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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

17

Abstract

18 Although there has been considerable growth in talent identification and development
19 research, the mixed quality and lack of applied focus means little has changed in the field.

20 We propose the Performance-Outcome-Process continuum, a structure which examines ideas
21 based on what and how they contribute to the talent development process. Reflecting a
22 pracademic focus we highlight the importance of understanding the processes and
23 mechanisms of development-focused constructs to best bridge the research-practice divide.
24 We suggest a pragmatic approach that prioritises the quality of research and the importance
25 of applied impact; at least in research which claims to be *for* sport.

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

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

37 The last 25 years has seen a concentration of research in Talent Identification and
38 Development (TID). Unfortunately, as we will argue, the mixed quality and unclear applied
39 focus of much of this research, together with organisational inertia on the part of many
40 National Governing Bodies and associated agencies, means that relatively little has changed
41 in the TID landscape at a systems level compared to what we know on the basis of empirical
42 evidence. Indeed, we contend that even *quality* research has found it difficult to infiltrate
43 applied practice in sport. For example, early specialisation (Güllich, 2014; Moesch, Trier-
44 Hauge, Wikman, & Elbe, 2013), “snapshot” talent identification protocols (Abbott, Button,
45 Pepping, & Collins, 2005), and an emphasis on the accumulation of deliberate practice
46 (Ericsson, Krampe, & Tesch-Romer, 1993) continue to be common approaches to TID across
47 many sports despite the significant evidence countering these ideas (e.g., Baker, Schorer, &
48 Wattie, 2017).

49 From a methodological viewpoint, we would suggest that the quality of some research
50 and, particularly, the ongoing use of single methodologies explains the gap between research
51 and practice. These methodological decisions may well be due to a *perhaps* inevitable
52 difference between research focused primarily on application and that for more directly
53 academic purposes: what Collins and Kamin (2012) refer to as science *for* sport as opposed to
54 science *of or through* sport. Our point here is that, whilst certain research can be well
55 designed and impactful in addressing its specified research questions (e.g., interview-based
56 studies of elite performers; Hardy et al., 2017; or research examining the accumulation of
57 deliberate practice; Ericsson et al., 1993), it may be less effective in informing practice. In
58 this respect, it is unfortunate that the applied merit of research continues to be under-
59 emphasised in debates on research quality. For example, whilst Levitt, Motulsky, Wertz,

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

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

81 As a first step in addressing the research-practice divide, we would like to suggest a
82 structure which can be applied to the myriad approaches which exist within TID and related
83 areas. The idea being to situate findings within a structure of how they contribute to the
84 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 athletes¹.

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 Stoszowski & 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.

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.

286 **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.

381 **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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