, such as utilising PRISMA and quality assessments in the systematic review, despite these processes often not being reported within sport (Allen, 2012; Nicholls & Polman, 2007). Thus, the thesis adds value to the literature by addressing a previously unresearched area and providing a new set of sport-specific psychological strengths that have emerged from research evidence based on robust methods.

Moreover, this thesis provides a new sport-specific psychological strengths questionnaire – a gap in the literature – and initial evidence of validity and reliability. This can help athletes raise self-awareness of their psychological strengths and provides a way for practitioners to initiate conversations about strengths (see section 8.5). Both uses can enhance psychological strengths use within applied settings, further highlighting how this thesis adds value to the area. What is more, not only does this thesis itself add value, but it therefore provides a basis from which other research and applied work can occur, which can then further contribute to knowledge in this area – in line with the advancement of strengths research in mainstream psychology (Peterson & Seligman, 2004). This thesis therefore enhances knowledge of relevant psychological strengths within sport, increasing conceptual clarity, and provides a questionnaire to measure these in athletes. In doing this, as noted

previously, the thesis provides a foundation that will also allow for further work in this area. Thus, this thesis has helped progress the area of psychological strengths in sport. The overall contribution, and added value, of this thesis is, therefore, a key strength that must be noted.

8.5 Applied Implications

When considering the findings, this thesis has implications for applied practice. From a practical perspective, the process of focusing on an individual's strengths begins by identification of what these strengths are within an individual (Hodges & Clifton, 2004; Peterson & Seligman, 2004; Simmons & Lehmann, 2013). It is argued that measuring these constructs facilitates a better understanding of the qualities, and hence resources, that individuals possess that can allow them to increase their performance and reach their goals (Simmons & Lehmann, 2013). Mainstream psychology research highlights substantial benefits as the result of identifying, and then using, an individual's strengths (see Chapter 2). Having a questionnaire for psychological strengths in sport therefore provides applied practitioners with a starting point to identify these with athletes. The development of a more formalised strengths-based assessment tool, that has previously been missing from the literature, can help facilitate discussions with athletes around these concepts – in line with the use of the CSF as a starting point for self-discovery (Hodges & Clifton, 2004). This could then be used to underpin applied strengths-based interventions with athletes, looking at strategies to build on these psychological strengths and ways to use them effectively (Gordon, 2012; Gordon et al., 2017; Gordon & Gucciardi, 2011; Ludlham et al., 2016).

The findings from the current thesis also provide applied practitioners with a way to help increase athlete's self-awareness of their strengths. Previous research in mainstream psychology identified that simply increasing self-awareness of strengths, even with no additional interventions conducted, resulted in multiple benefits such as increased confidence, productivity, perception of better life choices, and subjective and psychological wellbeing (Govindji & Linley, 2007; Hodges & Clifton, 2004; Proctor et al., 2009). This therefore implies applied practitioners may find benefits from using the current findings to help develop psychological strengths awareness in athletes – although further research needs to be conducted in this area. There are, however, links here with Beaumont et al.'s (2015) finding that getting athletes to understand, as well as develop, their own strengths is a method of developing robust sport-confidence. It was reported that the process of helping athletes understand their strengths was an important part of this process (Beaumont et al., 2015). It is

therefore suggested that the questionnaire developed throughout this thesis could support applied practitioners in the development of more robust sport-confidence by raising an athlete's awareness and understanding of their psychological strengths.

Furthermore, the current findings may also help applied practitioners who are working from, or adopt, a super-strengths approach. Previous research identified that this approach is being utilised by practitioners within the UK sport system, and that such an approach may be beneficial within sport (Ludlham et al., 2016, 2017). Super-strengths are reported to be made from a combination of underlying resources such as athletic, physical, qualities and more trait-like personal qualities (Ludlham et al., 2016). A barrier to such an approach being successful was identified, however, with athletes highlighting that individuals may struggle to articulate their super-strengths due to discomfort and unfamiliarity with focusing on, and discussing, these concepts (Ludlham et al., 2017). Ludlham et al. (2016; 2017) argue that current strengths assessments, such as the VIA-IS, are not context specific and thus they are not applicable to the identification of the specific super-strengths approach. The findings from the current thesis therefore provide applied practitioners with a sport-specific set of psychological strengths and an assessment that can be used in conjunction with this approach. This may help applied practitioners reduce the barriers and aid in the identification process of the personal trait-like elements of super-strengths, helping to facilitate discussions and provide a starting point for athletes to identify psychological strengths as part of this approach (Ludlham et al., 2016) – as was the case in previous contexts (Hodges & Clifton, 2004). The provision of a new set of sport-specific strengths, and subsequent assessment method, may therefore support applied practice in this area.

It must be noted here that this is a new and emerging area of research, with consistent calls for further research into strengths within sport (Gordon, 2012; Gordon & Gucciardi, 2011; Ludlham et al., 2016). It is therefore acknowledged that further recommendations for applied practitioners will require additional research evidence. Research is encouraged that examines both this questionnaire, and the impact of strengths awareness and development, in applied settings. As previously stated, however, it is hoped that the current thesis can provide an initial starting point on which further research can build to enhance knowledge within this area.

8.6 Methodological Implications

When conducting the systematic review in Study 1, it became apparent that there was a lack of consensus as to the best method to quality assess quantitative studies within the literature despite numerous methods to do so (Bland et al., 1995; Cowley, 1995; Deeks et al., 2003; Downs & Black, 1998; Lang & Kleijnen, 2010). Recommendations in the literature are therefore to choose an assessment method that fits the nature of your review (Petticrew & Roberts, 2006). This thesis, however, has identified a gap within this area of the literature. Of the six assessment methods recommended by Deeks et al. (2003), most attribute strong quality to randomised, or clinical, controlled trials (Deeks et al., 2003; Effective Public Health Practice Project, 1998). Tools such as the EPHPP assess study designs beyond randomised controlled trials, however these other study designs result in a moderate or weak rating for that category. This, therefore, reduces the chances of an overall rating of high study quality for any research design that is not a randomised, or clinical, controlled trial. Study designs such as these are, however, uncommon designs within the sport psychology literature (Shaw et al., 2005) and thus such tools reduce the chances of sport psychology studies being given strong quality ratings. This has the potential to result in studies within a sport psychology systematic review being removed, as well as stopping researchers reporting study quality or readers being able to get a true representation of the difference in quality between certain studies presented within a review – all due to a non-specific quality assessment method.

An unintended finding from this thesis is therefore the lack of a quality assessment method for studies being included within a systematic review that takes account of the different study designs used within the sport psychology literature (Shaw et al., 2005). Consequently, it is recommended that such a tool be developed to accurately assess study quality in this area. This would allow studies within systematic reviews in sport psychology to be quality assessed relative to the gold standard of research within this field. This has the potential to avoid studies being removed because of the quality assessment method being used. Additionally, it may also provide a more accurate representation of studies within the review, which in turn may allow researchers to better assess the research within the literature and potentially include quality ratings in research articles as these ratings then become more relevant. It also has the potential to allow readers to better draw their own conclusions from reading reviews that report study quality. Thus, having a tool that better represents study

quality in sport psychology, and accurately assesses this, would fill a gap that has been identified in this thesis.

8.7 Future Research Directions

Further research that would build upon the current thesis has been mentioned throughout this chapter. It is important to reiterate at this juncture that all these previously mentioned areas are still recommended and need to be considered. Of particular importance is work that adds further weight to the validity of the current questionnaire (see section 8.4). Beyond these, however, there are also other areas that future research could examine that would be of benefit to the literature.

Now that the current thesis has developed an initial way to identify an athlete's strengths, further research is required that examines the impact of increasing both psychological strengths awareness and use on different areas within sport. Such research could examine these in relation to performance and wellbeing variables, akin to mainstream psychology research (see section 2.4.2). This may increase understanding of the benefits of adopting psychological strengths-based approaches within the context of sport and provide further evidence for such approaches being applicable within this context. Additionally, as this is an emerging area with limited research, there is potential for psychological strengths to be examined in relation to multiple other areas within the sporting domain. Of particular interest may be research looking at the relationships between psychological strengths awareness and use with other areas that examine optimal functioning such as research into the Individual Zone of Optimal Functioning (Robazza, Pellizzari, & Hanin, 2004) or thriving (Brown, Arnold, Reid, & Roberts, 2018). Research into other areas, such as stress and coping (Nicholls & Polman, 2007) or posttraumatic growth in sport (Tamminen & Neely, 2016), however, might also provide enhanced understanding about the potential impact of psychological strengths in these areas.

Whilst further work is suggested that looks to examine convergent and discriminant validity with existing measures, additional research could examine links between the current psychological strengths questionnaire and existing general strengths measures. Research could examine if links exist between the strengths in this thesis and those in the VIA-IS or CSI to identify if relationships exist between psychological strengths in the context of sport and more general strengths (Peterson & Seligman, 2004; Wright et al., 2017). Similar links could also be examined between the psychological strengths identified here and more general

personality traits (Cattell & Mead, 2008; Costa & McCrae, 2008), with calls in the literature for further research looking at such links (Macdonald et al., 2007).

Peterson and Seligman (2004) acknowledge that there are different ways to display their concept of character strengths. Aligned to this idea, further research could use the current questionnaire to identify individual's psychological strengths and then investigate the different ways individuals display these strengths. This may provide further knowledge about the operationalisation of these psychological strengths, potentially enhancing knowledge around the associated behaviours. Such research may also provide an opportunity to assess links between psychological strengths and psychological skills to examine whether specific psychological skills can be used to facilitate increased strengths use.

Furthermore, research into strengths throughout this thesis has focused on athletes' strengths. Additional research could therefore examine if the current strengths are also applicable to other individuals within the sporting system, such as coaches, practitioners, or performance directors. Research could examine the strengths of these populations and the potential impact of strengths awareness, and use, with these individuals in their specific roles.

Work throughout this thesis has developed a questionnaire that can assess psychological strengths, specific to the sporting domain, in athletes. Additional research could investigate links between this method of strengths assessment and more idiographic approaches, such as Personal Construct Theory (Gucciardi & Gordon, 2009; Kelly, 1977). These methods could be used to identify an individual's strengths and the findings of these approaches then compared to the psychological strengths identified in this thesis to examine any similarities or differences. Equally, research could design intervention programmes using the current questionnaire in comparison to idiographic approaches to understand how different approaches to strengths identification and awareness may impact interventions. Doing this may provide applied practitioners with information about the effectiveness of different assessment methods and the potential benefits of using different methods depending on the nature of the desired intervention or applied setting.

8.8 Conclusions

This thesis set out to develop, and provide initial validation for, a sport-specific psychological strengths assessment tool. First, it aimed to investigate the potential relevant psychological strengths within the context of sport. Secondly, it aimed to use these as the basis for the development of a questionnaire and to explore, and confirm, the underlying

structure of this questionnaire. Through a robust evidence-based process the thesis has achieved this, identifying relevant psychological strengths within the sporting context that have emerged from the data (Held, 2018), and providing initial validity and reliability for a sport-specific psychological strengths questionnaire (the SSPSQ) – something that has been lacking within the sports literature. This thesis has therefore made a significant and original contribution to the literature as it has addressed a gap within this area, providing research into an approach which has previously received limited attention. Part of the aim of the thesis was to help progress research into psychological strengths within sport, and so the current thesis makes no claims as to provide a final, exhaustive, set of psychological strengths in this domain. Further research is recommended, and of particular importance is work that continues the development of the SSPSQ, providing additional evidence as to the validity and reliability of the final questionnaire. It is hoped, however, that whilst adding to the current literature this thesis can provide the foundations on which further work can build to establish a strong evidence base for a strengths-based approach within sport. The findings from this thesis have theoretical, applied, and methodological implications and provide a questionnaire that can form the basis of further research and intervention work in this area.

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Appendix A

The Effective Public Health Practice Project (EPHPP) Quality Assessment Tool for Quantitative Studies

QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES

COMPONENT RATINGS

A) SELECTION BIAS

(Q1) Are the individuals selected to participate in the study likely to be representative of the target population?

1 Very likely
2 Somewhat likely
3 Not likely
4 Can't tell

(Q2) What percentage of selected individuals agreed to participate?

1 80 - 100% agreement
2 60 – 79% agreement
3 less than 60% agreement
4 Not applicable
5 Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

B) STUDY DESIGN

Indicate the study design

1 Randomized controlled trial
2 Controlled clinical trial
3 Cohort analytic (two group pre + post)
4 Case-control
5 Cohort (one group pre + post (before and after))
6 Interrupted time series
7 Other specify _____
8 Can't tell

Was the study described as randomized? If NO, go to Component C.

No Yes

If Yes, was the method of randomization described? (See dictionary)

No Yes

If Yes, was the method appropriate? (See dictionary)

No Yes

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

C) CONFOUNDERS

(Q1) Were there important differences between groups prior to the intervention?

1 Yes
2 No
3 Can't tell

The following are examples of confounders:

1 Race
2 Sex
3 Marital status/family
4 Age
5 SES (income or class)
6 Education
7 Health status
8 Pre-intervention score on outcome measure

(Q2) If yes, indicate the percentage of relevant confounders that were controlled (either in the design (e.g. stratification, matching) or analysis)?

1 80 – 100% (most)
2 60 – 79% (some)
3 Less than 60% (few or none)
4 Can't Tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

D) BLINDING

(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of participants?

1 Yes
2 No
3 Can't tell

(Q2) Were the study participants aware of the research question?

1 Yes
2 No
3 Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

E) DATA COLLECTION METHODS

(Q1) Were data collection tools shown to be valid?

1 Yes
2 No
3 Can't tell

(Q2) Were data collection tools shown to be reliable?

1 Yes
2 No
3 Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

F) WITHDRAWALS AND DROP-OUTS

(Q1) Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?

1 Yes
2 No
3 Can't tell
4 Not Applicable (i.e. one time surveys or interviews)

(Q2) Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).

1 80 -100%
2 60 - 79%
3 less than 60%
4 Can't tell
5 Not Applicable (i.e. Retrospective case-control)

RATE THIS SECTION	STRONG	MODERATE	WEAK	
See dictionary	1	2	3	Not Applicable

G) INTERVENTION INTEGRITY

(Q1) What percentage of participants received the allocated intervention or exposure of interest?

1 80 -100%
2 60 - 79%
3 less than 60%
4 Can't tell

(Q2) Was the consistency of the intervention measured?

1 Yes
2 No
3 Can't tell

(Q3) Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the results?

4 Yes
5 No
6 Can't tell

H) ANALYSES

(Q1) Indicate the unit of allocation (circle one)

Community organization/institution practice/office individual

(Q2) Indicate the unit of analysis (circle one)

Community organization/institution practice/office individual

(Q3) Are the statistical methods appropriate for the study design?

1 Yes
2 No
3 Can't tell

(Q4) Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?

1 Yes
2 No
3 Can't tell

GLOBAL RATING

COMPONENT RATINGS

Please transcribe the information from the gray boxes on pages 1-4 onto this page. See dictionary on how to rate this section.

A	**SELECTION BIAS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
B	**STUDY DESIGN**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
C	**CONFOUNDERS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
D	**BLINDING**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
E	**DATA COLLECTION METHOD**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
F	**WITHDRAWALS AND DROPOUTS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	Not Applicable

GLOBAL RATING FOR THIS PAPER (circle one):

1	STRONG	(no WEAK ratings)
2	MODERATE	(one WEAK rating)
3	WEAK	(two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

No Yes

If yes, indicate the reason for the discrepancy

1 Oversight
2 Differences in interpretation of criteria
3 Differences in interpretation of study

Final decision of both reviewers (circle one):

1 STRONG
2 MODERATE
3 WEAK

Quality Assessment Tool for Quantitative Studies Dictionary

The purpose of this dictionary is to describe items in the tool thereby assisting raters to score study quality. Due to under-reporting or lack of clarity in the primary study, raters will need to make judgements about the extent that bias may be present. When making judgements about each component, raters should form their opinion based upon information contained in the study rather than making inferences about what the authors intended.

A) SELECTION BIAS

(Q1) Participants are more likely to be representative of the target population if they are randomly selected from a comprehensive list of individuals in the target population (score very likely). They may not be representative if they are referred from a source (e.g. clinic) in a systematic manner (score somewhat likely) or self-referred (score not likely).
(Q2) Refers to the % of subjects in the control and intervention groups that agreed to participate in the study before they were assigned to intervention or control groups.

B) STUDY DESIGN

In this section, raters assess the likelihood of bias due to the allocation process in an experimental study. For observational studies, raters assess the extent that assessments of exposure and outcome are likely to be independent. Generally, the type of design is a good indicator of the extent of bias. In stronger designs, an equivalent control group is present and the allocation process is such that the investigators are unable to predict the sequence.

Randomized Controlled Trial (RCT)

An experimental design where investigators randomly allocate eligible people to an intervention or control group. A rater should describe a study as an RCT if the randomization sequence allows each study participant to have the same chance of receiving each intervention and the investigators could not predict which intervention was next. If the investigators do not describe the allocation process and only use the words 'random' or 'randomly', the study is described as a controlled clinical trial.
See below for more details.
Was the study described as randomized?

Score YES, if the authors used words such as random allocation, randomly assigned, and random assignment.
Score NO, if no mention of randomization is made.

Was the method of randomization described?

Score YES, if the authors describe any method used to generate a random allocation sequence.
Score NO, if the authors do not describe the allocation method or describe methods of allocation such as alternation, case record numbers, dates of birth, day of the week, and

any allocation procedure that is entirely transparent before assignment, such as an open list of random numbers of assignments. If NO is scored, then the study is a controlled clinical trial.

Was the method appropriate?

Score YES, if the randomization sequence allowed each study participant to have the same chance of receiving each intervention and the investigators could not predict which intervention was next. Examples of appropriate approaches include assignment of subjects by a central office unaware of subject characteristics, or sequentially numbered, sealed, opaque envelopes.
Score NO, if the randomization sequence is open to the individuals responsible for recruiting and allocating participants or providing the intervention, since those individuals can influence the allocation process, either knowingly or unknowingly.
If NO is scored, then the study is a controlled clinical trial.

Controlled Clinical Trial (CCT)
An experimental study design where the method of allocating study subjects to intervention or control groups is open to individuals responsible for recruiting subjects or providing the intervention. The method of allocation is transparent before assignment, e.g. an open list of random numbers or allocation by date of birth, etc.

Cohort analytic (two group pre and post)
An observational study design where groups are assembled according to whether or not exposure to the intervention has occurred. Exposure to the intervention is not under the control of the investigators. Study groups might be nonequivalent or not comparable on some feature that affects outcome.

Case control study
A retrospective study design where the investigators gather 'cases' of people who already have the outcome of interest and 'controls' who do not. Both groups are then questioned or their records examined about whether they received the intervention exposure of interest.

Cohort (one group pre + post (before and after)
The same group is pretested, given an intervention, and tested immediately after the intervention. The intervention group, by means of the pretest, act as their own control group.

Interrupted time series
A time series consists of multiple observations over time. Observations can be on the same units (e.g. individuals over time) or on different but similar units (e.g. student achievement scores for particular grade and school). Interrupted time series analysis requires knowing the specific point in the series when an intervention occurred.

C) CONFOUNDERS

By definition, a confounder is a variable that is associated with the intervention or exposure and causally related to the outcome of interest. Even in a robust study design, groups may not be balanced with respect to important variables prior to the intervention. The authors should indicate if confounders were controlled in the design (by stratification or matching)

or in the analysis. If the allocation to intervention and control groups is randomized, the authors must report that the groups were balanced at baseline with respect to confounders (either in the text or a table).

D) BLINDING

(Q1) Assessors should be described as blinded to which participants were in the control and intervention groups. The purpose of blinding the outcome assessors (who might also be the care providers) is to protect against detection bias.

(Q2) Study participants should not be aware of (i.e. blinded to) the research question. The purpose of blinding the participants is to protect against reporting bias.

E) DATA COLLECTION METHODS

Tools for primary outcome measures must be described as reliable and valid. If 'face' validity or 'content' validity has been demonstrated, this is acceptable. Some sources from which data may be collected are described below:

Self reported data includes data that is collected from participants in the study (e.g. completing a questionnaire, survey, answering questions during an interview, etc.).

Assessment/Screening includes objective data that is retrieved by the researchers. (e.g. observations by investigators).

Medical Records/Vital Statistics refers to the types of formal records used for the extraction of the data.

Reliability and validity can be reported in the study or in a separate study. For example, some standard assessment tools have known reliability and validity.

F) WITHDRAWALS AND DROP-OUTS

Score **YES** if the authors describe BOTH the numbers and reasons for withdrawals and drop-outs.
Score **NO** if either the numbers or reasons for withdrawals and drop-outs are not reported.
The percentage of participants completing the study refers to the % of subjects remaining in the study at the final data collection period in all groups (i.e. control and intervention groups).

G) INTERVENTION INTEGRITY

The number of participants receiving the intended intervention should be noted (consider both frequency and intensity). For example, the authors may have reported that at least 80 percent of the participants received the complete intervention. The authors should describe a method of measuring if the intervention was provided to all participants the same way. As well, the authors should indicate if subjects received an unintended intervention that may have influenced the outcomes. For example, co-intervention occurs when the study group receives an additional intervention (other than that intended). In this case, it is possible that

the effect of the intervention may be over-estimated. Contamination refers to situations where the control group accidentally receives the study intervention. This could result in an under-estimation of the impact of the intervention.

H) ANALYSIS APPROPRIATE TO QUESTION

Was the quantitative analysis appropriate to the research question being asked?

An intention-to-treat analysis is one in which all the participants in a trial are analyzed according to the intervention to which they were allocated, whether they received it or not. Intention-to-treat analyses are favoured in assessments of effectiveness as they mirror the noncompliance and treatment changes that are likely to occur when the intervention is used in practice, and because of the risk of attrition bias when participants are excluded from the analysis.

Component Ratings of Study:

For each of the six components A – F, use the following descriptions as a roadmap.

A) SELECTION BIAS

Strong: The selected individuals are very likely to be representative of the target population (Q1 is 1) **and** there is greater than 80% participation (Q2 is 1).
Moderate: The selected individuals are at least somewhat likely to be representative of the target population (Q1 is 1 or 2); **and** there is 60 - 79% participation (Q2 is 2). 'Moderate' may also be assigned if Q1 is 1 or 2 and Q2 is 5 (can't tell).
Weak: The selected individuals are not likely to be representative of the target population (Q1 is 3); **or** there is less than 60% participation (Q2 is 3) **or** selection is not described (Q1 is 4); and the level of participation is not described (Q2 is 5).

B) DESIGN

Strong: will be assigned to those articles that described RCTs and CCTs.
Moderate: will be assigned to those that described a cohort analytic study, a case control study, a cohort design, or an interrupted time series.
Weak: will be assigned to those that used any other method or did not state the method used.

C) CONFOUNDERS

Strong: will be assigned to those articles that controlled for at least 80% of relevant confounders (Q1 is 2); **or** (Q2 is 1).
Moderate: will be given to those studies that controlled for 60 – 79% of relevant confounders (Q1 is 1) **and** (Q2 is 2).
Weak: will be assigned when less than 60% of relevant confounders were controlled (Q1 is 1) **and** (Q2 is 3) **or** control of confounders was not described (Q1 is 3) **and** (Q2 is 4).

D) BLINDING

Strong: The outcome assessor is not aware of the intervention status of participants (Q1 is 2); **and t**he study participants are not aware of the research question (Q2 is 2).

Moderate: The outcome assessor is not aware of the intervention status of participants (Q1 is 2); **or** the study participants are not aware of the research question (Q2 is 2); **or b**linding is not described (Q1 is 3 and Q2 is 3).
Weak: The outcome assessor is aware of the intervention status of participants (Q1 is 1); **and** the study participants are aware of the research question (Q2 is 1).

E) DATA COLLECTION METHODS

Strong: The data collection tools have been shown to be valid (Q1 is 1); **and** the data collection tools have been shown to be reliable (Q2 is 1).
Moderate: The data collection tools have been shown to be valid (Q1 is 1); **and** the data collection tools have not been shown to be reliable (Q2 is 2) **or** reliability is not described (Q2 is 3).

Weak: The data collection tools have not been shown to be valid (Q1 is 2) **or** both reliability and validity are not described (Q1 is 3 and Q2 is 3).

F) WITHDRAWALS AND DROP-OUTS - a rating of:

Strong: will be assigned when the follow-up rate is 80% or greater (Q2 is 1).
Moderate: will be assigned when the follow-up rate is 60 – 79% (Q2 is 2) **OR** Q2 is 5 (N/A).
Weak: will be assigned when a follow-up rate is less than 60% (Q2 is 3) or if the withdrawals and drop-outs were not described (Q2 is 4).

Appendix B

The VAKS Quality Assessment Tool for Qualitative Studies

User guideline

The guide is divided into five main subjects: formal requirements, credibility, transferability, dependability and confirmability, each including a number of criteria. The main topics are weighted equally and no topic is assigned higher value than others.

Each question is evaluated on a four-point scale from 4 = "totally agree" to 1 = "totally disagree" with two points in between: 3 0 "agree" and 2 = "disagree". The scale indicates the extent to which a criterion has been met.

If you believe a criterion is met completely you answer "totally agree".
If you believe a criterion is not met at all you answer "totally disagree".
If you are uncertain whether a criterion has been met because there is no information you answer
"totally disagree".
If you are uncertain whether a criterion has been met because of unclear information or because only some criteria have been met you answer "agree" or "disagree" depending on the extent of your uncertainty.

On each subject a score is calculated by adding the points for each criterion and dividing this number by the number of criteria. Questions without relevance for the article in question are left out (see example) and not included in the calculation of results. From the example below a total of 14 points has been given. This is divided by the number of relevant questions = 5.

Example of calculation of total score for the subject Dependability

Dependability	Totally disagree_ __totally agree 1 2 3 4	Comments and arguments
• A logical connection between data and themes developed by the researcher is described.	X	
• The process of analysis is described.	X	
• There is a clear description of the results.	X	
• The findings are credible.	X	
• Any quotations are reasonable/support the interpretation.		Quotations are not used in this study (not relevant).
• There is agreement between the findings of the study and the conclusions.	X **Total score: 14/5 = 2,8 points**	

Total score

The scoring is inspired by the AGREE instrument used for evaluation of clinical guidelines. The overall evaluation includes a choice between three options: “Recommended”, “Recommended with reservations” or “Not recommended”. This is addressed as follows. The score for each main subject is added and if the result is 15 or above the article is recommended. If the result is between 10 and 14 the article is recommended with reservations and if the result is below 10 the article is not recommended. If there are weaknesses in one or several subjects and the results are still evaluated as relevant we encourage you to ask the researcher to elaborate the subject in question.

Guide for evaluation of credibility and validity of qualitative articles

Title of article: **Evaluated by:**

Formal requirements	Evaluation Totally disagree_ _totally agree 1 2 3 4	Comments and arguments
• Background of the study is described through existing literature.		
• It appears why the study is relevant.		
• It is described how demands to informed consent, voluntariness and anonymization of data have been met (Helsinki Declaration or Nursing Research in the Nordic Countries).		
• It is described if there are relevant approvals (e.g. The Data Agency Board, Ethical Committee).		
• The researcher has described whether the study can affect the informants.		
• The researcher has described what will be done if the study affects the participants.		
	Total score:	

Credibility	Totally disagree_ __totally agree	Comments and arguments
	1 2 3 4	
• The purpose is described clearly.		
• The method is described.		
• Arguments for choice of method have been made.		
• The method suits the purpose.		
• There is a description of how data were registered (digitally, by video, notes, field notes etc.).		
• Triangulation has been applied.		
• The research process is described.		
	Total score:	

Transferability	Evaluation Totally disagree_ __totally agree	Comments and arguments
	1 2 3 4	
• Selection of informants or sources is described.		
• There is a description of the informants.		
• It is argued why these informants are selected.		
• The context (place and connection of research) is described.		
• The relationship between the researcher(s) and the context (in which the research takes place) as well as the informants.		
	Total score:	

Dependability	Totally disagree_ __totally agree	Comments and arguments
	1 2 3 4	
• A logical connection between data and themes developed by the researcher is described.		
• The process of analysis is described.		
• There is a clear description of the results.		
• The findings are credible.		
• Any quotations are reasonable/supporting the interpretation.		
• There is agreement between the findings of the study and the conclusions.		
	Total score:	

Confirmability	Evaluation Totally disagree_ __totally agree	Comments and arguments
	1 2 3 4	
• The researcher has described his background and perceptions or pre-understanding.		
• There are references to theory/theorists (clear who has inspired the analysis).		
• There is a description of whether themes emerged from data or if they were formulated in advance.		
• It is described who conducted the study.		
• It is described how the researcher participated in the process of analysis.		
• The researcher has described whether his position is important in relation to the findings.		
	Total score:	

Can you recommend this article?

Recommended (≥15)
Recommended with reservations (≥10 <15)
Not recommended (<10)

Appendix C

An example of an Individual Data Table Used for the Extraction of Information in Study 1

Study ID:		
Author:		
Year/ Date:		
Study Questions/ Aims:		
Participants:	**Number:**	
	Age: (Range, mean, SD)	
	Sex:	
	Level/ Type:	
	Ethnicity/ Socio-demographic information:	
Country/ Setting:		
Sports:		
Design:		
Method/ Procedure:		

Measures used:	
Sample Type:	
Sample Size analysed:	
Method of Data analysis:	
Key findings/ Outcomes:	
(Other findings not identified by the authors)	
Authors Key Conclusions:	
Definitions of Terms/ Constructs:	

Appendix D

An Overall Summary Table of the Papers Included in Study 1

Ref. No.	Authors	Year	Sample Characteristics					Study type[a]	Study Question	Measures[b]
			Size	Age	Level	Country	Sport			
1	Allen, Greenlees, & Jones	2011	253	M age =21.10	International, National, Regional, Club, University	Great Britain	N/R	Quant.	To explore the main and interactive effects of the big 5 personality dimensions on sport-related coping.	Quest.
2	Andrew, Grobbelaar, & Potgieter	2007	120	M age =18.78	Top and lower ranked Rugby players	South Africa	Rugby union	Quant.	To compare top and lower ranked rugby players on psychological factors.	Quest.
3	Anshel	1995	77 48	Range 17.40-22.30 Range 17.10-19.60 Total M age =19.40	International Club	Australia	Swimming	Quant.	To examine differences in psychological characteristics and behaviours of elite and non-elite competitive swimmers.	Survey
4	Bertollo Saltarelli, & Robazza	2009	14	M age =27.43 Range 21-33	International	Italy	Modern pentathlon	Qual.	To examine the preparation and coping strategies that elite modern pentathletes display.	Int.

Ref. No.	Authors	Year	Sample Characteristics					Study type[a]	Study Question	Measures[b]
			Size	Age	Level	Country	Sport			
5	Bois, Sarrazin, Southon, & Boiché	2009	41	M age =28.80	Professional	N/R	Golf	Quant.	To investigate the psychological characteristics of professional golfers and their relation to performance.	Quest., performance data
6	Bull, Shambrook, James, & Brooks	2005	12	N/R	International	Great Britain	Cricket	Qual.	To understand what mental toughness is within cricket.	Int.
7	Butt, Weinberg, & Culp	2010	15	M age =20.00 Range 19-22	NCAA Div. 1	USA	American football, basketball, hockey, rowing, soccer, swimming, track and field, volleyball	Qual.	To explore athletes' perceptions of mental toughness.	Int.
8	Cook, Crust, Littlewood, Nesti, & Allen-Collinson	2014	8	N/R	English Premier League Academy coaches	Great Britain	Soccer	Qual.	To explore coaches' and support staffs' perceptions on mental toughness and its development.	Int.
9	Corrado, Murgia, & Freda	2014	43	M age =26.40 Range 20-37	Professional	Italy	Rugby union	Quant.	To examine differences in focus and mental skills depending on experience.	Quest.
10	Coulter, Mallett, & Gucciardi	2010	6 4	M age =29.30 Range 25-34	International athletes	Australia	Soccer	Qual.	To explore mental toughness in Australian soccer.	Int.

Ref. No.	Authors	Year	Sample Characteristics					Study type[a]	Study Question	Measures[b]
			Size	Age	Level	Country	Sport			
			5	M age =44.30 Range 40-47 M age =59.40 Range 57-64	UEFA A licenced coaches Parents					
11	Covassin & Pero	2004	24	M age =20.40	Collegiate	USA	Tennis	Quant.	To examine the relationship between self-confidence, anxiety, and mood in collegiate tennis players.	Quest.
12	Cox, Shannon, McGuire, & McBride	2010	627	N/R	Collegiate	USA	American football, baseball, soccer, swimming, track and field	Quant.	To determine the degree to which subjective performance can be predicted by psychological skills.	Quest.
13	Crust & Azadi	2010	107	M age (males) =22.60 M age (females) =21.10	National, Club, Collegiate	Great Britain	N/R	Quant.	To assess the relationship between mental toughness and athletes' use of psychological performance strategies.	Quest.
14	Curry, Snyder, Cook, Ruby, & Rehm	1997	86 84	Total M age =20.50 N/R	Collegiate athletes Non-athlete controls	USA	Track and field	Quant.	To explore the role of hope in college student athletes.	Quest.

Ref. No.	Authors	Year	Sample Characteristics					Study type[a]	Study Question	Measures[b]
			Size	Age	Level	Country	Sport			
			9	N/R	Collegiate athletes					
			106		Collegiate athletes					
15	Davis & Mogk	1994	30	M age =22.34 Range 14-39	International, Professional	Canada	Cycling, diving, figure skating, gymnastics, luge, skiing, squash, swimming, track and field	Quant.	To compare elite, sub-elite, and recreational athletes and non-athletes on personality variables.	Quest.
			30	M age =21.27 Range 15-46	Collegiate level					
			30	M age =22.47 Range 13-38	Recreational					
			30	M age =23.34 Range 18-36	Non-athlete controls					
16	Devenport	2006	3	M age =37.00	International	Great Britain	Kick boxing	Qual.	To explore the contribution of psychology to the development and maintenance of expert kickboxing performance.	Int.
17	Duffy, Lyons, Moran,	2006	191	M age =21.30	International	Ireland	Archery, badminton, boxing, canoeing, cycling,	Qual.	To investigate the factors perceived to have facilitated or inhibited	Quest.

Ref. No.	Authors	Year	Sample Characteristics					Study type[a]	Study Question	Measures[b]
			Size	Age	Level	Country	Sport			
	Warrington, & MacManus			Range 16-36			equestrianism, handball, judo, motor sports, orienteering, rowing, sailing, shooting, snooker, squash, surfing, swimming, table tennis, tennis, track and field, weightlifting		international athletes' development and success.	
18	Durand-Bush & Salmela	2002	10	Range 19-36	Minimum 2 gold medals at the Olympics or World Championships	N/R	Bob sledding, ice-hockey, skiing, speed skating, swimming, synchronised swimming, track and field, wrestling	Qual.	To examine factors that contributed to the development and maintenance of expert athletic performance.	Int.
19	Eklund, Gould, & Jackson	1993	6	M age =26.60 Range 23-29	Olympic Medallists	USA	Wrestling	Qual.	To identify the differences in psychological factors among 6 medal winning wrestlers.	Int.
20	Fletcher & Sarkar	2012	12	M age =47.50	Olympic gold medallists	Great Britain, Ireland, New Zealand	Curling, cycling, figure skating, hockey, modern pentathlon, pentathlon, rowing, sailing, track and field	Qual.	To explore the relationship between psychological resilience and optimal sport performance.	Int.

Ref. No.	Authors	Year	Sample Characteristics					Study type[a]	Study Question	Measures[b]
			Size	Age	Level	Country	Sport			
21	Galli & Vealey	2008	10	M age =24.10	Collegiate and Professional	USA	American football, basketball, boxing, hockey, rugby, soccer, swimming, tae kwon do, track and field,	Qual.	To explore athletes' perceptions and experiences of resilience.	Int.
22	Gat & McWhirter	1998	17	M age =26.90 Range 18-46	Competitive	USA	Cycling	Quant.	To assess differences between competitive and non-competitive cyclists and non-athletes on personality dimensions.	Quest.
			17	M age =27.00 Range 19-45	Recreational					
			17	M age =24.30 Range 19-43	Non-athlete controls					
23	Géczi, Bognár, Tóth, Sipos, & Fügedi	2008	25	M age =27.21	International	Hungary	Ice-hockey	Quant.	To identify psychological factors that affect ice hockey players.	Quest.
			27	M age =16.78	International under 18 comparison group					
24	Gee, Marshall, & King	2010	63	N/R	Professional	Canada	Hockey	Quant.	To assess if a measure of personality has a relationship to athletic performance over a 15-year period.	Quest., performance data

Ref. No.	Authors	Year	Sample Characteristics					Study type[a]	Study Question	Measures[b]
			Size	Age	Level	Country	Sport			
25	Golby & Sheard	2004	115	M age =25.50 Range 18-35	International, Professional	Great Britain	Rugby league	Quant.	To examine measures of personality style and mental skills in predicting success.	Quest.
26	Gondola & Wughalter	1991	16	M age =27.40 Range 21-35	Professional	N/R	Tennis	Quant.	To understand the profile of female athletes.	Quest.
27	Gould, Dieffenbach, & Moffatt	2002	10	M age =35.10 Range 24-42	Olympic Champions	USA	Ice-hockey, skiing, speed skating, swimming, track and field, wrestling	Mixed.	To examine the psychological characteristics of, and their development in, Olympic champions.	Int., Quest.
28	Greene, Sears, & Clark	1993	39	M age =18.30 Range 17-21	Collegiate, Intramural	USA	American football, flag football	Quant.	To investigate differences in trait anger between varsity and intramural athletes.	Quest.
29	Greenleaf, Gould, & Dieffenbach	2001	15	M age =32.27 Range 23-44	Olympic	N/R	N/R	Qual.	To gain an understanding of factors perceived to have influenced Olympic athletes' performance.	Int.
30	Gucciardi, Gordon, & Dimmock	2008	11	M age =42.00	Level 3 accredited coaches	Australia	Australian football	Qual.	To reveal a holistic understanding of mental toughness in Australian football.	Int.
31	Gucciardi, Mahoney, Jalleh, Donovan, & Parkes	2012	423	M age =25.64 Range 14-66	Olympic and World Championship level	Australia	N/R	Quant.	To explore perfectionistic profiles within elite athletes.	Quest.

Ref. No.	Authors	Year	Sample Characteristics					Study type[a]	Study Question	Measures[b]
			Size	Age	Level	Country	Sport			
32	Guillén & Sánchez	2009	71 13	M age =23.20 Range 17-33 M age =24.90 Range 19-33	1st Division professionals International	Spain	Basketball	Quant.	To investigate state and trait anxiety levels in Spanish elite female basketball players.	Quest.
33	Halldorsson, Helgason, & Thorlindsson	2012	50 64	M age =34.00 M age =30.00	International, National, Professional Control – below national	Iceland	Basketball, handball, soccer, swimming, track and field	Quant.	To test if elite level and second level athletes differ on socio-psychological variables.	Quest.
34	Hanton, Neil, Mellalieu, & Fletcher	2008	217	M age =20.40 Range 18-36	National and above	N/R	N/R	Quant.	To examine the influence of competitive experience on anxiety, confidence, and coping.	Quest.
35	Hanton, O'Brien, & Mellalieu	2003	233	M age =23.56 Range 19-34	International, county/ district level	N/R	Cricket	Quant.	To examine debilitative and facilitative anxiety as a function of skill level.	Quest.
36	Hays, Maynard, Thomas, & Bawden	2007	14	M age =31.20 Range 21-48	International	N/R	Bob skeleton, diving, hockey, judo, modern pentathlon, rugby, speed skating, swimming, tae	Qual.	To identify the sources and types of confidence salient to world class athletes.	Int.

Ref. No.	Authors	Year	Sample Characteristics					Study type[a]	Study Question	Measures[b]
			Size	Age	Level	Country	Sport			
							kwon do, track and field			
37	Holt & Mitchell	2006	9	M age =18.50	3rd Division soccer	Great Britain	Soccer	Qual.	To examine psychological aspects of the talent development experiences of youth players.	Int.
38	Hughes, Case, Stuempfle, & Evans	2003	66	M age =38.70	Ultra-marathon runners	N/R	Ultra-endurance marathon	Quant.	To identify the personality profile of ultra-marathon runners.	Quest.
39	Johnson, Tenenbaum, Edmonds, & Castillo	2008	15 5 13	Elites Range 21-28 Sub-elites Range 19-22 Coaches – N/R Parents – N/R	Olympic gold medallists, world record holders, ranked top 5 in the world Sub-elite qualified for Olympics	USA	Swimming	Qual.	To investigate the differences in the development of elite and sub-elite swimmers.	Int.
40	Jones & Swain	1995	68 65	M age =23.00 M age =22.68	International, Professional Amateur, club	Great Britain	Cricket	Quant.	To examine the distinction between intensity and direction of anxiety as a function of skill level.	Quest.

Ref. No.	Authors	Year	Sample Characteristics					Study type[a]	Study Question	Measures[b]
			Size	Age	Level	Country	Sport			
41	Jones, Hanton, & Connaughton	2002	10	M age =31.20	International	N/R	Golf, gymnastics, netball, rugby union, swimming, track and field, trampolining	Qual.	To explore how mental toughness can be defined, and the essential attributes.	Int.
42	Jones, Hanton, & Connaughton	2007	8 3 4	Range 25-48 Range 38-60 Range 35-45	Min. 1 gold at Olympics or World Championships Coaches Sport Psychologists	Australia, Canada, Great Britain	Boxing, cricket, judo, pentathlon, rowing, rugby union, squash, swimming, track and field, triathlon	Qual.	To define mental toughness and identify the underpinning attributes in a broad range of sports.	Focus groups and Int.
43	Jones, Hanton, & Swain	1994	97 114	Total M age =19.98, Total Range 13-29	International/ Olympic Non-elite	Great Britain	Swimming	Quant.	To examine intensity and direction of anxiety in the context of sports performance.	Quest.
44	Kajtna, Tušak, Baric, & Burnik	2004	38 38 76	M age =24.82 M age =23.55 M age =24.82	International high-risk sports International non-high-risk sports	N/R	Badminton, diving, downhill mountain biking, karate, kayaking, motor sports, paragliding, rowing, sailing, skiing, skydiving, swimming, track and field	Quant.	To investigate, and compare, the personality traits of high-risk sports athletes.	Quest.

Ref. No.	Authors	Year	Sample Characteristics					Study type[a]	Study Question	Measures[b]
			Size	Age	Level	Country	Sport			
					Non-athlete controls					
45	Kioumourtzoglou, Tzetzis, Derri, & Mihalopoulou	1997	13	M age =22.67	International athletes	Greece	Basketball, polo, volleyball	Quant.	To assess the different psychological skills of elite athletes in different ball games.	Quest.
			12	M age =22.67	International athletes					
			19	M age =22.67	International athletes					
			15	M age =14.87	International junior athletes					
			18	M age =21.69	Non-elite athlete controls					
46	Lane & Wilson	2011	34	Range 23-59	Ultra-marathon runners	Great Britain	Ultra-endurance running	Quant.	To investigate relationships between trait emotional intelligence and emotional state changes in an ultra-endurance race.	Quest.
47	MacNamara, Button, & Collins	2010 a	7	M age =30.10 Range 21-37	International athletes	N/R	Curling, hockey, javelin, judo, rowing,	Qual.	To explore the attributes that facilitates the successful development of athletes.	Int.
			7	N/R	Parents					

Ref. No.	Authors	Year	Sample Characteristics					Study type[a]	Study Question	Measures[b]
			Size	Age	Level	Country	Sport			
48	MacNamara, Button, & Collins	2010 b	8 8 8	M age =28.90 M age =28.50 M age =41.80 Total range 25-56	International individual sports International team sports Professional orchestral Musicians	N/R	Hockey, rugby, track and field	Qual.	To determine the psychological characteristics of developing excellence that facilitated successful negotiation of the pathway to excellence.	Int.
49	Mallett & Hanrahan	2004	10	M age =27.30 Range 22-34	International	Australia	Track and field	Qual.	To examine what drives some athletes to achieve at the highest level whilst others fail to achieve their potential.	Int.
50	Martinent & Ferrand	2006	166	M age (males) =21.20 M age (females) =21.40	Regional	France	Basketball, gymnastics, handball, judo, rugby, soccer, table tennis, track and field	Quant.	To see if self-confidence and intensity and direction of anxiety would differ across profiles of perfectionism.	Quest.
51	Mellalieu, Hanton, & O'Brien	2004	162	M age =26.34 Range 18-32	International, National	N/R	Golf, rugby union	Quant.	To examine control, intensity, and direction of anxiety with competitive trait anxiety as a function of sport type and competitive experience.	Quest.

Ref. No.	Authors	Year	Sample Characteristics					Study type[a]	Study Question	Measures[b]
			Size	Age	Level	Country	Sport			
52	Mills, Butt, Maynard, & Harwood	2012	10	M age =47.50 Range 31-62	UEFA A/Pro licenced coaches	Great Britain	Soccer	Qual.	To examine the factors that are perceived to influence the development of elite youth football players.	Int.
53	Neil, Mellalieu, & Hanton	2006	65 50	Total M age =20.38 Range 18-36	Professional Semi-professional	Great Britain	Rugby union	Quant.	To examine the intensity and direction of anxiety and psychological skills usage in rugby players of different skill levels.	Quest.
54	Phillips, Davids, Renshaw, & Portus	2010	11	M age =44.00	International	Australia	Cricket	Qual.	To investigate the utility of a multi-dimensional model of expertise development.	Int.
55	Phillips, Davids, Renshaw, & Portus	2014	11 10	Athletes – N/R Coaches – N/R	International	Australia	Cricket	Qual.	To investigate the acquisition of expertise in cricket fast bowling.	Int.
56	Piedmont, Hill, & Blanco	1999	79	Range 18-21	Collegiate	USA	Soccer	Quant.	To determine if the 5-factor model could predict athletic performance.	Quest.
57	Poczwardowski, Diehl, O'Neil, Cote, & Haberl	2014	6	M age =23.50	Olympic athletes	USA	N/R	Mixed.	To examine the resources that contributes to a successful transition to the Olympic Training Centre.	Int., Quest.

Ref. No.	Authors	Year	Sample Characteristics					Study type[a]	Study Question	Measures[b]
			Size	Age	Level	Country	Sport			
58	Robazza, Bertollo, & Bortoli	2006	100	M age =28.44 M age =24.64 M age =22.44 M age =22.80	High skilled rugby players Low skilled rugby players High skilled judokas Low skilled judokas	Italy	Judo, rugby	Quant.	To investigate interpretations of anger, and examine differences in this as a function of sport type.	Quest.
59	Robazza & Bortoli	2003	374	M age =23.80 Range 16-38 M age =21.80 Range 13-44	International, National level athletes Lower than national level athletes	Italy	Basketball, biathlon, canoeing, skiing, soccer, swimming, tennis, volleyball	Quant.	To examine the differences in intensity, direction, and hedonic tone of trait anxiety and self-confidence by competitive standard.	Quest.
60	Robazza & Bortoli	2007	197	M age =26.60 Range 18-37 M age =26.23 Range 18-40	Professional 1st Division athletes Non-professional 3rd Division athletes	Italy	Rugby	Quant.	To assess perceptions of facilitative and debilitative effects of trait anger.	Quest.

Ref. No.	Authors	Year	Sample Characteristics					Study type[a]	Study Question	Measures[b]
			Size	Age	Level	Country	Sport			
61	Ruiz & Hanin	2011	20	M age =24.95 Range 17-38	International	Spain	Karate	Quant.	To investigate anger in karate.	Quest.
62	Ruiz-Tendero & Martín	2012	48	M age =25.50 Range 17-38	Olympic, World, and European Championship level athletes	Spain	Triathlon	Quant.	To compare coaches' and athletes' perceptions of important positive and negative factors affecting performance.	Quest.
			14	M age =37.40	Professional coaches					
63	Seligman, Nolen-Hoeksema, Thornton, & Thornton	1990	47 33	N/R	Collegiate athletes	USA	Swimming	Quant.	To examine if pessimistic explanatory style predicts power performance.	Quest., Coaches' ratings, & performance data
64	Sheard & Golby	2010	1,566	M age =21.70 Range 17-42	International, National, County, Club	Great Britain	Artistic roller skating, basketball, canoeing, cricket, equestrianism, gymnastics, hockey, martial arts, netball, racquet sports, rugby league, rugby union, soccer, swimming, track and field, volleyball	Quant.	To see if hardiness can differentiate elite level sports performers.	Quest.

Ref. No.	Authors	Year	Sample Characteristics					Study type[a]	Study Question	Measures[b]
			Size	Age	Level	Country	Sport			
65	Smith & Christensen	1995	104	N/R	Minor league athletes	USA	Baseball	Quant.	To study the role of physical and psychological skills as predictors of performance.	Quest.
66	Spieler, Czech, Joyner, Munkasy, Gentner, & Long	2007	108	M age =20.13	Collegiate	USA	American football	Quant.	To determine what factors predict starting status of collegiate football players.	Quest.
67	Steiner, Denny, & Stemmle	2010	461 61	M age =19.60 Age matched	Collegiate athletes Collegiate controls	USA	N/R	Quant.	To examine if elite student athletes can be distinguished from non-athlete students based on emotion regulation techniques.	Quest.
68	Szabo & Urbán	2014	80 40	Total M age =22.20	International, National, Non-athlete controls	Hungary	Boxing, judo	Quant.	To examine emotional intelligence in combat sports.	Quest.
69	Taylor, Gould, & Rolo	2008	176	M age =28.90 Range 18-45	Olympic	USA	Archery, badminton, baseball, basketball, canoeing, cycling, diving, equestrianism, fencing, gymnastics, judo, modern pentathlon, rowing, sailing,	Quant.	To investigate differences in performance strategies of US Olympians.	Quest.

Ref. No.	Authors	Year	Sample Characteristics					Study type[a]	Study Question	Measures[b]
			Size	Age	Level	Country	Sport			
							shooting, soccer, softball, swimming, synchronised swimming, table tennis, tennis, track and field, trampolining, triathlon, volleyball, water polo, weightlifting, wrestling			
70	Thelwell & Maynard	2000	100 98	M age =26.60 Range 17-53 M age =26.30 Range 17-51	Professional batsmen Professional bowlers	Great Britain	Cricket	Quant.	To examine if there is agreement on the factors important for repeatable good performance.	Rank order task
71	Thelwell & Maynard	2002	18 20	M age =25.00 Range 18-44 M age = 26.00 Range 17-42	Professional	Great Britain	Cricket	Mixed.	To investigate repeatable good performance in professional cricketers.	Int., repertory grid, rank order task

Ref. No.	Authors	Year	Sample Characteristics					Study type[a]	Study Question	Measures[b]
			Size	Age	Level	Country	Sport			
			198	M age = 26.45 Range 17-53						
72	Vernacchia, McGuire, Reardon, & Templin	2000	15	N/R	Olympic athletes	USA	Track and field	Qual.	To present and describe the salient aspects of the development of elite athletes.	Int.
73	von Guenthner & Hammermeister	2007	142	M age =19.90 Range 18-24	Division 1 collegiate athletes	USA	American football, basketball, soccer, tennis, track and field, volleyball,	Quant.	To assess the link between wellness and psychological variables thought to be related to athletic performance.	Quest.
74	Weinberg, Butt, & Culp	2011	10	N/R	NCAA Coaches	USA	Baseball, basketball, figure skating, golf, hockey, swimming, tennis, track and field, volleyball	Qual.	To explore coaches' perceptions of mental toughness attributes.	Int.
75	Weissensteiner, Abernethy, & Farrow	2009	3 2 5	N/R	International athletes State level athletes International coaches	Australia	Cricket	Qual.	To develop a conceptual model of expertise in cricket batting.	Int.

Ref. No.	Authors	Year	Sample Characteristics					Study type[a]	Study Question	Measures[b]
			Size	Age	Level	Country	Sport			
			4		State and national level administrators					
76	Weissensteiner, Abernethy, Farrow, & Gross	2012	11 10	M age =22.50 M age =20.70 Total range 20.30-26.10	State and national level Below state level	Australia	Cricket	Quant.	To determine the psychological characteristics and skills required for batting success in cricket.	Quest.
77	Woodcock, Holland, Duda, & Cumming	2011	26	N/R	District level Coaches, administrators, and parents	Great Britain	Rugby	Qual.	To examine the perspectives of influential others on the required psychological qualities of young rugby players.	Focus groups
78	Zizzi, Deaner, & Hirschhorn	2003	61	Range 18-23	Collegiate	USA	Baseball	Quant.	To look at the relationship between emotional intelligence and athletic performance.	Quest.

[a]Quant. refers to a quantitative design and Qual. refers to a qualitative design
[b]Quest. refers to questionnaires and Int. refers to interviews.

Appendix E

A Full List of Sports Included in the Systematic Review Papers From Study 1

Sport	Number of papers including each sport		
	Qualitative Papers	Quantitative Papers	Total
American Football	2	4	6
Archery	1	1	2
Artistic Roller-Skating	-	1	1
Australian Football	1	-	1
Badminton	1	2	3
Baseball	1	4	5
Basketball	3	8	11
Biathlon	-	1	1
Bob Skeleton	1	-	1
Bob Sledding	1	-	1
Boxing	3	2	5
Canoeing	1	3	4
Climbing	-	1	1
Cricket	6	6	11[a]
Cross Country	-	1	1
Curling	2	-	2
Cycling	2	3	5
Diving	1	3	4
Downhill Mountain Biking	-	1	1
Equestrian	1	2	3
Fencing	-	1	1
Figure Skating	2	1	3
Flag Football	-	1	1
Golf	2	2	4
Gymnastics	1	4	5
Handball	1	2	3
Hockey	7	2	9
Ice-Hockey	2	2	3[a]
Javelin	1	-	1
Judo	4	4	8
Karate	-	2	2
Kayaking	-	1	1
Kick Boxing	1	-	1
Luge	-	1	1
Martial Arts (non-specific)	-	1	1
Modern Pentathlon	3	1	4
Motorsport	1	1	2
Netball	1	1	2
Orienteering	1	-	1

Paragliding	-	1	1
Pentathlon	2	-	2
Polo	-	1	1
Racquet Sports (non-specific)	-	1	1
Rowing	5	2	7
Rugby (non-specific)	4	3	7
Rugby League	-	2	2
Rugby Union	2	6	8
Sailing	2	2	4
Shooting	1	1	2
Skiing	2	4	5[a]
Skydiving	-	1	1
Snooker	1	-	1
Soccer	6	9	15
Softball	-	2	2
Speed Skating	3	1	3[a]
Squash	2	1	3
Surfing	1	-	1
Swimming	10	11	20[a]
Synchronised Swimming	1	1	2
Table tennis	1	2	3
Tae kwon do	2	-	2
Tennis	2	5	7
Track and Field	13	10	22[a]
Trampolining	1	1	2
Triathlon	1	2	3
Ultra-Endurance Marathon Running	-	2	2
Volleyball	2	5	7
Water Polo	-	1	1
Weightlifting	1	1	2
Wrestling	3	3	5[a]
Sport Information Not Provided	2	6	7[a]

[a] One paper was removed from each of these totals as these were mixed design papers and so were duplicated in the qualitative and quantitative figures.

Appendix F

A Full List of Sports in Which Experts From Study 2 had Experience Working

Sport	Number of Participants	Sport	Number of Participants
Archery	2	Swimming	5
Athletics	7	Table Tennis	1
Badminton	3	Tennis	4
Boccia	1	Triathlon	1
Bowls	2	Weightlifting	2
Boxing	5	Wheelchair Basketball	2
Canoeing	2	Wheelchair Curling	1
Cricket	6	Wheelchair Rugby	2
Curling	1		
Cycling	5		
Disability Swimming	1		
Diving	1		
Extreme Sports	1		
Fencing	3		
Field Hockey	1		
Football	8		
Golf	9		
Gymnastics	2		
Hockey	2		
Judo	2		
Lacrosse	1		
Lawn Bowls	1		
Modern Pentathlon	1		
Motorsport	2		
Netball	2		
Para-Archery	1		
Para-Cycling	1		
Para-Fencing	1		
Powerlifting	1		
Rally Driving	1		
Rugby	6		
Rugby Union	3		
Sailing	5		
Shooting	5		
Skeleton	2		
Snowboarding	1		
Squash	3		

Appendix G

The Participant Information and Consent Form From Study 2

Information Sheet

Please retain this for future reference.

Research Title: Character Strengths in Sport: Identifying the Positive Psychological Qualities Possessed by Athletes that Allow them to Flourish and Achieve.

Thank you for responding to the initial invitation to participate in this online research project. The purpose of this research is to identify and understand the relevant character strengths within a sports setting – that is, the positive traits, or qualities, of athletes that are natural to them, allow them to thrive, and bring out their best self. This research is being conducted as part of a Ph.D. research project at the University of Central Lancashire (UCLan), where it has received ethical approval.

Your input will help further understanding as to the relevant character strengths within sport, and will help develop future directions for research and practice within this area. Specifically, we will look to use the strengths identified to form the basis of an assessment tool that will allow individuals within sport an opportunity to identify their own strengths. You have been invited to take part in this study, but in order to take part you need to have *at least 5 years' experience working with elite level athletes across 2 or more sports*. If this is not the case, please let the research team know (contact details below).

How to take part?

Please read the following information, and then decide whether you wish to take part in this research project. Participation is voluntary, and if you do not wish to participate, please ignore this invitation.

If you do still wish to participate, please sign (either by hand, electronically, or typing your name) the consent form (attached) and return it to the research team (CBeaumont@uclan.ac.uk).

Background Information

This research takes a positive psychology approach. Positive psychology looks at positive traits, strengths of individuals, and optimal functioning. The approach states that for individuals to function positively and at their best there needs to be more than simply the absence of deficits or weakness – there needs to be the presence, and use, of positive aspects within the individual. To improve positive functioning and optimal performance we therefore need to spend time developing the positive aspects of an individual rather than simply focusing on reducing weaknesses.

A key component of this centers around helping individuals to identify and use their strengths – the topic of this research. Traditionally, when we look to improve performance we focus on

weaknesses, but this approach targets the development of existing strengths in order to develop optimal functioning. Specifically, the research is looking into character strengths, which are defined as:

"The positive parts of an individual's personality that impact how they think, feel, and behave, and are the keys to bringing out their best self."

Character strengths are therefore the positive traits, qualities, or characteristics that allow people to thrive as individuals – they are not physical skills or talents, but personality traits and part of the individual's character. These characteristics are not either present or not present, but exist within people in degrees. Strengths-based psychology focuses on identifying your top strengths as an individual (those that you possess more of) and then using these to improve performance. The purpose of this research is therefore to try and identify and understand the relevant character strengths within a sports setting.

We are not looking to list all the positive qualities required to be an elite/ successful athlete, or stating that all of these need to be present for an individual to thrive. Rather, we are looking to identify the positive qualities, traits, and characteristics that have allowed athletes you have worked with to thrive and achieve as individuals. This is so that we can gain an understanding as to the relevant strengths that may impact positive functioning within sport, and develop a method for individuals to identify their top strengths, i.e. of all the positive character strengths which does the individual possess more of. This will allow further research to assess how we can use individual's top character strengths in sport in order to impact positive functioning.

A helpful analogy:

Consider weaknesses and strengths like parts of a sailboat. If you plug the holes in the bottom of a boat (weaknesses) it will stop you from sinking, but it is not what helps you to move forwards – you need to use the sails (your strengths) to get where you want to. Fixing weaknesses is important, and stops you from "sinking" but it is using your "sails" or strengths that will help you achieve what you want to, and to move towards your desired goal.

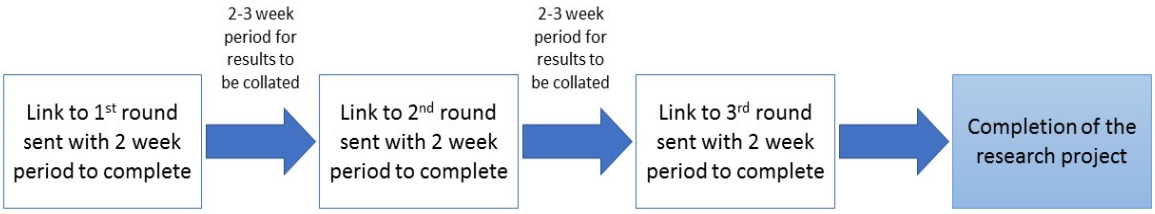
What will I have to do?

Participation will involve three separate online surveys (or rounds) spread over a period of approximately 12 weeks, and will require no more than 1.5 hours of your time in total over this period. The three rounds will be completed on three separate occasions, with approximately two-three weeks between each round. This is because the results of each round will influence the information and structure of the next.

In round one you will complete a questionnaire where you will be asked to generate potential character strengths that you have seen in athletes. The information you generate in round one will then be combined with the strengths identified by the other participants, along with findings from previous research, and this information will be sent out in round two. In this round you will be asked to rate the relevance of all the strengths generated in round one. Based on the overall ratings from all participants, the strengths will then be grouped into three categories, and this information will be sent out to you in round three. In this round you will be asked if you agree with the overall rating of each strength, and given an opportunity to

provide a different rating. Each round is therefore shaped by your views and comments, combined with those of the other participants.

For each round, you will be emailed a link which takes you to the survey – this can be accessed on your phone, tablet, or computer. For each round, you will have approximately 2 weeks to complete the survey, and the questionnaire can be completed any time within this period - so you can complete it at your own convenience. Within the survey, you will be required to either generate a short response, or rate different items. It is estimated that the first round will take no more than 20-30 minutes to complete, with rounds 2 and 3 taking no more than 10-20 minutes each.



There are no right or wrong answers, we are simply interested in your views.

Consent and withdrawal

If, after reading this information, you consent to taking part in the study please sign the consent form (either by hand or electronically) and return it to the research team (CBeaumont@uclan.ac.uk).

If you wish to withdraw as a participant from this study, you may do so at any time. You are not required to complete any questions or rounds that you do not wish to. In order to withdraw from the study you only need to email the research team (CBeaumont@uclan.ac.uk) informing them that you wish to withdraw. No reasons need to be provided.

In terms of withdrawing your results, you will be presented with a screen upon completion of each round of the survey asking you to confirm that you wish to submit your results. If you would like to withdraw your results at this stage of each round, please do not confirm you would like your results to be submitted and follow the on-screen instructions. However, if you click to confirm you would like your results to be submitted then you cannot withdraw these results from the study as they will be merged with other participants' and so will be unrecognisable as your own. As the information in each round of this research is based upon participants' responses, if you withdraw from this study after completing any of the rounds, the information you provide will still be included in subsequent rounds. For example, if you complete round one (and click submit on the survey) and decide to withdraw before round two, the strengths you provided in round one will still be included in the information sent to the other participants in round two. Therefore, once your results for each round have been submitted, they cannot be removed from the study.

Anonymity

Only the one member of the research team (Chris Beaumont) will have access to your name and email address – no other members of the research team, or the other experts, will know who is taking part in this research project. This information will be kept in a separate, password

protected file. You will not be asked to include your name in any of rounds, and so your name will at no stage be connected to the information you generate. You will, instead, create your own unique participant number in round one that you can use in the other rounds. As you will create this yourself, no member of the research team will be able to connect this number to you, and so will not be able to identify the information you provide as yours. This means that any information you generate in this research will remain completely anonymous.

All anonymous data will be securely stored for up to 5 years following the completion of the research. After this period it will be destroyed. Any publication of the data will report group data only, and will not single out your individual responses.

Feedback

As part of your involvement in this research project you will receive a debrief sheet at the end of the study, and if you would like can be provided with a full set of results.

If you have any questions, at any time throughout the research, please feel free to get in touch using the contact information below.

If you have any concerns about the research that you wish to raise with somebody who is independent of the research team, you should raise this with the University Officer for Ethics (OfficerForEthics@uclan.ac.uk).

Contact Information

PhD Researcher: Chris Beaumont, School of Psychology, University of Central Lancashire, Fylde Road, Preston, PR1 2HE; CBeaumont@uclan.ac.uk

Director of Studies: Dr Paul J Taylor, School of Psychology, University of Central Lancashire, Fylde Road, Preston, PR1 2HE; PJTaylor@uclan.ac.uk

Second Supervisor: Dr Andy Morley, School of Psychology, University of Central Lancashire, Fylde Road, Preston, PR1 2HE; AMMorley@uclan.ac.uk

Third Supervisor: Dr Jamie Taylor, School of Psychology, University of Central Lancashire, Fylde Road, Preston, PR1 2HE;99 JATaylor2@uclan.ac.uk

CONSENT FORM

Character strengths in sport: Identifying the positive psychological qualities possessed by athletes that allow them to flourish and achieve.

Chris Beaumont, Dr Paul Taylor, Dr Andy Morley, Dr Jamie Taylor, School of Psychology.

Please read the following statements and initial the boxes to indicate your agreement

Please initial box

I confirm that I have read and understand the information sheet, dated August 2017 for the above study and have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	☐
I understand that my participation is voluntary and that I am free to withdraw from the study at any time, without giving a reason.	☐
I agree to take part in the above study.	☐
I agree that my responses gathered in this study may be stored (after it has been fully anonymised) in a specialist data centre and may be used for future research.	☐
I understand that it will not be possible to withdraw my responses from the study after they have been submitted, and that if I withdraw from the study after completing any round(s) of the survey the information I have submitted will still be included in subsequent rounds, as it has been anonymized.	☐

Name of Participant	Date	Signature
Chris Beaumont		
Name of Researcher	Date	Signature

Round 1 Information: Understanding Character Strengths in Sport

Dear Participant,

Thank you for agreeing to take part in this research project (as titled above). As stated in the initial email, this research project is trying to identify character strengths in sport (with a definition of these provided in section two).

This is the first of three rounds which will make up the overall study. This round is split in to two parts: the first will focus on your background and experience, and the second will ask for your views on character strengths in sport. There are no right or wrong answers; we are simply looking for your opinion. We would be grateful if you could respond to each question, but if you are unsure or do not have a response please state this.

This round should take you approximately 20-30 minutes to complete. You can complete it at any time that is convenient for you; however, it must be completed by the (INSERT DATE) for your responses to be used in the next round. You will receive a reminder about completing this survey one week before this date.

At the end of the round there is space for you to state any additional comments – please feel free to include anything in this section that you think is relevant.

You will be asked again if you agree to consent to take part in this project, specifically in this round. Please remember you may withdraw from this study at any time and are not required to complete any questions or rounds that you do not wish to. You will be presented with a screen upon completion of this round of the survey asking you to confirm that you wish to submit your results. If you would like to withdraw your results at this stage of the round, please do not confirm you would like your results to be submitted and follow the on-screen instructions. However, if you click to confirm you would like your results to be submitted then you cannot withdraw these results from the study as they will be merged with other participants' and so will be unrecognisable as your own. As the information in each round of this research is based upon participants' responses, if you withdraw from this study after completing this round, the information you provide will still be included in subsequent rounds – that is to say, the character strengths you provided in this round will still be included in the information sent to the other participants in round two. Therefore, once your responses to this round have been submitted, they cannot be removed from the study.

For further information about the project, please refer back to the information sheet. If you require a copy of this please contact the research team: CBeaumont@uclan.ac.uk. If you have any concerns about the research that you wish to raise with somebody who is independent of the research team, you should raise this with the University Officer for Ethics (OfficerForEthics@uclan.ac.uk).

Thank you

Round 2 Information: Understanding Character Strengths in Sport

Dear Participant,

Thank you for your responses in round one of this research project. This is the second round of the overall study looking at identifying and understanding character strengths in sport. The aim of this round is to evaluate the previous findings to highlight the key, relevant, character strengths within the sports setting.

As with round one, there are no right or wrong answers; we are simply looking for your opinion. Also, you can complete this round at any time that is convenient for you; however, for your responses to be used in the next round it must be completed by (INSERT DATE). As with the previous round, you will receive a reminder about completing this survey one week before this date. This round should take between 10-20 minutes to complete, and is made up of only one section.

At the end of the round there is space for you to state any additional comments – please feel free to include anything in this section that you think is relevant.

You will be asked again if you agree to consent to take part in this project, specifically in this round. Please remember you may withdraw from this study at any time and are not required to complete any questions or rounds that you do not wish to. As in round one, you will be presented with a screen upon completion of this round of the survey asking you to confirm that you wish to submit your results. If you would like to withdraw your results at this stage of the round, please do not confirm you would like your results to be submitted and follow the on-screen instructions. However, if you click to confirm you would like your results to be submitted then you cannot withdraw these results from the study as they will be merged with other participants' and so will be unrecognisable as your own. As the information in each round of this research is based upon participants' responses, if you withdraw from this study after completing this round, the information you provide will still be included in subsequent rounds – that is to say that the scores and ratings you provided in this round will still be included in the information sent to the other participants in round three. Therefore, once your responses to this round have been submitted, they cannot be removed from the study.

For further information about the project, please refer back to the information sheet. If you require a copy of this please contact the research team: cbeaumont@uclan.ac.uk. If you have any concerns about the research that you wish to raise with somebody who is independent of the research team, you should raise this with the University Officer for Ethics (OfficerForEthics@uclan.ac.uk).

Thank you

Round 3 Information: Understanding Character Strengths in Sport

Dear Participant,

Thank you for your responses in the previous rounds of this research project. This is the third, and final, round of the overall study looking at identifying and understanding character strengths in sport. The aim of this round is to ensure that a consensus is established about the most relevant/important sport-specific character strengths, and to provide you with an opportunity to change any of your ratings.

As with the previous rounds, you can complete this at any time that is convenient for you; however, for your responses to be included in the final set of results it must be completed by (INSERT DATE). You will also receive a reminder about completing this survey one week before this date. This round should take no more than 10-20 minutes to complete, and is made up of only one section.

At the end of the round there is space for you to state any additional comments – please feel free to include anything in this section that you think is relevant.

You will be asked again if you agree to consent to take part in this project, specifically in this round. Please remember you may withdraw from this study at any time and are not required to complete any questions or rounds that you do not wish to. As in previous rounds, you will be presented with a screen upon completion of this round of the survey asking you to confirm that you wish to submit your results. If you would like to withdraw your results at this stage of the round, please do not confirm you would like your results to be submitted and follow the on-screen instructions. However, if you click to confirm you would like your results to be submitted then you cannot withdraw these results from the study as they will be merged with other participants' and so will be unrecognisable as your own. Therefore, once your responses to this round have been submitted, they cannot be removed from the study.

For further information about the project, please refer back to the information sheet. If you require a copy of this please contact the research team: cbeaumont@uclan.ac.uk. If you have any concerns about the research that you wish to raise with somebody who is independent of the research team, you should raise this with the University Officer for Ethics (OfficerForEthics@uclan.ac.uk).

Thank you

Appendix H

The Percentage Agreement of Experts in Round 3 of Study 2 on the Categorisation of the Psychological Strengths Identified

Overall Category	Psychological Strength	No. of participant ratings	% agreement with being in that category
Relevant	Coachability	10	100.00%
	Commitment	10	100.00%
	Competitiveness	10	100.00%
	Dedication	10	100.00%
	Desire to continually improve	10	100.00%
	Determination	10	100.00%
	Drive	10	100.00%
	High self-motivation	10	100.00%
	Mental strength	10	100.00%
	Passion	10	100.00%
	Perseverance	10	100.00%
	Persistence	10	100.00%
	Personal Responsibility	10	100.00%
	Professional Attitude	10	100.00%
	Self-awareness	10	100.00%
	Willing to learn	10	100.00%
	Willing to step out of comfort zone	10	100.00%
	Ability to perform under pressure	10	90.00%
	Adaptation	10	90.00%
	Coping with setbacks	10	90.00%
	Desire	10	90.00%
	Discipline	10	90.00%

Overall Category	Psychological Strength	No. of participant ratings	% agreement with being in that category
	Emotion control	10	90.00%
	Peaking under pressure	10	90.00%
	Work ethic	10	90.00%
	Ability to view obstacles as challenges	10	80.00%
	Attentional control	10	80.00%
	Goal-orientated/ Task focused	9	77.78%
	Love of competing	9	77.78%
	Mental preparation	10	70.00%
	Preparation	10	70.00%
	Physical preparation	10	60.00%
Somewhat Relevant	Awareness of environment/ situation	10	100.00%
	Killer instinct	9	100.00%
	Not willing to accept 2nd best	10	100.00%
	Patience	10	100.00%
	Pragmatic	10	100.00%
	Realistic expectations	10	100.00%
	Realistic view of achievements	10	100.00%
	Ability to maximise resources	10	90.00%
	Controlling arousal	10	90.00%
	Courage	10	90.00%
	Down to earth perspective	10	90.00%

Overall Category	Psychological Strength	No. of participant ratings	% agreement with being in that category
	High enthusiasm	10	90.00%
	Need for achievement	10	90.00%
	Positive attitude	10	90.00%
	Positive goal beliefs	10	90.00%
	Responsive	10	90.00%
	Ability to build and maintain relationships	10	80.00%
	Analytical	10	80.00%
	Comfort with conflict	10	80.00%
	Conscientiousness	10	80.00%
	Coping with not winning, having excelled	10	80.00%
	Decision making	10	80.00%
	Emotional intelligence	10	80.00%
	Enjoys performing on the big stage	10	80.00%
	Facilitative interpretations of anxiety	10	80.00%
	Honesty	10	80.00%
	Problem solver	10	80.00%
	Reflective	10	80.00%
	Routines	10	80.00%
	Sport intelligence	10	80.00%
	Winning mentality	9	77.78%
	Ability to read and react to the environment quickly	10	70.00%
	Automaticity	10	70.00%

Overall Category	Psychological Strength	No. of participant ratings	% agreement with being in that category
	Concentration	10	70.00%
	Control	10	70.00%
	Leadership	10	70.00%
	Optimism	10	70.00%
	Prioritising sport	10	70.00%
	Robust confidence	10	70.00%
	Sacrifice	10	70.00%
	Self-set challenging targets	10	70.00%
	Sense of humour	10	70.00%
	Showing robustness during difficult times	10	70.00%
	Values	9	66.67%
	Activation	10	60.00%
	Adherence to plans	10	60.00%
	Organisation	10	60.00%
	Communication	10	50.00%
	Goal-setting	10	50.00%
Not Relevant	Ability to simplify	10	100.00%
	Balanced	10	100.00%
	Freedom from worry	9	100.00%
	Acceptability	10	90.00%
	Aggression	10	90.00%
	Agreeableness	10	90.00%
	Anger	10	90.00%
	Anticipation	10	90.00%
	Athletic identity	10	90.00%
	Challenge	10	90.00%
	Creative	10	90.00%
	Energy giver	10	90.00%

Overall Category	Psychological Strength	No. of participant ratings	% agreement with being in that category
	Focus on career development	10	90.00%
	Fun/enjoyment	10	90.00%
	Headstrong	10	90.00%
	Inspirational	10	90.00%
	Lower levels of anxiety	10	90.00%
	Methodical	10	90.00%
	Neuroticism	10	90.00%
	Sportspersonship	10	90.00%
	People orientation	9	88.89%
	Considerate	10	80.00%
	Evaluative	10	80.00%
	Forward thinker	10	80.00%
	Good enough is not good enough	10	80.00%
	Good teammate/ play for the team	10	80.00%
	Hope	10	80.00%
	Imagery	10	80.00%
	Independence	10	80.00%
	Knowledge	10	80.00%
	Not willing to accept failure	10	80.00%
	Perfectionism	10	80.00%
	Persuasive	10	80.00%
	Principled	10	80.00%
	Risk taker	10	80.00%
	Selflessness	10	80.00%
	Social skills/ Intelligence	10	80.00%

Overall Category	Psychological Strength	No. of participant ratings	% agreement with being in that category
	Team responsibility	10	80.00%
	Curiosity/ Inquisitiveness	10	70.00%
	Detail oriented/ attention to detail	10	70.00%
	Humble	10	70.00%
	Pride	10	70.00%
	Relaxation	10	70.00%
	Respect	10	70.00%
	Openness	10	60.00%
	Self-talk	10	60.00%
	Trustworthy	10	60.00%

Appendix I

The Psychological Strengths Included in Study 3's Initial Questionnaire Development Phase, Their Definitions, and the Psychological Strengths From Study 2 That Comprised These Qualities

Psychological Strength Included	Psychological Strength Identified in Study 2	Definition
Commitment	Commitment Dedication	An individual's dedication to doing what is necessary and leaving no stone unturned
Work-ethic	Work-ethic Professional attitude	An ability to push oneself and work hard
Self-motivation	Drive Desire High self-motivation	An intrinsic drive that pushes one forwards
Perseverance	Coping with setbacks Perseverance Persistence Determination Mental strength	One's ability to keep going and to persist in the face of obstacles and difficulties, managing setbacks
Competitiveness	Competitiveness Love of competing	One's desire to perform better than a comparable standard - either one's own personal standard or that of other competitors
Perform under pressure	Ability to perform under pressure Peaking under pressure	An ability to perform and rise to the occasion and thrive when under pressure
Openness	Willing to learn Desire to continually improve	One's tendency to be willing to learn, try, and master new things in order to improve

Psychological Strength Included	Psychological Strength Identified in Study 2	Definition
Goal-oriented/ task focused	Goal-oriented/ task focused	One's ability to remain focused on one's goal
Ability to view obstacles as challenges	Ability to view obstacles as challenges	One's ability to view obstacles and difficulties as challenges to accomplish rather than reasons to give up
Discipline	Discipline	One's ability to stick to the plan
Attentional control	Attentional control	One's ability to focus on the right thing at the right time
Self-awareness	Self-awareness	One's understanding of oneself and what works for them
Emotion control	Emotion control	One's ability to not allow thoughts, feelings, and physical sensations to interfere with performance
Coachability	Coachability	One's ability to be instructed, or corrected, and to act on this instruction
Adaptation	Adaptation	One's ability to adapt to the demands of a situation
Passion	Passion	One's enjoyment and love of one's sport
Personal responsibility	Personal responsibility	One's ability to act on one's own and taking responsibility for one's self
Willing to step out of comfort zone	Willing to step out of comfort zone	The courage to put oneself in situations that one is not comfortable with

Appendix J

The Initial 90 Items Included in the First Draft of the Questionnaire in Study 3

Psychological Strength	Item				
Commitment	I am completely dedicated to my sport	I enjoy dedicating time to my sport	I am willing to give whatever it takes to reach my full potential	When it comes to my sport, I ensure no stone is left unturned	I love putting all my energy into my sport
Work-ethic	I look forward to working hard	My work ethic is one of my strong points	I am happy to do extra work when I need to	I work hard no matter what	When I need to work harder, I enjoy pushing myself
Self-motivation	I am driven by an internal desire to achieve	I have a strong internal feeling that pushes me on	I can motivate myself well	I do not require others to motivate me	Motivation comes easily to me
Perseverance	Coping when things go wrong is one of my strong points	When obstacles arise I am able to keep going	I persist in the face of difficulties	I continue with things even when they become very difficult	I do not give up
Competitiveness	Competing against others gets the best out of me	I love competing against others	Competing against myself is something I enjoy	I consider my competitiveness to be one of my strong points	I thrive on trying to beat my previous best performance
Openness	It is important to me to learn new things	I am open to things that will help me develop	I am constantly looking for ways to improve	I am thrilled when I learn something new	I like to do new and different things

Psychological Strength	Item				
Perform under pressure	I thrive when put under pressure	Being able to deliver a performance when it matters is one of my strong points	Under pressure I am able to think clearly	I am able to execute appropriate skills when under pressure	I am at my best when required to perform under pressure
Goal-oriented/ task focused	When I achieve one goal I am able to focus on the next	I am focused on achieving my goals	I value my ability to focus on the tasks that I know will help me achieve my goals	I am able to break my goals down into tasks that are more easily achievable	Being focused on completing the task at hand is important to me
Ability to view obstacles as challenges	I see obstacles as challenges to overcome	When I encounter a difficulty I am able to see this as a challenge	I approach things that may interfere with my performance as a challenge	I see difficult situations as opportunities rather than problems	My ability to see potential obstacles as a challenge is one of my strong points
Discipline	I am capable of sticking to my plan	When I make plans, I follow through with them	I am a highly disciplined person	I have a high level of self-restraint	Showing discipline is one of my strong points
Attentional control	I am good at focusing on the right thing at the right time	I can maintain concentration in the face of distractions	I am able to switch my focus on and off when required	I can maintain my concentration during competition	I can maintain my concentration during training
Self-awareness	I understand my own needs	I consider myself highly self-aware	I am aware of what I need to perform at my best in training	I am aware of what I need to perform at my best in competition	No matter what the situation, I am aware of how I respond
Emotional control	I do not let emotions interfere with my performance	I can handle unpleasant feelings	I can clear interfering emotions quickly	I rarely struggle to keep my feelings under control	I have control over my emotions
Coachability	I welcome advice on how to get better	I value input from my coach	I regularly seek out feedback from my coach	I enjoy discussing how I can develop with my coach	I make changes to my training based on

Psychological Strength	Item				
					feedback from my coach
Adaptation	I am able to adapt to the demands of a situation	My flexibility to adapt to situations is one of my strong points	I adapt well to change	When unexpected events occur, I am able to modify my behaviour effectively	I am able to adjust to unexpected situations
Passion	I love my sport	I am passionate about my sport	I enjoy discussing my sport with others	I feel excited about all aspects of my sport	Thinking about my sport gives me a genuine sense of enjoyment
Personal responsibility	It is important to me to be able to take responsibility for myself	I am able to act on my own	I do not rely on others to do things for me	I take ownership of my actions	I take responsibility for my performance
Willing to step out of comfort zone	I willingly put myself in situations where I am not necessarily comfortable	I am not afraid to step out of my comfort zone	I enjoy situations that stretch my comfort zone	I am happy managing the uncertainty of acting outside of my comfort zone	I am not afraid to do something different to what I normally do

Appendix K

Study 3 Participant Information and Instructions

Information and Instructions

Research Title: Character Strengths in Sport: Development and Validation of a New Sport-Specific Strengths Questionnaire

Thank you for visiting this online questionnaire page and considering participating in this research.

Please read the following information carefully before continuing.

What is this research project about?

This research is part of a Ph.D. project being run at the University of Central Lancashire by UK Chartered Sport and Exercise Psychologist Chris Beaumont. The purpose of it is to finalise, and validate, a new questionnaire that assesses an individual's character strengths in sport. Character strengths refer to the positive qualities, or parts of your personality, that you already have and that are part of who you are and help you to thrive – for example personal qualities such as discipline, competitiveness, or emotional control etc. It has been shown that being able to identify your strengths can lead to lots of benefits to your performance.

Your input into this research will allow us to finalise, and validate, a new questionnaire that assesses character strengths in sport. This will provide a way for those who take part in sport to identify their own strengths in these areas, allowing them to further develop these and potentially improving performance. If you want much more in-depth background information then please click in the box below.

You are invited to take part in this research, but you need to *regularly take part in sport* (this can be at any level) and be *at least 18 years old.*

What will I be asked to do?

If you choose to take part, you will only be asked to complete an online questionnaire. This will take around 15 minutes to complete. It will cover some brief background questions (such as age, gender etc.) and then ask you to agree or disagree whether a series of statements are like you or unlike you. There are no right or wrong answers, we are simply interested in your responses.

Please note participation is *voluntary* and if you do not wish to participant please ignore this invitation.

What are the benefits of taking part?

At the end of the research you can enter a prize draw to potential win £50 of amazon vouchers by providing an email address. The draw will take place once all data has been collected, and

the winner contacted via the email address provided. Your email address will be used for no other purpose and not passed on to anyone else.

What happens to the information I provide?

The information you provide will be used as part of a Ph.D. research project and may also be published in academic journals and/or other formats (e.g. conference presentations). At no stage will you be asked to provide your name and so there will be no method of identifying the information you provide as yours or linking you to any of the data. If you enter into the prize draw the email address you provide will be stored separately from your data and so the information you provide in this research will remain completely anonymous. All anonymous data will be securely stored for up to 5 years following the completion of the research. After this period it will be destroyed. Any publication of the data will report group data only, and will not single out your individual responses.

Consent and withdrawal

If, after carefully reading this information, you consent to taking part in the study please answer the consent question below by saying "yes." Doing this will be considered as you consenting to take part in the research. Please take as long as you need to read and re-read this information before you decide to take part.

You are not required to complete any questions that you do not wish to and are free to withdraw from this study, without needing to provide a reason for withdrawal. To withdraw, you only need to close down the web page before submitting your responses. Please be aware, however, that once you have clicked to submit your responses you cannot then withdraw these from the study as they will be merged with other participants' and so will be unrecognisable as your own.

Problems or Feedback

At the end of the questionnaire you will be presented with a debrief online. If you have any questions, at any time throughout the research, please feel free to get in touch using the contact information below.

If you have any concerns about the research that you wish to raise with somebody who is independent of the research team, you should raise this with the University Officer for Ethics (OfficerForEthics@uclan.ac.uk).

Contact Information:

PhD Researcher: Chris Beaumont, School of Psychology, University of Central Lancashire, Fylde Road, Preston, PR1 2HE; CBeaumont@uclan.ac.uk

Director of Studies: Dr Paul J Taylor, School of Psychology, University of Central Lancashire, Fylde Road, Preston, PR1 2HE; PJTaylor@uclan.ac.uk

(Optional Pop-up Information:

Background Information

This research takes a positive psychology approach. Positive psychology looks at positive traits, strengths of individuals, and optimal functioning. The approach states that for individuals to function positively and at their best there needs to be more than simply the absence of deficits or weakness – there needs to be the presence, and use, of positive aspects within the individual. To improve positive functioning and optimal performance we therefore need to spend time developing the positive aspects of an individual rather than simply focusing on reducing weaknesses.

A key component of this centres around helping individuals to identify and use their strengths – the topic of this research. Traditionally, when we look to improve performance we focus on weaknesses, but this approach targets the development of existing strengths in order to develop optimal functioning. Specifically, the research is looking into character strengths, which are defined as:

"The positive parts of an individual's personality that impact how they think, feel, and behave, and are the keys to bringing out their best self."

Character strengths are therefore the positive traits, qualities, or characteristics that allow people to thrive as individuals – they are not physical skills or talents, but personality traits and part of the individual's character. These characteristics are not either present or not present, but exist within people in degrees. Strengths-based psychology focuses on identifying your top strengths as an individual (those that you possess more of) and then using these to improve performance. The purpose of this research is therefore to try and identify and understand the relevant strengths within a sports setting.

A helpful analogy:

Consider weaknesses and strengths like parts of a sailboat. If you plug the holes in the bottom of a boat (weaknesses) it will stop you from sinking, but it is not what helps you to move forwards – you need to use the sails (your strengths) to get where you want to. Fixing weaknesses is important, and stops you from "sinking" but it is using your "sails" or strengths that will help you achieve what you want to, and to move towards your desired goal.

The Current Study:

The current research is part of a wider Ph.D. project. The initial phases of this project involved identifying potential character strengths in sport. Questions to assess whether an individual possesses these strengths were then developed and make up the questionnaire in this study. The purpose of this research is, therefore, to finalise and validate this questionnaire to make sure each question is measuring what it claims to measure.)

Appendix L

The Participant Debrief From Studies 3 and 4

Participant Debrief

You have completed all the questions in this study. If you agree to submit your responses, once you have read the following, then please click the agree button below followed by continue. If, however, you wish to withdraw from the study at this point then please close down your web browser and do not click agree.

You may have found yourself disagreeing with more statements than you agree with, or vice versa (agreeing with more than you disagreed with). This is something we might expect to happen as you will naturally score higher on some strengths than others – it is these differences that we are interested in. As this research is exploratory in nature, you may also have disagreed/ agreed with most statements, in which case you are still providing valuable information. Regardless of how you have responded, we would therefore like to thank you for your input into this study.

If you wish to enter the prize draw you will have the opportunity to do so on the next page. The draw will take place once all data has been collected, and the winner contacted via the email address provided – good luck!

If you have any questions regarding the research – either the study you have taken part in, the future research directions, or for a copy of the full scale once it is completed – please feel free to get in touch with the research team – either Chris Beaumont, CPsychol, (CBeaumont@uclan.ac.uk) or Dr Paul Taylor (Director of Studies; PJTaylor@uclan.ac.uk).

☐ I agree to submitting my results

Thank you for your responses. If you would like to be entered into a draw to potentially win £50 of Amazon vouchers please include an email address below. Your email address will be used for no other purpose other than the draw. The draw will be made once all data has been collected and we will be in touch if you win the draw. Once the draw has been made your email address will be deleted.

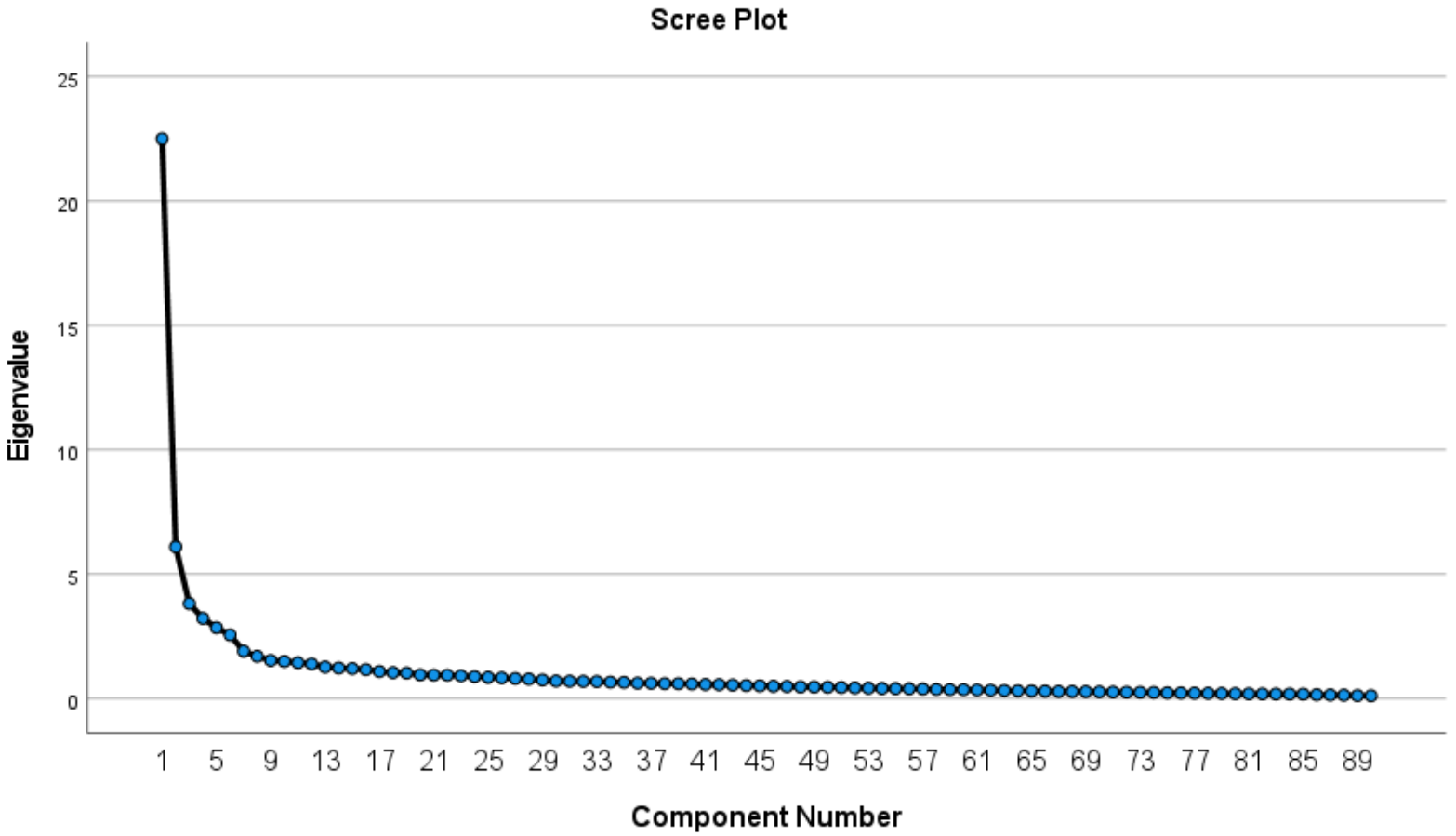
Appendix M

A Full List of Participants' Sports From Study 3

Sport	Number of Participants	Sport	Number of Participants
American Football	1	Kickboxing	1
Archery	2	Lacrosse	1
Artistic Gymnastics	1	Martial Arts	1
Athletics	16	Modern Pentathlon	1
Badminton	4	Mountain Biking	3
Baseball	1	Mountain Running	1
Basketball	2	Muay Thai	1
Beach Volleyball	1	Netball	5
BJJ	1	Polo	1
BMX Racing	9	Powerlifting	1
Boxing	2	Professional Wrestling	1
Canoeing	1	Racewalking	1
Cheerleading	2	Road Cycling	3
Climbing	8	Road Running	1
Cricket	17	Rock Climbing	4
Crossfit	1	Rowing	3
Cycling	30	Rugby	12
Dance	2	Rugby Union	3
Distance Running	3	Running	79
Endurance Cycling	1	Soccer	23
Endurance Running	4	Shooting	1
Equestrian	2	Surfing	2
Field Hockey	3	Swimming	14
Figure Skating	2	Taekwondo	1
GAA	1	Tennis	2
Gaelic Games Hurling	1	Track Cycling	1
Golf	5	Trail Running	1
Gymnastics	1	Triathlon	66
Handball	1	Ultimate Frisbee	1
Hockey	29	Volleyball	8
Horse Riding	1	Not reported	1
Hurling	1		
Ice Hockey	5		
Indoor Rowing	1		
Judo	3		
Karate	2		

Appendix N

The Scree Plot From Study 3



Appendix O

A Full List of Participants' Sports From Study 4

Sport	Number of Participants	Sport	Number of Participants
American Football	3	Pool	1
Archery	1	Riflery	1
Athletics	13	Road Cycling	1
Badminton	4	Road Running	1
Baseball	1	Rugby	18
BMX Racing	1	Rugby League	1
Bodybuilding	1	Running	47
Boxing	1	Sailing	1
Brazilian Jiu Jitsu	1	Shooting	1
Cheerleading	3	Soccer	26
Climbing	3	Surfing	2
Cricket	27	Swimming	10
CrossFit	1	Table Tennis	7
Cycling	28	Taekwondo	5
Equestrian	5	Tennis	3
Fencing	3	Touch Rugby	1
Field Hockey	3	Trail Running	1
Figure Skating	1	Trampolining	1
Futsal	1	Triathlon	33
GAA	1	Ultimate Frisbee	1
Golf	4	Volleyball	2
Gymnastics	7	Weightlifting	1
Hockey	18		
Historical European Martial Arts	1		
Ice Hockey	4		
Jiu Jitsu	1		
Judo	3		
Karate	7		
Kayaking	4		
Lacrosse	1		
Long Distance Running	2		
Martial Arts	2		
Mountain Biking	2		
Mountain Running	1		
Mountaineering	1		
Muay Thai	2		
Netball	20		
Obstacle Course Racing	1		

Appendix P

Study 4 Participant Information and Instructions

Information and Instructions

Research Title: Character Strengths in Sport: Development and Validation of a New Sport-Specific Strengths Questionnaire

Thank you for visiting this online questionnaire page and considering participating in this research.

Please read the following information carefully before continuing.

What is this research project about?

This research is the second part of a set of studies from a Ph.D. project being run at the University of Central Lancashire by UK Chartered Sport and Exercise Psychologist Chris Beaumont. The purpose of it is to finalise, and validate, a new questionnaire that assesses an individual's character strengths in sport. Character strengths refer to the positive qualities, or parts of your personality, that you already have and that are part of who you are and help you to thrive – for example personal qualities such as discipline, competitiveness, or emotional control etc. It has been shown that being able to identify your strengths can lead to lots of benefits to your performance.

Your input into this research will allow us to finalise, and validate, a new questionnaire that assesses character strengths in sport. This will provide a way for those who take part in sport to identify their own strengths in these areas, allowing them to further develop these and potentially improving performance. If you want much more in-depth background information then please click in the box below.

You are invited to take part in this research, but you need to *regularly take part in sport* (this can be at any level) and be *at least 18 years old.*

What will I be asked to do?

If you choose to take part, you will only be asked to complete an online questionnaire. This will take around 15 minutes to complete. It will cover some brief background questions (such as age, gender etc.) and then ask you to agree or disagree whether a series of statements are like you or unlike you. There are no right or wrong answers, we are simply interested in your responses.

Please note participation is *voluntary* and if you do not wish to participant please ignore this invitation.

This project seems familiar?

This is the second part of this piece of research. You may have taken part in the first online survey, which was very similar to this one. Whether you did or did not take part in the first

survey, as long as you take part in sport and are at least 18 years old you can take part in this one.

What are the benefits of taking part?

At the end of the research you can enter a prize draw to potential win £50 of amazon vouchers by providing an email address. The draw will take place once all data has been collected, and the winner contacted via the email address provided. Your email address will be used for no other purpose and not passed on to anyone else.

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(Optional Pop-up Information:

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A key component of this centres around helping individuals to identify and use their strengths – the topic of this research. Traditionally, when we look to improve performance we focus on weaknesses, but this approach targets the development of existing strengths in order to develop optimal functioning. Specifically, the research is looking into character strengths, which are defined as:

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The Current Study:

The current research is part of a wider Ph.D. project. The initial phases of this project involved identifying potential character strengths in sport. Questions to assess whether an individual possesses these strengths were then developed and make up the questionnaire in this study. The purpose of this research is, therefore, to finalise and validate this questionnaire to make sure each question is measuring what it claims to measure.)

Appendix Q

The Sport-Specific Psychological Strengths Questionnaire (SSPSQ)

The Sport-Specific Psychological Strengths Questionnaire (SSPSQ)

The following aims to identify your psychological strengths within the context of sport. Please rate yourself on each of the following statements in relation to your sport by circling the appropriate number. For each statement, rate how much that statement is like you using the following scale:

Very much like me	Like me	Neutral	Unlike me	Very much unlike me
1	2	3	4	5

Please complete this honestly as this will give you a better understanding of your psychological strengths. A lot of these statements may be considered desirable, but please only respond in terms of whether that statement *describes you, specifically*. There are no right or wrong answers.

1.	I work hard no matter what	1	2	3	4	5
2.	I can clear interfering emotions quickly	1	2	3	4	5
3.	I love competing against others	1	2	3	4	5
4.	I enjoy discussing how I can develop with my coach	1	2	3	4	5
5.	I enjoy dedicating time to my sport	1	2	3	4	5
6.	I am happy managing the uncertainty of acting outside of my comfort zone	1	2	3	4	5
7.	It is important to me to be able to take responsibility for myself	1	2	3	4	5
8.	I look forward to working hard	1	2	3	4	5
9.	I am passionate about my sport	1	2	3	4	5

10.	I do not let emotions interfere with my performance	1	2	3	4	5
11.	I am a highly disciplined person	1	2	3	4	5
12.	Competing against others gets the best out of me	1	2	3	4	5
13.	I value input from my coach	1	2	3	4	5
14.	I willingly put myself in situations where I am not necessarily comfortable	1	2	3	4	5
15.	Thinking about my sport gives me a genuine sense of enjoyment	1	2	3	4	5
16.	I take ownership of my actions	1	2	3	4	5
17.	I have control over my emotions	1	2	3	4	5
18.	I enjoy discussing my sport with others	1	2	3	4	5
19.	I do not give up	1	2	3	4	5
20.	I consider my competitiveness to be one of my strong points	1	2	3	4	5
21.	I rarely struggle to keep my feelings under control	1	2	3	4	5
22.	I regularly seek out feedback from my coach	1	2	3	4	5
23.	I enjoy situations that stretch my comfort zone	1	2	3	4	5
24.	I feel excited about all aspects of my sport	1	2	3	4	5
25.	I am able to act on my own	1	2	3	4	5

Scoring

Once completed, you can calculate your average score for each strength by adding up your score on each of the following items and then dividing it by the number of items for that strength.

Psychological Strength	**Items**	**Definition**
Commitment	1, 8, 11, 19	An individual is dedicated to working hard
Emotional Control	2, 10, 17, 21	An individual is able to control their emotions and not let them interfere with their performance

Psychological Strength	Items	Definition
Competitiveness	3, 12, 20	An individual has a strong desire to outperform others
Coachability	4, 13, 22	An individual is open to feedback and input from their coach
Embrace New Experiences	6, 14, 23	An individual is willing to go outside of their comfort zone
Passion	5, 9, 15, 18, 24	An individual has an intense level of love and enjoyment for their sport
Personal Responsibility	7, 16, 25	An individual can act on their own and take ownership for themselves and their behaviour

Your ***lowest average score*** will indicate your ***highest*** psychological strength within sport. Ranking the strengths from your lowest to your highest score will therefore give you your psychological strengths order. Please note, the purpose of this questionnaire is to identify your top psychological strengths – it is not designed to highlight weaknesses and areas you need to improve. Please, therefore, use your results to focus on using, and further developing, your top psychological strengths.