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Research and Practice in Talent Identification and Development – Some Thoughts on the State of Play

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Running Head: The State of Play in Talent Identification and Development

Abstract

Although there has been considerable growth in talent identification and development research, the mixed quality and lack of applied focus means little has changed in the field. We propose the Performance-Outcome-Process continuum, a structure which examines ideas based on what and how they contribute to the talent development process. Reflecting a pracademic focus we highlight the importance of understanding the processes and mechanisms of development-focused constructs to best bridge the research-practice divide. We suggest a pragmatic approach that prioritises the quality of research and the importance of applied impact; at least in research which claims to be *for* sport.

Lay Summary: To bridge the research-practice divide in Talent Identification and Development, it is important that translational and pragmatic research becomes the norm, with progression from the retrospective studies which have been typical in this domain. Focusing on the processes and mechanisms that generate *comprehensive* development would seem a logical step especially for investigations that want to make a difference in applied settings.

Research and Practice in Talent Identification and Development – Some Thoughts on the

State of Play

The last 25 years has seen a concentration of research in Talent Identification and

Development (TID). Unfortunately, as we will argue, the mixed quality and unclear applied

focus of much of this research, together with organisational inertia on the part of many

National Governing Bodies and associated agencies, means that relatively little has changed

in the TID landscape at a systems level compared to what we know on the basis of empirical

evidence. Indeed, we contend that even *quality* research has found it difficult to infiltrate

applied practice in sport. For example, early specialisation (Güllich, 2014; Moesch, Trier-

Hauge, Wikman, & Elbe, 2013), "snapshot" talent identification protocols (Abbott, Button,

Pepping, & Collins, 2005), and an emphasis on the accumulation of deliberate practice

(Ericsson, Krampe, & Tesch-Romer, 1993) continue to be common approaches to TID across

many sports despite the significant evidence countering these ideas (e.g., Baker, Schorer, &

Wattie, 2017).

From a methodological viewpoint, we would suggest that the quality of some research

and, particularly, the ongoing use of single methodologies explains the gap between research

and practice. These methodological decisions may well be due to a *perhaps* inevitable

difference between research focused primarily on application and that for more directly

academic purposes: what Collins and Kamin (2012) refer to as science *for* sport as opposed to

science *of* or *through* sport. Our point here is that, whilst certain research can be well

designed and impactful in addressing its specified research questions (e.g., interview-based

studies of elite performers; Hardy et al., 2017; or research examining the accumulation of

deliberate practice; Ericsson et al., 1993), it may be less effective in informing practice. In

this respect, it is unfortunate that the applied merit of research continues to be under-

emphasised in debates on research quality. For example, whilst Levitt, Motulsky, Wertz,

Morrow, and Ponterotto describe integrity in qualitative research as "whether the implementation of fidelity and utility function coherently together" (p.2, 2016), their meaning of utility seems more related to research that achieves its academic goals rather than the actual applied value (another important type of utility) of these goals in the first place. Indeed, past and present discussions (e.g., Sparkes & Smith, 2009) have tended to focus on improving the *process* and *internal coherence* of research rather than improving its *purpose* and *external impact*. This difference is important, especially if work in TID is to be considered as an applied science. At the very least, the highly *individual* perspective described in autobiographical (e.g., Howell & Fletcher, 2015) and some qualitative research (e.g., Collins, MacNamara, & McCarthy, 2016; Hardy et al., 2017) would seem questionable as the *sole* basis for advising practitioners on how to work *generally* with athletes. We would also argue that TID now needs to progress from research replicating outcomes already shown in the literature (e.g., Hardy et al., 2017) towards translational work that bridges the gap between research and practice. Of course, replication focused on real, practically meaningful findings is very useful but we would argue that overcoming the methodological limitations of TID studies and identifying ways to use research to improve TID practices should be the key consideration moving forward, at least for those espousing an applied focus. Therefore, it seems timely to consider the current focus within TID research, proposing future directions, and methodological approaches to bridge the gap between research and practice in order to conduct research "that makes a difference".

A Structure for Ideas: The Performance - Outcome - Process (POP) Structure

As a first step in addressing the research-practice divide, we would like to suggest a structure which can be applied to the myriad approaches which exist within TID and related areas. The idea being to situate findings within a structure of how they contribute to the overall process of TID, thus providing practitioners with evidence-based recommendations

85 about the processes and outcomes that lead to the desired performance. The Performance-

86 Outcome-Process (POP) continuum looks at ideas within a hierarchy, based on what and how

87 they contribute to the TID process. We start at the top of the continuum with performance;

88 specifically, what the goal is when working with athletes[1].

89   **Performance.** The ultimate aim of any talent pathway is to develop athletes with the

90 ability to perform at the highest level. This focus on *eventual* performance has resulted in a

91 body of research that has examined the multiple factors associated with successful

92 development (e.g., Ericsson et al., 1993; Philips, Davids, Renshaw, & Portus, 2010; Tucker &

93 Collins, 2012). In practical terms, however, such information with a developmental focus

94 (i.e., "performance later") is often confused with empirical findings concerned with

95 "achievement now". For example, coaches are often trained towards the generation of

96 performance now (Visek et al., 2015) and such success can certainly bring some reputational

97 capital. Being successful in front of your coaching peers is clearly important within the

98 social structures which play such a large part in coaching communities (Jones, 2000;

99 Stoszkowski & Collins, 2012). This is to some extent understandable; the time lag between

100 coaching a young promising athlete and his/her eventual success at senior level can be long

101 and human nature prefers more immediate gratification. Our point here is that, for a variety

102 of reasons, talent development (TD) requires a different mindset, approach, community and

103 overall organisational structure than doing what most coaches are normally trained to do –

104 WIN. Of course, some sports are recognising this through the implementation of specifically

105 development-focused training (e.g., the FA's Advanced Youth Award) but there is still a need

106 for a culture change in TD circles in terms of talent. So, for the present purpose, coaches,

107 researchers and organisations need to be very clear about what they are working to achieve.

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[1] For the purpose of this paper, athlete is used to cover any performer within a physical task performance pathway (e.g., sport, dance)

108 In crude terms, performance today *or* tomorrow may be the choice needed, albeit that the

109 balance may sensibly be changed systematically as players progress up the pathway (cf.

110 Webb et al. 2016).

111   **Outcome.** Once the exact performance target has been specified, the next challenge

112 is to decide on the outcome deliverables which will take the athlete there. In our experience,

113 these can be seen as falling into two groups, with some overlap between the two. The first

114 can be thought of as taxonomies of characteristics needed for the target performance in

115 question. Some are empirically based, such as the "11 Model" in football, developed by

116 Jordet (2016). Others have been developed by working groups of coaches, such as the

117 CARDS model used by the RFU (England Rugby, 2017). In such cases, the models offer an

118 outcome-focused curriculum towards which TID coaches can work. Notably, these models

119 often include psychological constructs; for example, coping with pressure in the 11 Model or

120 resilience within the CARDS model. Additionally, and presumably, these characteristic

121 taxonomy models would claim to address the essential list of "what it takes" to be successful,

122 given that success (i.e., performance in our POP structure) is operationalised in these cases

123 as future achievement.

124   Our suggested second category of outcome deliverables is built around specific

125 psychological constructs, deemed causative of the target performance. Such examples

126 include grit (Duckworth, Peterson, Matthews, & Kelly, 2007), the growth mindset (Dweck,

127 2017), resilience (Seligman, 2011; Sarkar & Fletcher, 2016), and self-control (Toering &

128 Jordet, 2015). The constructs in this second category often contain elements of both trait and

129 contextual behaviour, suggesting that training may build both the tendency to habitually

130 apply them and the skill to apply them to novel contexts. Albeit individual constructs rather

131 than broader taxonomies, the idea is again that these outcomes allow individuals to make it to

132 the top.

133   We would like to make two points about these outcome models and their place in the

134   existing and emerging research picture: firstly, how they may fail to address the full picture

135   and secondly, a consideration of ways in which these outcomes are achieved. First of all,

136   consider the validity of the models and constructs proposed. We would suggest that, of those

137   listed above, only the 11 Model could have some claim to represent a *comprehensive* list of

138   the skills needed. Of course, all the models are clearly and definitely valuable, and ongoing

139   research from a variety of sources adds to the evidence for their utility – *none of which we*

140   *question*. But are any of them the whole or even a large part of the picture? We would

141   suggest not. The challenges documented by pathway athletes are widely varied, suggesting

142   that any of the aforementioned constructs would not *solely* prepare the athlete for the whole

143   pathway.

144   Secondly, we would suggest that all the constructs will need some skills to be taught

145   and practised before they can be relied on to work "under fire" and in response to

146   developmental challenge – a position which is perhaps in contrast to some other work. It is

147   true that some research suggests, or at least intimates, that development accrues *as a direct*

148   *consequence* from challenge. In other words, if I suffer trauma then the inevitable outcome is

149   a bunch of skills which help me make it to the top. In one such study, Van Yperen (2009)

150   showed that footballers who eventually made it to the elite level were significantly higher in

151   acknowledged "challenge" factors such as number of siblings, minority ethnicity and

152   divorced parents than those who did not achieve at the highest level. Other studies have used

153   autobiographical and biographical accounts (Fletcher & Sarkar, 2012; Sarkar & Fletcher,

154   2014) or detailed retrospective interviews (e.g., Hardy et al., 2017) to demonstrate the role of

155   life experiences, adversity, and trauma in particular, in the development of elite athletes. We

156   would have to question this finding from both methodological and applied perspectives,

157   citing the importance of what athletes *bring to* the challenges (Savage, Collins, &

158   Cruickshank, 2017), learn from prospective training (Fletcher & Sarkar, 2016), or post hoc,

159   supportive debriefs (Joseph, Murphy & Regel, 2012). These points are important because for

160   every one person who survives or benefits from childhood trauma, there would seem to be a

161   lot more who crash and burn.

162   We have made these points before (Collins et al., 2016) but reiterate them here as

163   crucial to the development of *comprehensive* skillsets in TID athletes. In short, we would

164   suggest that no one construct or model mentioned in the Outcome section above offers either

165   the comprehensive skillset required or enough detail on how this could and should be

166   developed. Though undoubtedly important, being resilient, gritty, or having a growth mindset

167   cannot therefore be the whole answer. Instead, understanding, then teaching and refining a

168   broad range of generic skills in young people, which they can then apply to the different

169   challenges of development, would seem a sensible way forward. Hence, we turn to the third

170   and underpinning level of our POP structure - process.

171   **Process.** Reflecting a pracademic focus, and the need to generate effective and

172   applicable answers to TID issues, we propose an emphasis on the mechanisms and processes

173   that underpin the young athlete's ability to make the most of the developmental opportunities

174   they are afforded. Extending from our arguments above, these processes must be both

175   comprehensive (i.e., cater for the full range of challenges and contexts) and proactively

176   developable as the athlete proceeds along the pathway. For example, incremental theories

177   (such as growth mindset, which sees ability as something which can be grown) may be best

178   applied through an understanding of how they operate and the processes that underpin the

179   outcome behaviours. In this regard, growth mindset may relate to, or even be a product of,

180   self-regulatory learning (e.g., Burnette, O'Boyle, VanEpps, Pollack, & Finkel, 2013) while

181   grit's positive effects are thought by some as attributable to perseverance, which is itself

182   related to motivation and self-drive (Credé, Tynan, & Harms, 2017). As such, we would

183 highlight the importance of understanding the processes and underlying mechanisms of

184 development-focused constructs to best support the integration of these ideas into applied

185 TID procedures. In short, understanding the *skills* that athletes need to achieve a growth

186 mindset or be gritty.

187   In regard to this skills development approach, we have tested for, refined and

188 proposed (see Collins & MacNamara, 2017a) the systematic teaching, testing and tweaking of

189 a set of essential skills, the Psychological Characteristics of Developing Excellence (PCDEs),

190 as a logical way to prepare young people for the "ups and downs" of development. This set

191 of empirically derived skills (MacNamara, Collins, & Button, 2010) are proactively

192 developed through a teach then test and refine approach, offering young athletes a toolbox

193 with which they have practised and are confident in using to counter a variety of challenges,

194 both real and contrived (Collins & MacNamara, 2017b). The skill set involved has been

195 shown to be comprehensive enough to help athletes cope with, and optimally benefit from,

196 the range of challenge inherent in their pathway (Collins & MacNamara, 2017a). In short,

197 focusing on the process and teaching the skills whilst building on experiences, both planned

198 or naturally occurring, can generate growth mindset, grit, and/or resilience as the

199 aforementioned outcome deliverables.

200   In completing the proposal of this POP structure, it is important to acknowledge that

201 several solutions are possible. We would clearly not claim a monopoly on truth with the

202 PCDE model; different, and more appropriate, lists for specific contexts may be proposed.

203 Indeed, we regularly review and refine this list by, crucially, using a combination of research

204 and in-the-field experience with athletes and TID practitioners. Consequently, the current list

205 of PCDEs (i.e., commitment, focus and distraction control, realistic performance evaluations,

206 self-awareness, coping with pressure, planning and self-organisation, goal-setting, quality

207 practice, effective imagery, actively seeking social support) are the result of over 20 years of

208   research and field testing. In our (e.g., Collins & MacNamara, 2017a) and others' (e.g.,

209   Newton & Holmes, 2017) experience, the approach works very well. We would hope that

210   future comprehensive lists build on this rather than "reinvent the wheel". We also recognise

211   that several of the PCDEs can be criticised as "chicken or egg" constructs. So, is resilience a

212   crucial omission from the list or can it be achieved through using a combination of skills

213   selected from the "hand of cards" which is how the PCDEs are taught (cf. Collins et al.,

214   2016)? Our point here is more one of principle and reflects the POP model presented earlier.

215   Namely, that TID research must equip practitioners with a comprehensive toolbox and the

216   means to develop and facilitate a comprehensive skillset in athletes.   Based on this

217   philosophical but ecologically valid stance, we would see the common current practice of

218   pursuing one or other sole construct as epistemologically flawed.

219   **Methodological Progressions for TID Research**

220   As our second opportunity for improvement in this "state of the nation" review, it is

221   also important to consider the ways in which research is conducted to inform TID processes

222   and systems. The vast majority of research in TID, at least those studies focused on the

223   psycho-behavioural and psycho-social factors associated with development, adopt a

224   qualitative approach (e.g., Bjorndal & Ronlan, 2017; Henriksen, Larsen, & Christensen,

225   2014; Hill, MacNamara, & Collins, 2015). Typically, retrospective interviews are conducted

226   with elite athletes who are asked to reflect on their career trajectory. This approach

227   dominates since it is impossible to predict which young performer will reach the highest level

228   in his or her activity, and therefore one can only identify outstanding athletes "after the fact"

229   (Côté, Ericsson, & Law, 2005, p. 15). While these studies have provided a useful starting

230   point for examining TID, there are a number of methodological limitations that must be

231   acknowledged (e.g., self-report bias, hindsight bias; Coolican, 2004). Of most concern from

232   the applied perspective is the accuracy and quality of data presented and then used to inform

233   TID practices. For example, when using retrospective recall, respondents are likely to recall

234   only a small number of vivid experiences that may, but also may not, be genuinely

235   representative of their developmental trajectory (cf. Brown & Kulik's flashbulb memories,

236   1977). The recall of these vivid memories is also liable to be influenced by implicitly

237   aggregating many years of accumulated experience as well as an integration of current

238   attitudes and behaviours (Côté et al., 2005). These limitations can be managed by concrete

239   attempts to ensure that participants recount their experiences relevant to particular stages of

240   development. For example, both early (MacNamara et al., 2010) and more recent (Howells

241   & Fletcher, 2015) retrospective studies have used a graphic time-line to break down the

242   individual's career into stages using salient temporal boundaries. This approach

243   notwithstanding, our main point is that the long-term memory of some individuals alone is

244   not the most stable of data sources through which to inform general TID practices for others.

245   Unfortunately, however, it is precisely this type of data on which many TID studies – and

246   implications for practice – have been based.

247   Although the accuracy of recall information from personally interviewed participants,

248   especially when conducted retrospectively and without concrete questioning and coding

249   structures, may be relatively unreliable as a source to generalise to others, the systematic bias

250   inherent in the recall of autobiographical information may be of even greater concern. Ross

251   (1989) suggests that this bias is the result of reconstruction and inferences, with participants

252   (both the performer and the researcher) relying on their current feelings, attitudes, and

253   situations to extrapolate what they think they might have thought or experienced at earlier

254   stages of their careers. Given these issues, it is surprising to see athlete autobiographies used

255   as the *sole* data source in some recent studies of elite athletes (e.g., Howells & Fletcher,

256   2015) given that "autobiographies, rather than seeking historical accuracy or objective truth,

257   seek to offer deep insights into subjective expressions of experience . . . [and] emphasize not

258 facts, but personal experiences and personal lives as cultural constructions" (Stewart, Smith,

259 & Sparkes, 2011 p. 583). Simply, autobiographies do not attempt to relate back to the

260 general experience of others and therefore their purpose is more self-serving rather than

261 science-serving. Indeed, and with reference to Levitt et al.'s (2016) assertions noted earlier,

262 autobiographical studies may certainly yield "hi-fidelity" data but their utility to drive

263 tomorrows' practice must be carefully considered. In short, TID is a complex situation which

264 is unlikely to be well addressed by reading a filtered account of an athlete's own memories

265 and perceived experiences (Freeman, 2001), often ghost-written to persuade the audience,

266 raise the author's profile and for financial gains rather than to capture the truth of the

267 experience and inform system-level change. Of course, as some qualitative research gurus

268 have suggested (Sparkes & Stewart, 2016), these techniques do offer an insight into the

269 individual's reflections on her or his experience. However, following from our earlier

270 comments on the focus of the research (science for sport or science of, and, through sport),

271 surely trustworthiness and generalisability are also valid issues? Furthermore, the

272 retrospective nature of these data (i.e., retrospective interviews and autobiographical studies)

273 means that the status of the athlete will influence their perception of the route to the top;

274 those who do not make it to the top of their sport are likely to regard certain developmental

275 challenges differently than their more successful counterparts. As such, the athlete's eventual

276 success will undoubtedly colour their perception of the pathway and this impression

277 management and bias might be even more of a factor for athletes still involved in the sport.

278   The key point here is the need to question the use of "single" methodologies in many

279 TID studies and go beyond post-hoc descriptions of athletic careers. We are very aware of

280 this as a potential shortcoming having conducted studies of this nature ourselves and have

281 subsequently stressed the need for triangulation of multiple measures across studies (Collins,

282 MacNamara, & McCarthy, 2016; Collins & MacNamara, 2017a). In this regard, the use of

283 the transdisciplinary approach employed by Toohey, MacMahon, Weissensteiner et al.

284 (2017), where a team of different disciplines work together on TID issues (using multiple

285 methods across studies), would seem one obvious, if overdue, answer.

Where Next? The Need for a New "Tolerance" in Pragmatic Research

287 In order to close the research-practice divide in TID research, we suggest a pragmatic

288 approach that prioritises both the quality of research and the importance of applied impact; at

289 least in research which claims to be *for* sport (Giacobbi, Poczwardowski, & Hager, 2005).

290 Notably, while most research appeals to markers of quality around the technical aspects of

291 the investigative process, pragmatic research encourages this *and*, more fundamentally, a

292 consideration of the "so what?" principle (Bryant, 2009, para. 47). In other words, what

293 difference has the work delivered for improving the lives and actions of those studied?

294 Of course, against this applied emphasis, we are aware that there may firstly need to

295 be a greater understanding, tolerance, or specific acceptance of pragmatic research in the TD

296 community. More specifically, the need to better understand how phenomena and

297 interventions really impact developing athletes should encourage researchers to acquire rich

298 qualitative data but *in combination* with quantitative approaches that enable future,

299 generalizable action; or, in the case of any qualitative-only work, approaches that at least

300 generate more generalizable evidence than typical small sample and, in particular,

301 autobiography-based work (e.g., the matched-triad design in Collins et al., 2016). Of course,

302 any mixed methods (or "best of both worlds") solutions will require careful design if they are

303 to have optimal methodological integrity (Morgan, 2014). Indeed, the challenges of quality

304 in mixed methods research must be acknowledged given previously neglected issues

305 (Sparkes, 2015); especially as results are likely to (or *should*) play a central role in evolving

306 structures, systems and theory. In this respect, Sparkes (2015) has already highlighted

307 Mason's (2006, p.3) earlier assertion that:

308   Researchers engaging in mixed methods research need to have a clear sense of the

309   logic and purpose of their approach and of what they are trying to achieve, because

310   this ultimately must underpin their practical strategy not only for choosing and

311   deploying a particular mix of methods, but crucially also for linking their data

312   analytically.

313   As well as for researchers, these points also apply to journal editors and reviewers; in short,

314   the peer-review process must also recognize the logic and purpose of applied, mixed method

315   studies as this perspective should ultimately underpin the *evaluation* of the described methods

316   and analysis. Accordingly, and as further suggested by Sparkes (2015), editors and reviewers

317   will have to judge the quality of the qualitative elements with criteria that are at least in

318   addition to those espoused in qualitative-only research (e.g., Sparkes & Smith, 2009); in

319   effect, criteria relating to how well the qualitative parts contribute to advancing practice in

320   the broader, target population. Of course, pragmatic research, just like every other form of

321   research, has received some "bad press" and some might argue that it defies principles of

322   methodological integrity (cf. Sparkes, 2015). However, and just like these other forms of

323   research, this bad press has not always been accurate or balanced. For example, Sparkes

324   (2015), drawing on the arguments of Lincoln (2010) and others, has summarised that

325   pragmatists "are not required to tell us anything about their ontological or epistemological

326   positions" and "[may] declare that one's philosophical belief system is irrelevant to how

327   research gets conducted". However, while these points might be the case for *some*

328   pragmatists and *some* research, the pragmatic philosophy *can and does* encourage ontological

329   and epistemological transparency, as others (e.g., Corbin & Strauss, 2008) and ourselves have

330   previously attempted to adhere to (e.g., Savage et al., 2017).

331   Returning to the case of TID, we see it as entirely appropriate that qualitative-like

332   approaches, in conjunction with quantitative-based measures, may therefore be used to offer a

333   rich but generalizable and practically meaningful picture of developing groups (Johnson &

334   Onwuegbuzie, 2004). In this regard we concur with Johnson and Onwuegbuzie's perspective

335   that "differences in epistemological beliefs (such as a difference in beliefs about the

336   appropriate logic of justification) should not prevent a qualitative researcher from utilizing

337   data collection methods more typically associated with quantitative research, and vice versa"

338   (p. 15). One might consider this as similar to the use of a particular pan-theoretical

339   technique in applied sport psychology. The same technique may be used by practitioners

340   from a humanistic, cognitive behavioural or even NLP perspective. The perspective will, of

341   course, impact on the outcome. However, the tool, whilst it should be clearly situated against

342   a philosophical approach, can be employed across domains. Again, from a pragmatic

343   perspective, our suggestion throughout the paper is that the most appropriate mixture of

344   methods should be used in order to answer important research questions (Maxcy, 2003). We

345   will examine this broader issue of pragmatic research in a future paper but, for the moment,

346   triangulation would seem to be an important tool in the pursuit of high utility findings that are

347   developed primarily *for* TID practice.

348

349   In terms of what pragmatic research should specifically focus on next, we urge

350   researchers to consider what we need to know to *advance* the field. In order to advance, we

351   suggest a need for prospective, longitudinal, multi-method, and contextually situated studies

352   that examine performers' experiences, skills, supports, and roadblocks (a focus on *process* as

353   defined in the POP model above). Another useful next step would focus on larger cohort

354   studies that track individuals ("good" and "poor" developers) against group and individual

355   profiles. For example, if sport-related challenge is an important aspect of the TID journey

356   (and our and others' work to date suggests strongly that it is) we need to understand the

357   mechanisms underpinning this phenomenon. The post-traumatic growth literature certainly

358   suggests that post-event interventions that help people learn from the challenge and counter

359   the negatives are essential in order to accrue benefits from that experience (Joseph et al.,

360   2012). It is also important, however, that research investigates the utility of *pre-traumatic*

361   growth. Essentially, what skills can be developed a priori so that performers can cope, learn

362   from, and benefit as a result of developmental challenge. In this regard, we suggest a focus

363   on examining the underlying processes and mechanisms for what is needed to generate

364   *comprehensive* development, rather than a concentration on particular outcomes such as

365   resilience or growth mindset. This would seem to offer the best applied information and may

366   also provide the most parsimonious explanation across the many psychological trait/state

367   constructs. Of course, there is a clear need to concurrently test the validity of this approach

368   using longitudinal research designs.

369   Finally, and to address a confusion to which our own work has contributed (Collins &

370   MacNamara, 2012), there is a need to clarify how *much* trauma is needed for such growth to

371   occur and where it should come from. Are top performers really made by severe life trauma

372   as suggested by some researchers (e.g., Sarkar, Fletcher, & Brown, 2015)? Or is a process of

373   challenge, often sport-related, the best way to support development (e.g., Collins et al.,

374   2016)? In short, an important question to which better research techniques should be applied

375   is the extent to which life defining *trauma* or developmentally impactful, acute, and perhaps

376   *traumatic* phases of challenge impacts development. From a pragmatic point of view we can

377   see greater implications for practice accruing from the second position in terms of the

378   qualitative nature of the trauma (e.g., the amount and timing of challenge on the pathway)

379   and exploiting the pre- and post-challenge experience of the athlete in order to optimise this

380   experience.

In Conclusion

382   To summarise, we see some exciting possibilities and important next steps for

383   research, practice, and application in the TID field. In order to advance, prospective,

384   longitudinal, multi-method, and contextually situated studies are required. Essentially, this

385   call extends to asking for an increase in translational research – working with and for sports –

386   that bridges the gap between research and practice, especially in cases where the

387   investigations want to genuinely make a difference in applied settings. As explored by

388   several researchers, this may well involve a culture change in the way research in our field is

389   evaluated. There seems little doubt to us that the impact of "objective evaluations" such as

390   the UK Research Excellence Framework (REF 2021) have served to change the nature of our

391   field. The move towards genuinely impactful applied research has recently seen several

392   institutions advertise for and appoint positions in translational research – a welcome step but

393   one which needs to gather momentum. In the meantime, and at the other end of the

394   translational spectrum, there has been an exponential growth in blog-based opinion pieces

395   and twitter gurus as a primary, even preferred source of information (cf. MacNamara &

396   Collins, 2015). Importantly for the present purpose, only a few of these are active

397   researchers. Once again, a culture change that sees primary research consumers encouraged

398   and facilitated to be both acquisitive and critical would seem to represent an important step.

399   We hope readers with a pracademic orientation will take this paper as both encouragement

400   and a call to arms, so that even more translational, pragmatic, "make a difference" research

401   impacts our field.

402

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