ABSTRACT

This practical advance paper outlines the complexity of simultaneously coaching in Olympic and Paralympic disciplines of canoeing. The paper integrates applied experience from the Tokyo Games, with a critical review of disability literature, to explore the importance of the creation of Shared Mental Models to inform the development of a performance vision in elite sport. The paper first addresses the design and development of complex performance visions, which underpins the delivery of such elite programmes. Secondly, and perhaps more importantly, the paper addresses the fundamental issue, that Paralympic sport is not a microcosm of Olympic sport, and that performance visions and coaching processes created in an able-bodied environment, cannot be cut, copied, and pasted into a Paralympic setting. Offering applied insight, from this unique dual perspective the paper discusses the complexity of designing a well-structured performance vision. We propose that although such performance visions developed in Olympic and Paralympic context share some similarities, the design of Shared Mental Models need to be bespoke to the performance setting. The paper articulates the additional complexities of Shared Mental Models deployed in a paracanoe setting and offers recommendations as to how we can better support the construction of performance visions in Paralympic sport.

Keywords:

Shared Mental Models, Olympic, Paralympic Sport, Coach Education, High-Performance Teams

Introduction

The operationalisation of a high-performance vision in the context of professional elite sport, in which Shared Mental Models (SMMs) are developed within Paralympic Sport, refutes the claim that Paralympic sport is a microcosm of Olympic performance. Instead, the Paralympic landscape should be viewed and coached in an appropriate manner that integrates the needs of athletes, events, environment, and coaches. Therefore, we should recognise that individual and team performance settings have unique parameters appropriate to that context and which influence the coach's vision or SMMs of athlete performance (Richards et al., 2009). This paper will prompt discussions about SMMs complexity in elite sports and outline how they can facilitate more effective coaching within this complex environment. More specifically, readers should gain insights into the Paralympic performance environment and how the complexity of the coaching process has been navigated.

In helping to set the naturalistic context of this practical advance, it would be helpful to consider the Paralympic landscape in which it is set. The current growing literature on Paralympic populations within elite sport, while useful in providing insight into coach education, is not considered through a contemporary lens and fails to consider the specific context of knowledge sources and the inclusion of parasport coaches (Fairhurst et al., 2017). Crucially, within the context of this practical advance narrative, the dominant discourse within the coaching literature remains misaligned to the effective individualisation of parasport athletes. Such a discourse aligns with assumptions driven through a medical lens of functional limitation of what the athlete can't do (Townsend et al., 2015). Further, historical coaching literature may also be viewed through a non-disability prism that fails to consider the person. Logically, this view would negatively impact the individualisation of the coaching process within Paralympic populations.

Consequently, if the concept of SMMs described here is accepted as needing to be unique or individualised to the athlete, these assumptions must be challenged to generate adequate SMMs within a Paralympic context. Supporting this stance, within Parasport populations, Townsend et al., (2015) argue that the reproductive nature of coaching should be critically appraised and unpacked within the context and complexities of real-world settings. Therefore, this paper contends that we cannot apply 'copy, cut & paste' SMMs to a Paralympic athlete (or any athlete) within naturalistic settings, as effective SMMs must be appropriate to the context and the individual. The paper outlines the additional complexity surrounding the Paralympic context, rejecting a mirroring of information where knowledge is transferred from an Olympic setting and misapplied directly to the Paralympic context. It is this contextualisation of coaching that remains unappreciated within coaching (Jones & Hemmestad, 2019).

In presenting this applied perspective the paper firstly explores how disability may be conceptualised through a theoretical lens, before applying it to sports coaching. The paper then presents SMMs, outlining their relevance to coaching as tools that can structure information, and inform how knowledge is shared with the coaches, athletes, and other specialists working within a high-performance setting, We then describe SMMs and their relevance to individualisation before presenting the paracanoe context in which they are applied. Subsequently, we present exemplars as to the operational use of SMMs, discuss individualisation and personalisation of coaching within the Paralympic context. Finally, we offer five recommendations derived from the applied insight of preparing for the Tokyo Games to support the advancement of coaching within parasport.

Exploring Disability Through A Theoretical Lens: Overview Of Models Of Disability

Within the sporting context, of this paper, the term *Parasport* will be used interchangeably to define both competitive and non-competitive sporting activities for people

with a disability (Wareham, et al., 2019). Paralympic athletes are coached and supported by a range of experts, including technical sports coaches and an athlete support team that may include strength and conditioning coaches, physiotherapists, sport medicine doctors, biomechanists, performance analysts and psychologists. However, professional training of support team professionals such as physiotherapy is often delivered through a medical model lens and focussed on textbook ideals which may become a barrier to effective athlete individualisation. Importantly, in helping to overcome these barriers and understand the world wherein this narrative is situated, it is relevant to consider how coaches and those indirectly or directly supporting coaching, such as those within the athlete support teams, conceptualise Paralympic sport.

In helping the paracanoe team to navigate the barriers described above, Townsend and colleagues (2015) model of disability has proven useful. In researching coaching and coach education practices within parasport, Townsend et al., (2015) examined and reviewed four theoretical lenses through which disability is viewed. Understanding and utilising Townsends (2015) model has provided the coaching team with an applied tool to deliver a coaching coherence and expose coaching dogma within Paralympic sport. At a practical level understanding models of disability has helped both technical and support team coaches (and those they must collaborate with) consider how they conceptualise and position disability, associated impairments, and how these factors influence their practice, development of coach-athlete relationships (Jowett & Arthur, 2019) and engagement in the coaching process. It is our view that understanding these lenses has greatly helped technical coaches and support team staff transferring into the paracanoe team from Olympic disciplines. In short, it has allowed alignment of the team around a central asset driven philosophy of what the athlete can do, rather than what they can’t. Townsend et al., (2015) theoretical lens of disability model is presented below.

The Medical Model: Emerging from clinical practice and perhaps the most pervasive model within disability research (Smith & Perrier, 2014), the medical model defines disability by the functional limitations of an impairment (Swain et al., 2003). Viewed through the medical lens, disability is something that should be fixed or cured and is something abnormal. The lived experience of disability is ignored, and a person with a disability is seen as socially and culturally 'different' and disadvantaged (Oliver, 1996). More simply, a person with a disability is treated as someone who must be fixed and is judged by what they cannot do. Thus, giving rise to coaching behaviour that judges a person against a preconceived *normalised* ideal, encouraging a nonethical approach to coaching. Consequently, the medical model ignores the formation of individualised or unique coaching knowledge, focusing instead on the medical functionality of athlete limitations (Denison et al., 2017). Therefore, coaching practice may be based on non-disability ideals, such as overlaying non-disabled running gait patterns and training modalities to an athlete with through-knee unilateral amputation whose impairment makes the overlayed pattern impossible to achieve.

The Human Rights Model: The human rights model was the first model to address the diversity and equality rights of people with disabilities (Townsend et al., 2015). The human rights model shifts the view of people with a disability as passive objects without rights and towards facilitating basic freedoms that are taken for granted, such as access to sport (Rioux, 2011). Therefore, participation in sport is a fundamental human right and people with disabilities are entitled to participate in it. Consequently, the human rights model champions inclusive policies, practices and environments that support people with disabilities in sport (Townsend et al., 2015).

The Social Model: The social model suggests that disability is a social construct, overlaid on top of impairment (Thomas, 2014). The social model argues that disability is a collection of imposed barriers that exclude people with impairments (Thomas, 2014). These

barriers permeate all aspects of daily life, such as transport, housing, employment, and accessibility to many buildings. Put more simply, all people could be considered equal until society imposes a barrier on one of us. Social examples in sport include exclusion policies, restricted venue access, inadequate changing facilities, etc. We would argue that the paucity of parasport research and consequent stagnation within academia in associated coach education and development could be attributed to a social model lens. In other words, the dominant research approach within sports coaching is within the non-disabled population, overlayed into disability fields.

The Social-Relational Model*:* The social-relational model of disability (Thomas, 2014) views disability through the social-cultural and historic activities that influence collective activity (Townsend et al., 2015). Therefore, disability is given meaning through relational practices that shape how people interact with each other and experience the world. The social-relational model allows coaches in parasport to utilise a dynamic process built on a coach-athlete relationship that allows both agents to contribute to the coaching process (Townsend et al., 2015). Through this model, the athlete can be viewed as a unique person and is encouraged to contribute to the construction of knowledge, through sharing the embodied experience of disability with the coach, in co-construction of a performance solution (McMaster et al., 2012; Duarte, Culver & Paquette, 2020). More simply, a personalised social-relational lens helps develop an asset-driven paradigm of what an athlete can do, rather than what they cannot (coach the athlete not the disability). In this way, a coach can respond to athletes' ideographic needs and think about creating a unique and individualised SMM, even if underpinned by generic concepts. Consequently, if individualisation is the goal of the coaching process, then an asset-driven philosophy of what a person can do is critical in knowledge construction and practical truths.

The Theoretical Models Of Disability Applied To Coaching:

While a medical model may have some applications in the initial rehabilitation of an acquired impairment, we argue that it is limited and outdated in a Paralympic setting. As described earlier, the medical model focuses on normalised ideals and what the athlete cannot do. The social model has a high application by considering disability through an athlete's perspective and is thus useful in removing imposed barriers to allow participation and in the coaching process. From a coaching perspective and through the generation of individualised coaching, the social-relational model has proven the most useful. It follows an asset-driven philosophy and positions an athlete at the heart of generating solutions and bespoke interventions. However, all models are underpinned by the human rights model that provides equity and equality as a basic right with the consequential policies, practices, and environments provided. While presented and considered individually, all models have limitations, such as a failure to consider athletes' experiences. However, if the concept of disability could be considered as a whole, which is required for the construction of SMM (discussed next), it may represent a theoretical lens fit for 21st Century Parasport. At an applied level within the paracanoe example, Townsends (2015) model has proven important in providing an agreed philosophical lens through which coaches and the athlete support team can communicate, collaborate, define, and align performance collaboration.

For example, consider the Head Coach facilitating a conversation to improve athlete performance with an athlete support team who may have recently transitioned in Paralympic Sport from Olympic disciplines. The perception and lens that each person in the conversation views disability may differ greatly. Some depending on their knowledge and experiences may have a medical lens of what the athlete can't do and focus on the limitations of impairments. Conversely, others may see opportunity and what the athlete could be capable of and focus on unique asset driven individualised coaching solutions that would improve performance. This incongruence may negatively impact collaboration, agreement, and alignment on the

direction of coaching interventions. Having explored the key concept of disability and parasport and presented the theoretical models which shape our understanding of these concepts, the paper will next explore the use of the Shared Mental Model (SMM) to operationalise individualism. In doing so the paper will illustrate the importance of individualising SMMs to the athlete and setting.

What Are Shared Mental Models?

The SMM may be defined as a verbal or pictorial cognitive knowledge representation of the desired athlete performance (Richards, Collins & Mascarenhas, 2016; McGarry, 2009) that the coach holds in memory and works from. A shared understanding of the performance vision or task (Richards et al., 2016), allows teams to better explain phenomena, innovate, draw inferences, and identify relationships between concepts (Stadifer & Bluedorn, 2003). Consequently, in developing a shared understanding of the performance task SMMs within this applied example have been used as a tool to unify theories, models and philosophies in defining performance problem statements and considering solutions. Thus, aligning coaches, support teams and athletes in the development of individualised performance interventions.

Within sport Richards and colleagues (2012; 2016) suggests the coach's initial SMMs (alpha vision) are made up of two distinct elements, 1) psycho-motor, or *the what*, and 2) psycho-social or *the how* that must be considered to allow SMMs to be operationalised. In this way developing the SMMs has allowed team members to align and integrate their expertise to collaborate and socially construct a shared model (Richards et al., 2016). Accordingly, performance may be considered through the lens of distinct professions, yet critically be understood and a shared situational awareness created within the team to agree *(or not agree)* on a convergent team direction in developing shared athlete-specific SMMs of performance. In effect, this convergence has allowed the coordination of effort and permits each team member to contribute expert knowledge on an agreed area of athlete development.

198 Psycho-motor elements (e.g., performance vision, technical elements) are concerned
199 with the team members valuing, perceiving and interpreting information in the same way
200 (Richards, et al., 2009). Psycho-social elements (e.g., common language, generation of
201 concepts, tactics, SMMs) integrated with reflective practice, enables the content of the SMMs
202 (psycho-motor) to combine to develop alignment of the team collective vision, around
203 performance goals. Nevertheless, what this literature has not yet addressed, are the challenges
204 and processes undertaken when a coach with an already existing and well-established initial
205 or alpha vision for performance (no matter how diverse it is), must adapt outside of these
206 parameters or collaborate to develop a bespoke individualised SMMs (Richards et.al., 2012;
207 2016). For example, when coaching an athlete for the first time, transferring into Paralympic
208 Sport, or joining a new coaching team.
209 In considering this transfer at the applied level, while the role of a coach has been
210 recognised in high-performance sport (Cushion, 2006), the role and influence of a wider
211 athlete support team, integral to the development of an SMMs of athlete performance, has
212 been neglected (Alfano & Collins, 2021). Critically, members of the athlete support team
213 either directly (such as the strength & conditioning coach) or indirectly (such as the
214 physiotherapist) support the delivery of technical and nontechnical coaching interventions.
215 Therefore, coordination of technical coaching and athlete support team expertise is essential
216 for maximising performance. Addressing the challenge of adapting SMMs to the individual
217 from the coach's perspective, this paper offers a unique applied contribution as to how
218 experts in the athlete support team can be empowered to shape SMMs and exchange
219 knowledge. Thus, resulting in an aligned and defined performance vision that enhances an
220 athlete's chance of success. Such insight has within this example helped shape the vision of
221 SMMs through empowering (Kidman, 2001) the relevant expert to lead the coaching process,

enhanced collaboration and innovation. Thus, informing coaching efficacy, professional practice, and the development of specialist roles through the exchange of knowledge.

Such a collaboration is especially important in helping coaches transitioning into Paralympic sport decipher multiple, inter-related factors they lack familiarity or knowledge of (e.g., disability, impairment, equipment modification, etc) by expanding their education support networks (Duarte 2020). The transitioning coach (at least initially) may be required to move beyond the boundaries of their previous experience to address and solve the novel, inter-related needs of a Paralympic athlete. Logically, the utilisation and integration of experience and knowledge of a range of performance specialists, collaborating under the leadership of the head coach would help to address the coaching impasse caused by the boundaries of expertise. At a practical level, this impasse has been navigated by the head coach within their leadership role, firstly adopting the position of social learning leader (Duarte et.al., 2020). Secondly, empowering others to become social learning leaders.

Therefore, within the paracanoe settings, when faced with no definable athlete problem statement, no objectively correct answer, and layers of uncertainty and complexity (Maurer & Thomas, 2014), the solution has been found in developing an understanding of how each team member contributes their expertise to and works from a unified performance vision or SMM of the athlete. Through this contextual critical appraisal, knowledge is exchanged, coaching practice is challenged, context is gained, collaboration facilitated, and athlete experience enhanced.

The Evolution Of SMMs For Paralympic Sport

In common with many coaches working within Paralympic sport, the technical and support staff within this applied perspective are non-disabled, highly experienced coaches, of none parasport performers, who have “transferred” into the Paralympic domain from non-disabled sport (Fairhurst et al., 2015). Consequently, most of these transferring coaches and

support staff have established, and sometimes very well established SMMs from non-disabled sport developed through experience. However, although some similarities exist, the transference of previous experience can be a limitation in that it cannot be simply overlayed or passed down onto the unique needs of Paralympic the athlete, (Taylor et al., 2014).

This additional layer of complexity in the transfer of coaching knowledge across domains results in information shaped by SMMs in the Olympic world being frequently made redundant when applied to the bespoke Paralympic settings. For example, observational performance cues of leg drive, frequently referred to in the Olympic Kayak forward paddle-stroke context may be limited or redundant in a Paralympic setting owing to impairment limitations. Instead, the effective Paralympic coach will be required to create innovative individualised equipment and technical forward paddle-stroke modifications to address this aspect (Simon et al., 2017). A further example can be highlighted with the use of language. At an applied level within parasport, and particularly within Olympic and Paralympic paddlesport, there are differences within coaching language, definitions and phases (Taylor et al., 2014) that may hinder communication and collaboration within the athlete support team.

In addressing the examples above, the transferring coach (technical and support staff) faces a lack of formalised educational resources to aid coaches in creating or identifying, the declarative knowledge in adapting SMMs for the athlete (Taylor et al., 2014; Fairhurst et al., 2015). Equally problematic is a lack of training in the skills that allow the coach to derive that knowledge from their own experience (Taylor, et al., 2014) In addition, gathering and making sense of (Weick, 1995) parasport specific experience can be a long, isolated and lonely experience if the coach lacks a suitable support network (Collins et al., 2019). In practice, the lack of formal or relevant education and the time taken to develop applied experience have generated the need to seek informal experts and mentors as sources of knowledge in creating parasport SMMs. Through a two-way process of collaboration, experimentation and gaining

experience, knowledge is generated and transferred into the parasport context, exchanged and made useable. In optimising collaboration, the alignment of the team members behind an agreed and understood conceptual asset driven philosophy (Wareham et al., 2019). Such alignment allows individualised athlete solutions to be considered through a similar lens, whilst retaining the distinct diversity of professional critical thinking in defining and developing SMMs. Consequently, the leadership and decision-making as to the development of SMMs can be empowered to the most suitable expert (Kidman, 2001).

Accordingly, it is important that the challenges facing parasport coaches are recognised and that these processes are sufficiently addressed within the coaches (and other performance specialists), coach education, training and professional development. Consequently, this may then assist in the coaches' ability to utilise experience but effectively address performer needs, apply knowledge in context, design SMMs for individuals in a bespoke manner relating the parasport context to improve performance. So, in the applied nature of this paper, it is relevant to provide an exemplar of how the use of the SMMs have been employed in a sports context to operationalise individualised coaching.

Paracanoe: Contextualising The Landscape

In helping to understand the context of this applied perspective, we need to outline unique factors that differentiate Paracanoe and Olympic Canoe Sprint. The first consideration is that the Olympic and Paralympic events have subtle knowledge contextualisation differences in canoeing. Paracanoe and Olympic Canoe Sprint share commonalities in an integrated competition format and environment, racing in lanes from A to B on a flat-water regatta course. Olympic Canoe Sprint events are raced at over 200m, 500m, and 1000m distances in single, double, and four-person kayaks. Paracanoe is raced over the 200m distance exclusively in single Kayaks. Within the shared 200m distance, Paralympic race times compared to Olympic Canoe Sprint events are between four and 24 seconds longer in

relative duration, depending on the boat class (explored next). Both Para and Olympic canoe contexts require similar athlete preparation and race plans to support the physical performance and energy system. However, the additional complexity of the impact of impairment and strategic delivery of a race plan (bespoke to the individual and their impairment) may greatly influence, what initially at least may appear a similar task in terms of the application of this strategy and athlete preparation. While both disciplines may share principles, these principles are related to the demands of the sport such as race distance, energy system requirement etc. However, these principles need to be tailored to Para athletes to affect the approach taken within the coaching process, thus shaping SMMs.

Secondly, the equipment is different for Olympic and Paralympic canoeists. Paracanoe kayaks, while equivalent in regulatory length, are wider than Olympic Kayaks to provide additional stability and help mitigate the impact of impairment. Consequently, the drag factor (the resistance of water) the athlete must overcome to propel the kayak is greater for a Paralympic athlete. Therefore, to achieve an equivalent boat speed, a Paracanoe athlete must exert a greater force than their Olympic counterparts. Additionally, a Paralympic athlete may need boat modification to be better supported at the seat, footrest, etc. to stabilise the kayak and transfer force to the water through the paddle. Understanding additional Paracanoe equipment demands require a coach to consider how an athlete either modifies or adapts their technical or tactical models, in the context of their impairment to achieve success. For example, providing a high-backed seat and strapping to support a spinal cord injury.

The third consideration is related to individuality, as we cannot take a nomothetical approach. Therefore, while individualisation is relevant to athletes, the impact of impairment requires SMMs personalisation. Principles generating a core amount of information within the coaching process are transferable across individuals, with the key technical points delivered generically to all athletes. For example, within kayaking, the placement and

sequence of leg drive into the footplate of the kayak, or gait patterns in walking or running to move efficiently (Collins et al., 2019). However, within a Paralympic setting, such core information either does not exist or is difficult to decipher, as athletes' impairment may make information redundant. Therefore, technical points need to be individualised, via an ideographic approach in the form of delivery and considered through an asset driven, social-relational lens of what the athlete can do. Such a process requires designing the technical side of the SMMs according to Paralympic athletes and their impairment needs. Through the personalisation of information and delivery, coaches and specialists within parasport settings can better understand the functional ability, physiology, psychological, and psycho-social components of athletes (what they can do) and support asset-driven SMMs (explored later). Consequently, through personalisation of the SMMs individualisation can be operationalised.

Operationalising Individualisation

Paralympic Sport is prestigious, highly competitive, professional, and elite (Bellini, 2015; Wareham et al., 2018). From our applied experiences of working with elite Paralympic athletes, an important aspect of individualising the coach's SMMs is the expert knowledge and insight that the athlete support teams offer. However, professional training of allied professions such as physiotherapy is often delivered through a medical model lens. Thus, neglecting asset driven SMMs and focusing on textbook ideals. Consequently, the lens through which sports specialists frame an athlete or performance may be incongruent within the athlete support team. For example, competing medical and social-relational models of disability. Supporting practitioners and those involved in the creation of the SMM to understand and reframe their expertise to an asset-driven social-relational model is important in developing philosophical alignment to support individualised SMMs in parasport. Through this alignment, allied professionals and athletes can be empowered to engage in, and lead the development of a secondary or *beta* vision of performance (Richards et al., 2016).

In helping a transitioning coach to create, adapt, and apply these unique knowledge representations relating to performance into bespoke SMMs, knowledge obtained through collaboration with other specialists and experts is required (Simon et al., 2017). Such a process integrates multiple SMMs into one congruent SMM relating to the specific performance/athlete and context. For example, the agreed athlete support team goal may be to lower an athlete's 200m time by two seconds over a season. The technical coach may interpret this as the athlete needing to rotate their body to place their paddle further forward relative to the torso, to increase stroke length and sets this as the performance vision or SMM. The physiotherapist may contribute their expertise to activate as much trunk musculature as the impairment allows. The strength & conditioning coach may also understand how they can contribute to an aspect of the SMM by identifying an intervention that then allows the athlete to tolerate greater force through an increased joint angle so that the movement pattern does not default under fatigue. Consequently, the technical coach can connect 'dots' through the use of expert knowledge, gain clarity and context and leverage the team's expertise to innovate a bespoke intervention. Therefore, creating an adapted or *beta* SMM (Richards et al., 2016) with clarity on which expert is empowered to lead or own that phase of the coaching intervention. Therefore, we suggest that collaboration is more than the provision of acquisition of knowledge, but collaboration is the alignment of a shared vision of asset-driven philosophies rather than knowledge only. Consequently, the need for support staff and coaches to not only have a shared understanding and vision of SMMs for the event but to tailor this shared vision to meet complex needs of the individual and Paralympic landscape helps drive innovation and the development of beta SMMs (Richards et al., 2016).

Coaching Paralympic Athletes

Coaching a Paralympic athlete is about having a blueprint that is relevant to all, but also having the ability to adapt and personalise it to the person in front of you. Accordingly,

individualising coaching practice to the bespoke needs of an athlete (Chow et al., 2016). Therefore, we suggest that individualisation requires alignment of philosophy and integration of interdisciplinary information, principles, and structures of coaching to meet the performance and event demands that create SMMs of performance or blueprint (Richards et al., 2009). Within the technical components of SMMs (psycho-motor; Richards et al., 2017) coaches must understand technical elements of the sport. Expanding on the work of Richards (2012; 2017), in the context of Paralympic sport, the biomechanical templates, kinematic ideas, physiological training zones, and strategic aims can then be *individualised,* and, as such, SMMs can be prescribed to the athlete to help narrow performance gaps.

However, in Parasport, coaches need an additional understanding of the nature of an athlete's impairment against the demands of the sport, to generate individual solutions and provide optimised individualisation (Morriën et al., 2017). In discussing athlete impairment, the first author's anecdotal experience suggests the need for psychological safety may be particularly heightened and relevant as a coach, support personnel (or athlete) transfers into a Parasport performance environment. A psychologically safe environment allows personal risk-taking without fear of ridicule or loss of face (Edmondson & Harvey, 2017). For example, the coach acknowledges a lack of technical knowledge or asks for help when the cultural expectation is they must have the answer. Consequently, the quality of the connection between coach and athlete is improved, (Jowett & Arthur, 2019) the two-way discussion of disability enhanced, and the exposure of coaching dogma derived from overlayed able-bodied coach education and societal taboos regarding disability removed. Consequently, a psychologically safe environment (Gosai, et.al., 2021will aid SMM communication and collaboration through facilitating a greater understanding of the unique nature of the athlete as a person and their disability.

Accordingly, individualised SMMs relating to performance must be created for each athlete, and, therefore, a shared understanding of performance is understood and operationalised by the coach, athlete, and support staff. Importantly, while a deviation from an idealised technical psycho-motor norm into a bespoke SMMs might be more obvious within parasport, kinematic and kinetic differences such as height, weight, muscle type, and lever lengths in non-disabled athletes are equally worthy of consideration if individualisation is to be achieved, maximising any athlete's performance. If individualisation is the goal, bespoke SMMs are critical for coaches, athletes, and their support teams. More simply, we are all unique and should be considered that way.

Personalising The Coaching Process: Coaching The Person

Within the sports coaching literature, individualisation or differentiation has a wide range of meanings and definitions. However, there is a consensus that individualisation is a method of working and catering for a wide range of individuals (Bon, 2009). Therefore, we adopt the stance that individualisation means coaching an individual where the principles, organisation, and structures can be applied on a bespoke basis, accounting for the individual's needs, characteristics, and attributes for attaining performance goals. Elements such as physiological training principles or kinematic ideals that create technical frameworks can be prescribed differently based on the bespoke and unique needs of an athlete. However, it should be ensured that athletes are not just doing 'the same thing differently'. Consequently, individualisation of the coaching process could be made unique, or tailored in a bespoke manner, not only technical prescriptions but also psycho-social prescriptions, information sharing and communication (Richards et al., 2016). Such factors include pedagogy, coach-athlete relationships, and psychological and environmental understanding of developing the 'what, how, and why' of coaching. Therefore, individualising SMMs through considering

athletes' needs from multiple expert perspectives will help support an athlete and coaching team to identify the 'what, why, and how' of the SMMs.

Emphasising SMM's individualisation, we suggest the individual expert in terms of the individual Paralympic athlete, is the athlete who has lived experience of their impairment. Logically, the athlete is and should be viewed as an expert on the impact of their impairment and within this narrative, it has proven essential to integrate an athlete's voice in the design and development of individual SMMs in collaboration with experts, as part of finding effective solutions. Therefore, an athlete should be a part of an integrated interdisciplinary approach to address both technical and non-technical elements of a performance. In doing so, the initial or 'alpha vision' is remodelled into a unique, individualised, and personalised SMMs referred to as an adapted or 'beta' performance vision (Richards et al., 2016).

A Bespoke Individualisation of Coaching

The following section presents five recommendations derived from the head coaches applied experiences of preparing the team for the Tokyo Olympic and Paralympic games. It is hoped the recommendations be considered as a learning leader (Duarte, 2020) to facilitate discussion within the coaching and research community in supporting the next generation of Paralympic coaches and specialists. The nature, context and opportunity presented above piercingly call for both shared practical advances and research that not only adds to the paucity of Paralympic research but also offers interdisciplinary learning to technical coaches, support teams and coach educators in non-disabled sports.

Coaching: Transitioning To The Bespoke*:* The first recommendation considers the skill set of a transitioning coach from non-disabled sport to Parasport. The Parasport coach transferring from an Olympic discipline faces challenges in accessing formal knowledge sources for creating bespoke SMMs (Collins et al., 2019). Therefore, a transferring coach will be forced to default to their experience of what has worked in non-disabled sport such as

generic technical blueprints. Or for example, at a more operational level be unaware of the support an athlete may need to transfer from a wheelchair to a kayak. This specifically (or at least initially) relates to understanding the impact of impairment within the performance setting. Therefore, coaches are reliant on SMMs created from experience and coach education (specialist CPD) established with non-disabled athletes. These generic SMMs are formulated through structured non-disabled coach education (considered to be more generic in the context of this paper, as there is less variation of individual SMMs in non-disabled sport) and are frequently used as a common template in Paralympic settings. The use of generic non-parasport SMMs makes them too rigid for parasport athletes and the context they compete due to the lack of bespoke design. Consequently, an inexperienced coach, found within the Paralympic landscape may be over-reliant on existing non-disabled SMMs. Coach education, therefore, needs to support the transitioning coach, with their refinement of SMMs. This can be achieved by increasing the non-technical (philosophical lens) and technical (impairment and event) understanding of disability. Thus, supporting coaches with meta-cognitive abilities and sharing experience within the Paralympic setting.

***Using Multiple Lenses To Perceive Disability*:** The second recommendation suggests that it is essential to understand the framing of disability. Owing to the focus on the medical aspect of disability and the inclusion of multiple medical specialists, the lens of the medical model is valuable, but perhaps overinflated. We propose that enhancing the understanding of disability models, through coach education (and CPD for specialists), would urge us to view performance vision through a dichotomy of a lens. More simply, philosophical alignment operationalises the ability to consider asset driven individualised SMMs which are holistic in their design and, therefore, more effective.

Coach Education Resources: The third recommendation is related to the development of appropriate learning material and expert knowledge to context, to enhance the effectiveness

of individuals working within a Paralympic setting. Hence, developing social learning leaders and making knowledge exchange permeable between professions, (technical coach, physiotherapist etc). The formulation of knowledge structures requires access to not only education resources that are representative of the performance setting, but also experts and mentors that facilitate connections to be made. In doing so, working silos are removed and solutions generated for the individual athlete and context. Using resources from non-disabled coaching materials and overlaying them in a disabled context is not effective. We argue that this slows the developmental journey of a coach, as material should be context-specific to maximise learning. Learning resources and access to learning leaders, experts, and mentors specific to the parasport world would support the coach's transition to the new environment, while simultaneously removing potential barriers due to theoretical models of disability.

***Psychological Safe Environment*:** The fourth recommendation suggests that performance setting requires a psychologically safe setting, where an athlete, coach, and specialist can feel comfortable with asking questions, seeking new knowledge, and sharing expertise, (Gosai et al., 2021). The effect of a disability may heighten sensitivity surrounding the impairment, its effect on the athlete, how this is discussed within the team and the honesty and openness of the conversation to remove taboos. Providing a psychologically safe environment has allowed the athlete, coach, and specialist to support each other in developing a truly understood and individualised SMMs, and hence the performance context more effectively. This takes time and is strongly connected to the final and fifth recommendations below.

***Head Coach Facilitating Distributed Leadership*:** In overcoming these performance problems, coaches experienced in working with Parasport athletes are required to engage in a high level of sensemaking (Klein, 2015; Weick, 1995) to understand 'what's going on' and to start to notice critical information relative to the athlete and frame it in the context of the performance. Therefore, the coach can start to connect dots, run mental simulations, and

develop adapted beta SMMs (Richards et al., 2016). For this to occur, the athlete, coaches and support staff should utilise each other's expertise to develop permeable boundaries and a shared understanding of the individual, to develop bespoke SMMs that are truly unique. This approach requires a distributed, transformational leadership (Gosai, 2021approach and creates social learning leaders, (Duarte, 2020). Consequently, who leads and drives the performance conversation, is driven by the most expert in (or out with) the team that is best positioned to inform the delivery of performance. The ability of the head or technical coach to empower other specialists and hand over the task leadership requires trust and a psychologically safe setting (Gosai, 2021). When for a particular period in time (part of the coaching intervention), the intervention can be led by the most appropriate expert, and not necessarily the technical coach. The construction of SMMs and the facilitation of a psychologically safe environment relating to these enable distributed leadership to occur. However, such a process requires an understanding of these integrated elements which need to become part of the formal coach education processes. More simply, if leadership is a function of managing an integrated support team, so coaches should be supported to develop this skill set.

Conclusion:

Addressing the environment of Olympic and Paralympics the paper provided the reader with an understanding of the complexity of SMMs in shaping the delivery of performance visions in elite sports. Specifically, it outlined how SMMs within the Paralympic landscape are essential in allowing teams to define and align in supporting the development of the 'what, why & how' of performance, and hence athlete. Within a Paralympic setting, the variation in athlete movement may demand a higher level of modification of SMMs than in an Olympic context, owing to the complexity and nature of athlete impairment. It is hoped that the five recommendations offered within the paper

encourage discussion within the coach education community as to how best we can support specialists working in parasport.

References:

Alfano, H., & Collins, D. (2021). Good practice delivery in sport science and medicine support: Perceptions of experienced sport leaders and practitioners. *Managing Sport and Leisure, 26*(3), 145–160. https://doi.org/10.1080/23750472.2020.1727768

Bellieni, C. (2015). Paralympics should be integrated into the main Olympic Games. *Sport, Ethics and Philosophy, 9*(1), 75–82. https://doi.org/10.1080/17511321.2015.1041149.

Bon, M. (2009). Differentiation and individualisation—A must in the training of talented sportsmen. *Gymnasium*, Bacau, *10* (1*)*, 17-25

Chow, J. Y., Davids, K., Button, C. A., & Renshaw, I. (2016). *Non-linear pedagogy in skill acquisition: An introduction*. London, Routledge.

Collins, L., Simon, S., & Carson, H. J. (2019). Para-adventure: A hyper-dynamic problem for the inclusive coach. *Sport in Society*, *22*(7), 1165–1182. https://doi.org/10.1080/17430437.2018.1504776

Cushion, C. (Ed.) (2006). Mentoring: Harnessing the power of experience. *The sports coach as an educator, reconceptualising sports coaching.* Routledge.

Denison, J., Mills, J. P., & Konoval, T. (2017). Sports' disciplinary legacy and the challenge of "coaching differently". *Sport, Education and Society*, 22(6), 772–783. https://doi.org/10.1080/13573322.2015.1061986.

Duarte, T. Culver, D.M. & Paquette, K. (2020). Framing a Social Learning Space for Wheelchair Curling. International Sport Coaching Journal, (Ahead of Print). https://doi.org/10.1123/iscj.2019-0095

544 Edmondson, A. C., & Harvey, J. F. (2017). *Extreme teaming: Lessons in complex, cross-*
545 *sector leadership*. NY: Emerald Group Publishing.
546 Fairhurst, K. E., Bloom, G. A., & Harvey, W. J. (2017). The learning and mentoring experiences
547 of Paralympic coaches. *Disability and Health Journal, 10*(2), 240–246.
548 http://doi.org/10.1016/j.dhjo.2016.10.007, PubMed: 27806907
549 Gosai, J. Jowett, S. & Nascimento-Júnior J. R. A. D. (2021). When leadership, relationships
550 and psychological safety promote flourishing in sport and life, Sports Coaching
551 Review, DOI: 10.1080/21640629.2021.1936960
552 Jones, R.L. & Hemmestad, L.B. (2019). Reclaiming the 'competent' practitioner: furthering
553 the case for the practically wise coach. Sport Coaching Review, 10;1, 1-19
554 https://doi.org/10.1080/21640629.2019.1703881
555 Jowett, S., & Arthur, C. (2019). Effective Coaching: The links between Coach Leadership
556 and Coach-Athlete Relationship: From Theory to Research to Practice. In M.
557 Anshel, E. E. Labbe, T. A. Petrie, S. J., Petruzzello, J. A., Steinfeldt (Eds),. APA
558 Handbook of Sport and Exercise Psychology (Vol 1; Sport Psychology), pp. 419-
559 449.
560 Kidman, L. (2001). *Developing decision makers: An empowerment approach to coaching*.
561 IPC Print Resources, Worcester, UK.
562 Klein, G. (2015). A naturalistic decision-making perspective on studying intuitive decision
563 making. *Journal of Applied Research in Memory and Cognition, 4*(3), 164–168.
564 https://doi.org/10.1016/j.jarmac.2015.07.001
565 Maurer, D., & Thomas, P. (2014). Learning to think about future problems: Paradigms and the
566 wicked problem of 'landpower'. *Small wars* [Journal]. Retrieved from
567 https://smallwarsjournal.com/jrnl/art/thinking-about-thinking-about-the-army's-future

McGarry, T. (2009). Applied and theoretical perspectives of performance analysis in sport: Scientific issues and challenges. *International Journal of Performance Analysis in Sport*, 9, (2), 128–140.

McMaster, S., Culver, D., & Werthner, P. (2012). Coaches of athletes with a physical disability: A look at their learning experiences. *Qualitative Research in Sport, Exercise and Health, 4*(2), 226–243. https://doi.org/10.1080/2159676X.2012.686060.

Morriën, F. M., Taylor, M. J. D., & Hettinga, F. J. (2017). Biomechanics in Paralympics: Implications for performance. *International Journal of Sports Physiology and Performance, 12*(5), 578–589. http://doi.org/10.1123/ijspp.2016-0199, PubMed: 27918675

Oliver, M. (1996). *Understanding disability: From theory to practice* New York: MacMillan Press.

Richards, P., Collins, D., & Mascarenhas, D. R. D. (2012). Developing rapid high-pressure team decision-making skills. The integration of slow deliberate reflective learning within the competitive performance environment: a case study of elite netball. *Reflective Practice, 13*, 1–12. https://doi.org/10.1080/14623943.2012, PubMed: 670111

Richards, P., Collins, D., & Mascarenhas, D. R. D. (2017). Developing team-decision making: A holistic framework integrating both on-field and off-field pedagogical coaching processes *[Review]*. *Sports Coaching Review*, *6*(1), 57–75. https://doi.org/10.1080/21640629.2016.1200819

Richards, P., Mascarenhas, D. R. D., & Collins, D. (2009). Implementing reflective practice approaches with elite team athletes: Parameters of success. *Reflective Practice, 10*(3), 353–363. https://doi.org/10.1080/14623940903034721

Rioux, M. H. (2011). Disability rights and change in a global perspective. *Sport in Society, 14*(9), 1094–1098. https://doi.org/10.1080/17430437.2011.614766.

593 Simon, S., Collins, L., & Collins, D. (2017). Observational Heuristics in a Group of High-Level
594 Paddle Sports Coaches. *International Sport Coaching Journal, 4*(2), 235–245.
595 https://doi.org/10.1123/iscj.2017-0012
596 Smith, B. M., & Perrier, M. J. (2014). Disability, sport, and impaired bodies: A critical approach.
597 In R. Schinke & K. R. McGannon (Eds.), *The psychology of sub-culture in sport and*
598 *physical activity: A critical approach* (pp. 95–106). Psychology Press.
599 Stadifer, R., L. & Bluedorn, A., C. (2003). Alliance Management Teams and Entrainment:
600 Sharing Temporal Mental Models. Article *in* Human Relations · July 2006 DOI:
601 10.1177/0018726706067596
602 Swain, J., French, S., & Cameron, C. (Eds.) (2003). *Controversial issues in a disabling society*.
603 Open University Press.
604 Taylor, S., Werthner, P., & Culver, D. (2014). A Case Study of a Parasport Coach and a Life
605 of Learning. *International Sport Coaching Journal*, 2014, 1, 127-138
606 http://dx.doi.org/10.1123/iscj.2013-0005
607 Thomas, C. (2014). Disability and impairment. In J. Swain, S. French, C. Barnes & C. Thomas
608 (Eds.), *Disabling barriers-enabling environments* (pp. 9–16). Sage.
609 Townsend, R. C., Smith, B., & Cushion, C. J. (2015). Disability sports coaching: Towards a
610 critical understanding. *Sports Coaching Review, 4*(2), 80–98.
611 https://doi.org/10.1080/21640629.2016.1157324.
612 Wareham, Y., Burkett, B., Innes, P., & Lovell, G. (2019). Coaches of elite athletes with
613 disability: Senior sports administrators' reported factors affecting coaches'
614 recruitment and retention. *Qualitative Research in Sport, Exercise and Health, 11*
615 (3), 398-415 https://doi.org/10.1080/2159676X.2018.1517388'
616 Weick, K. E. (1995). *Sensemaking in organizations*. Sage.