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2 Psychological Skills and Characteristics Facilitative of Youth Athletes' Development: A

3 Systematic Review

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14

**Abstract**

15 Research has identified psychological skills and characteristics (PSCs) perceived to facilitate  
16 talented youth athletes' development. However, no systematic categorisation or synthesis of  
17 these PSCs exists to date. To provide such synthesis, this systematic review aims to: (i)  
18 identify PSCs perceived as facilitative of talented youth athletes' development; (ii) group and  
19 label synonymous PSCs; and (iii) categorise PSCs based on definitions established in  
20 Dohme, Backhouse, Piggott, and Morgan (2017). PRISMA systematic review guidelines  
21 were employed and a comprehensive literature search of SPORTDiscus, PsycINFO,  
22 PsycARTICLES, and ERIC completed in November 2017. Twenty-five empirical studies  
23 published between 2002 and 2017 met the inclusion criteria. Through thematic analysis, 19  
24 PSCs were identified as facilitative of youth athletes' development. Eight PSCs were  
25 categorised as psychological skills (e.g., goal-setting, social support seeking, and self-talk)  
26 and eleven as psychological characteristics (e.g., self-confidence, focus, and motivation). The  
27 practical implications of these findings are discussed.

28

29 **Keywords:** talent identification, mental skills, sport psychology, definitions

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32           Research has long attested to the important role of psychological skills and  
33 characteristics (PSCs) in determining elite athletic performance. According to Dohme et al.  
34 (2017), psychological characteristics are commonly defined as trait-like dispositions that can  
35 be regulated or enhanced through systematic development despite their relative stability (e.g.,  
36 motivation and focus). Psychological skills on the other hand, are defined as athletes' ability  
37 to use learned methods to regulate or enhance their psychological characteristics (e.g., self-  
38 talk and imagery). Specifically, Orlick and Partington (1998) and Gould, Dieffenbach, and  
39 Moffett (2002) identified that the possession of well-developed PSCs, such as high levels of  
40 commitment, motivation, and focus, distinguished successful from less successful athletes.  
41 Similarly, Williams and Krane (2001) concluded that having high levels of motivation,  
42 commitment, and self-confidence, as well as the ability to set and achieve goals, visualize,  
43 and self-regulate, facilitated athletes' ability to achieve peak performance. In an attempt to  
44 summarise some of this research, Gould and Maynard (2009) reviewed literature discussing  
45 the psychological preparation of Olympic athletes. The authors identified 28 PSCs believed  
46 to influence athletes' likelihood to achieve Olympic success, including concentration,  
47 competitiveness, sport intelligence, self-talk, imagery, and goal orientation. Despite recent  
48 research suggesting that PSCs do not necessarily distinguish elite from super elite athletes  
49 (Hardy et al., 2017), it appears to be universally accepted that highly successful athletes  
50 possess well-developed PSCs.

51           More recently, this literature was extended by authors interested in the development  
52 of these PSCs in youth athletes (e.g., MacNamara, Button, & Collins, 2010a). Despite  
53 similarities between the PSCs facilitative of youth athletes' development and elite athletic

54 performance to be expected, it is important to distinguish the psychological needs of adult  
55 and youth athlete populations. Particularly, experts have suggested that youth athletes should  
56 be considered a distinct and special population whose cognitive development needs to be  
57 taken into consideration when aiming to develop PSCs within them (e.g., Côté, 1999; Gould  
58 & Carson, 2008; McCarthy, Jones, Harwood, & Olivier, 2010). Despite the value and  
59 importance of the early, proactive, and systematic development of PSCs having been voiced  
60 as early as in 1988 by Vealey, an increase in literature attesting to the fundamental role of  
61 PSCs during youth athletes' development has only emerged over the past 15 years (e.g., Côté,  
62 Lidor, & Hackfort, 2009). Together, this literature argues that youth athletes' systematic  
63 psychological development is important for several reasons. First, young athletes have to  
64 dedicate considerable time and effort into the sport they want to excel in, in order to become  
65 a successful performer (Larsen, Alfermann, & Christensen, 2012). Particularly during  
66 adolescence, this can be challenging, as athletes have to learn to balance their athletic, school,  
67 and personal responsibilities effectively (Holt & Dunn, 2004). Second, behaviours and  
68 attitudes exerted by aspiring elite athletes need to be facilitative of the continuous  
69 engagement in deliberate practice which is associated with effective development, yet rarely  
70 inherently motivating (Larsen et al., 2012). Subsequently, PSCs supporting youth athletes'  
71 desire to learn and improve through effort and challenge have been suggested to facilitate  
72 athletes' successful long-term development (MacNamara, Button, & Collins, 2010b). Third,  
73 the pathway to excellence is rarely smooth, instead it is dynamic, complex, challenging, and  
74 unpredictable (Henriksen, Stambulova, & Roessler, 2010). Consequently, athletes have to  
75 deal effectively with the trials and tribulations the 'pathway to excellence' poses. Some of  
76 these trials and tribulations can be anticipated. For instance, athletes are likely to encounter  
77 disappointment, injury, transitions, and evolving relationships with coaches, teammates, and

78 opponents when moving through the stages of athletic development (Keegan, Spray,  
79 Harwood, & Lavallee, 2010).

80         To prepare athletes for these challenges, MacNamara and Collins (2015) suggested  
81 that athletes should be equipped with important PSCs early on in their development, to avoid  
82 trying to 'quick fix' athletes when problems, such as burnout, fear of failure, or anxiety,  
83 occur. Overall, researchers have suggested a range of PSCs that should be developed to  
84 decrease the number of athletes unequipped to manage challenges effectively and, in turn,  
85 increase athletes' likelihood to achieve their athletic goals. Although researchers seemingly  
86 agree that the early systematic development of PSCs is important, there is a degree of  
87 divergence regarding the specific PSCs that should be developed. For instance, when  
88 conducting a coach education intervention aimed at enhancing youth football coaches'  
89 efficacy to develop important PSCs in athletes, Harwood (2008) taught coaches about  
90 commitment, communication, concentration, control, and confidence, also known as the '5Cs  
91 of football'. In comparison, after interviewing 31 elite performers from team sports,  
92 individual sports, and music, MacNamara et al. (2010a; 2010b) identified 10 PSCs as  
93 particularly important for enhancing athletes' ability to effectively interact with the  
94 developmental opportunities they are afforded. The authors termed these PSCs  
95 'Psychological Characteristics of Developing Excellence' and included commitment, coping  
96 with pressure, having a vision of what it takes to succeed, imagery, focus, distraction control,  
97 social skills, goal setting, realistic performance evaluation, competitiveness, and game  
98 awareness. Across two research teams, we can thus see a level of variance concerning the  
99 PSCs recommended to be developed in youth athletes. This variance is not surprising and can  
100 occur when researchers study different contexts (e.g., different sports, genders, and ages), use  
101 different measures, measure different psychological constructs, or interpret findings

102 differently (Anshel & Lidor, 2012; Smith, 2010). Whilst the search for a unifying  
103 categorisation of PSCs is perhaps premature, it is arguably necessary to synthesise the  
104 existing information to make it more accessible to practitioners, coaches, and researchers  
105 alike. For instance, sport programs have long been understood as ideal platforms for young  
106 individuals to develop physical, psychological, and social skills (Fraser-Thomas, Côté, &  
107 Deakin, 2005). Yet, athletes' development of PSCs is not an automated outcome of sport  
108 participation, instead it is triggered through appropriate training patterns and social influences  
109 (Côté, Baker, & Abernethy, 2007; Côté & Vierimaa, 2014). As a result, coaches are  
110 increasingly called upon creating environments that systematically foster the development of  
111 PSCs in youth athletes. To increase coaches' ability to provide such environments, a  
112 synthesis of PSCs shown to enhance youth athletes' development has been called for (e.g.,  
113 Larsen et al., 2012). Consequently, the aim of this systematic review is to provide such  
114 synthesis by fulfilling three objectives: (i) to identify PSCs perceived as facilitative of  
115 talented youth athletes' development; (ii) to group and label synonymous PSCs; and (iii) to  
116 categorise PSCs based on definitions established in Dohme et al. (2017).

## 117 **Method**

### 118 **Development of search strategy**

119 To ensure a rigorous selection of literature, PRISMA systematic review principles  
120 based on replicable criteria were employed (Smith, 2010). In accordance with the research  
121 aims, a list of key search terms was comprised and trialled in a preliminary search on the  
122 SPORTDiscus database (Smith, 2010). Every 10<sup>th</sup> search result was sampled, assessed for  
123 relevance, and investigated to identify additional keywords frequently used in the literature  
124 (Weed, Coren, & Fiore, 2009). This process was repeated until the terms that returned the  
125 most relevant and specific literature in relation to the research aims were identified. Irrelevant

126 terms that repeatedly came up in the search results were excluded (e.g., disorder). The final  
127 list of search terms included the following:

128 ('psychological characteristic\*' OR 'mental skill\*' OR 'psychological skill\*' OR 'mindset')

129 AND

130 (elite OR success\* OR excellen\* OR perform\*)

131 AND

132 develop\*

133 AND

134 (young OR athlet\*)

135 NOT

136 disorder

137 The databases SPORTDiscus, PsycINFO, PsycARTICLES, and ERIC were searched  
138 for relevant papers. Further, all reference lists of included studies were hand searched to  
139 identify papers that may have been missed during the search.

#### 140 **Inclusion and exclusion criteria**

141 To create clearly defined boundaries for the review, inclusion and exclusion criteria  
142 were employed (Smith, 2010). The inclusion criteria were: (a) peer reviewed research studies,  
143 (b) published in English language, (c) published from January 2002 (when the first relevant  
144 study in relation to the research purpose could be identified) until November 2017 (when the  
145 formal search was finalised), (d) have gathered original qualitative or quantitative evidence  
146 on psychological skills and characteristics perceived as facilitative of young (under 18 years  
147 of age) talented athletes' development, (e) involve sporting activities as defined by the  
148 Oxford Dictionary of Sport Science and Medicine (Kent, 2006), (f) contain specific reference  
149 to either psychological/mental characteristics, psychological/mental skills,

150 psychological/mental qualities, psychological/mental attributes, psychological/mental  
151 techniques, psychological/mental factors, psychosocial characteristics, mindset, or life skills  
152 within the title or abstract, and (g) include data that was compatible and relevant to the three  
153 aims of this study.

#### 154 **Search returns**

155         The search process came to a close on the 7<sup>th</sup> of November 2017. In total, 260 papers  
156 were considered as holding potential for inclusion. After duplications were removed, abstracts  
157 and titles were assessed for relevance. Following the inclusion and exclusion criteria, 45 papers  
158 were considered for full-text retrieval and 215 papers excluded. The majority of these studies  
159 were excluded as their data was not compatible with or relevant to the three aims of this study,  
160 or due to their focus on senior (above 18 years of age) athletes. After hand searching the  
161 reference lists of the 45 papers, an additional nine papers were added. Subsequently, the full  
162 text of 54 papers was reviewed. Of the 54 papers, 22 met the inclusion criteria of this review.  
163 A reference list of these 22 papers was examined by an external advisory team which consisted  
164 of five individuals who all had over 12 years of research and applied practice experience in the  
165 field of youth athletes' psychological development. The advisory teams' suggestions with  
166 regards to further relevant papers were considered. As a result, twelve additional papers were  
167 reviewed in full, of which three were included in this review. Hence, 25 studies were analysed  
168 for the purpose of this review. Following Moher, Liberati, Tetzlaff, and Altman's (2009)  
169 PRISMA flow diagram guidelines, an overview of the search process is outlined in Figure 1.

#### 170 **Data synthesis**

171         Before data was extracted, the lead author established familiarity with the included  
172 papers by reading them three times (Glasziou, Irwig, Bain, & Colditz, 2001). In this instance,  
173 the word "data" refers to PSCs perceived to facilitate talented youth athletes' development. A

174 narrative inductive thematic analysis approach was used to identify, organise, and summarise  
175 key information (Pope, Mays, & Popay, 2007). The process was inductive as the analysis was  
176 not guided by existing theory, instead a bottom up data analysis approach was used (Braun &  
177 Clarke, 2013). In addition, a narrative synthesis approach was chosen which “relies primarily  
178 on the use of words and text to summarise and explain the findings of multiple studies” (Pope  
179 et al., 2007, p. 102), as the majority of findings were derived from qualitative data.  
180 Specifically, text and words were extracted that were perceived to offer insight into the three  
181 research aims.

### 182 **Establishing trustworthiness**

183 To establish trustworthiness, peer debrief - a process of consistent review of data and  
184 research process by three supervisors - was employed (Creswell & Miller, 2000). In addition,  
185 an advisory team comprised of five external researchers who had previously published  
186 studies in the substantive research field supported the initial stages of the review process.  
187 Specifically, they assisted with the selection of search terms, inclusion criteria, and screening  
188 of initial search results (Smith, 2010).

## 189 **Findings**

### 190 **General Findings**

191 The 25 papers included in this review comprised a total population size of 4021  
192 athletes (males = 3632, females = 233, and not identified = 35), 75 coaches, 35 parents, nine  
193 academy support staff, and two sport psychologists. In total, 34 different individual and team  
194 sports were included. Athletes engaged in sports such as soccer (n = 3240), distance running  
195 (n = 182), cricket (n = 127), rugby union (n = 54), tennis (n = 34), speed skating and  
196 basketball (n = 31), handball (n = 27), gymnastics (n = 27), field hockey (n = 25), and  
197 volleyball (n = 23). Together, this overview highlights that a significant amount of

198 participants were male football players. Of the reviewed studies, 14 focused on identifying  
199 PSCs, one life-skills, two Psychological Characteristics of Developing Excellence, and two  
200 self-regulatory skills that facilitate athletes' successful development; one on developing PSCs,  
201 and five explored PSCs that are perceived to facilitate the development of mental toughness.

## 202 **Exclusion of constructs**

203 For the purpose of this review psychological constructs, such as mental toughness,  
204 Psychological Characteristics of Developing Excellence, self-regulation, and life skills, were  
205 considered based on the PSCs that underpin them. For instance, according to MacNamara et  
206 al. (2010a; 2010b) the construct Psychological Characteristics of Developing Excellence  
207 consists of the PSCs commitment, coping with pressure, having a vision of what it takes to  
208 succeed, imagery, focus, distraction control, social skills, goal setting, realistic performance  
209 evaluation, competitiveness, and game awareness. Consequently, these PSCs were included  
210 in the data analysis of this review. Despite the development of psychological constructs  
211 perhaps being an attempt to summarise and consider context specific differences in the  
212 development and deployment of important PSCs, Lourenco (2001) argued that the  
213 development of constructs can lead to an over complication of research. Subsequently, the  
214 decision to refer to constructs' individual PSCs was made to keep the results transparent and  
215 inclusive of constructs' underpinning PSCs.

## 216 **Identification, grouping, labelling, and categorisation of PSCs perceived to facilitate** 217 **talented youth athletes' development**

218 In total, 92 PSCs were identified as facilitative of youth athletes' development (see  
219 Table 1 & 2, column 1 & 2). To understand the meaning of each PSC, the terms used to  
220 describe them were analysed using the reviewed literature, as well as sport science, medicine,  
221 and psychological dictionaries (Colman, 2008; Kent, 2006; Reber, 1995). This analysis, as

222 well as in-depth discussions between the lead and co-authors, revealed that various terms  
223 were synonyms or closely related to each other allowing terms to be grouped. For example,  
224 when analysing the terms 'imagery', 'visualization', and 'mental planning', the first author  
225 perceived terms to be synonymous or closely related to each other due to the reviewed  
226 papers' descriptions of the terms, the context in which they were referred to, as well as the  
227 definitions of these terms outlined in sport science, medicine, and psychological dictionaries.  
228 Once grouped, the authors engaged in further discussions to identify an umbrella term that  
229 would best represent the shared meaning of the group of terms. In the case of 'imagery',  
230 'visualization', and 'mental planning', the authors agreed that the word 'imagery' would best  
231 represented the terms' shared meaning. As a result, 'imagery' is presented under the table  
232 heading 'umbrella term' and the terms 'visualization' and 'mental planning' under the table  
233 heading 'encompassing terms' (Table 1). This outlines that the terms 'visualisation' and  
234 'mental planning' are encompassed by the umbrella term 'imagery'.

235         In some instances a further categorisation of encompassing terms, into antecedents  
236 (i.e., behaviours or thoughts that preceded the umbrella PSC), synonyms (i.e., a word or  
237 phrase that means exactly or nearly the same as the umbrella PSC), and associate behaviours  
238 or outcomes (i.e., behaviours or outcomes that are commonly trigger by the associated  
239 umbrella PSC) was possible. For instance, the reviewed literature indicated that antecedents  
240 of the psychological characteristic 'hard-work ethic' were behaviours or thoughts such as a  
241 'vision of what it takes to succeed' and a 'willingness to sacrifice'. Furthermore, the reviewed  
242 literature frequently used terms such as 'commitment' or 'determination' as synonyms of a  
243 'hard-work ethic', wherefore these terms were categorised under the heading 'synonyms'.  
244 Finally, the reviewed literature described that a 'hard-work ethic' was often associate with  
245 behaviours or outcomes such as 'investment of high levels of effort' or 'quality practice',

246 wherefore these terms were categorised under the heading of 'associate  
247 behaviours/outcomes'. This categorisation process was engaged in for every PSC until  
248 agreement between all authors was reached.

249           Grouping and labelling terms resulted in the identification of 19 umbrella PSCs  
250 perceived to enhance youth athletes' development. Each PSC was defined (Table 1 & 2,  
251 column 4) based on information elicited from the reviewed literature (Table 1 & 2, column  
252 3). The definitions were aligned to a guiding psychological framework that was established in  
253 Dohme et al. (2017). Within this framework, psychological terms frequently used within the  
254 talent development literature were divided into two categories, namely psychological skills  
255 and psychological characteristics. Psychological skills were defined as "an individual's  
256 ability to use learned strategies to accomplish specific results (e.g., the ability to reflect on a  
257 piece of work to make it better) ... psychological skills are used to regulate or enhance  
258 psychological characteristics either immediately (e.g., getting in the zone before a match) or  
259 over time (e.g., building confidence). Being able to use and retrieve complex psychological  
260 strategies effectively at the appropriate time makes it a skill that athletes can acquired through  
261 systematic long-term practice." (p. 158). In comparison, psychological characteristics were  
262 defined as trait-like dispositions that can, despite being fairly stable and enduring across  
263 different situations, be enhanced or strengthened through systematic development and  
264 training. In addition, the authors explained that "social and contextual influences (e.g.,  
265 athletes' performance domain or age/stage of development), as well as performance  
266 challenges, can impact the development and operationalization of psychological  
267 characteristics." (p. 157).

268           When carefully comparing the definitions of PSCs identified in this review with the  
269 definitions established in Dohme et al. (2017), a distinction of the 19 PSCs into psychological

270 skills and psychological characteristics was possible. Consequently, eight PSCs were  
271 categorised as psychological skills, including goal-setting, social support seeking, realistic  
272 self-evaluation, imagery, relaxation, maintaining a sense of balance, (pre-) performance  
273 routines, and self-talk (Table 1, column 1). The remaining 11 PSCs were categorised as  
274 psychological characteristics, including self-confidence, hard-work ethic, emotional control,  
275 interpersonal competencies, focus, motivation, competitiveness, positivity, resilience, sport  
276 intelligence, and independence (Table 2, column, 1). A detailed description of each PSC can  
277 be found in Tables 1 and 2, column 4. Within Table 1 and 2 PSCs are organised based on the  
278 number of studies that identified the particular PSC as facilitative of youth athletes'  
279 development. For example, in Table 1, 20 out of the 25 included studies identified goal-  
280 setting as an important psychological skill, consequently it was listed first. Other  
281 psychological skills were not as frequently identified as important for youth athletes'  
282 development (e.g., social support seeking n = 14; imagery n = 7) and were subsequently  
283 listed behind goal-setting. This order does not indicate that some PSCs have been suggested  
284 to be more important, instead, it highlights that certain PSCs appear to be researched more  
285 frequently than others are.

## 286 **Discussion**

287 The objectives of this review were to (i) identify PSCs perceived to facilitate talented  
288 youth athletes' development, (ii) group and label synonymous PSCs, and (iii) categorise  
289 PSCs based on authors' definitions established in Dohme et al. (2017). In total, 19 PSCs were  
290 identified as facilitative of youth athletes' development. Eight PSCs were categorized as  
291 psychological skills (e.g., goal-setting, social support seeking, and realistic self-evaluation)  
292 and eleven as psychological characteristics (e.g., hard-work ethic, emotional control, and  
293 focus). Overall, the reviewed literature suggested that an early, systematic development of

294 these 19 PSCs can increase youth athletes' likelihood to overcome challenges and,  
295 subsequently, achieve athletic excellence (MacNamara & Collins, 2015). For example, young  
296 athletes with high levels of motivation, a hard-work ethic, and competitiveness, were deemed  
297 more likely to deal effectively with challenges and overcome physical weaknesses, compared  
298 to similar talented peers that are lacking these PSCs.

299         Despite these promising results, the systematic review of the literature also revealed  
300 that the development, deployment, and effects of PSCs can be complex, as they are affected  
301 by athletes' individual differences (MacNamara et al., 2010b; Mills, Butt, Maynard, &  
302 Harwood, 2012). For instance, researchers such as Mills et al. (2012) suggested that not all  
303 PSCs recommended in the talent development literature need to be present for athletes to  
304 advance to an elite level. Instead, the authors describe that, inevitably, some athletes will  
305 successfully transition despite the absence of some PSCs. The authors explained this  
306 phenomenon through the compensation effect, which outlines that a lack of capability in one  
307 area can be compensated for by very high levels of capability in another area (Bartmus,  
308 Neumann, & Marees, 1987). For instance, an athlete with low levels of self-confidence to  
309 succeed can compensate by being extremely motivated to succeed. Others, such as  
310 MacNamara et al. (2010b), suggested that while the development and deployment of PSCs is  
311 evident throughout athletes' development, the manner by which they are deployed depends  
312 on athletes' individual characteristics, such as cognitive maturation and age, as well as the  
313 context in which athletes are embedded, including athletes' stages of development and  
314 performance domains. Specifically, MacNamara et al. (2010b) identified that athletes'  
315 development and deployment of PSCs commonly changed throughout the developmental  
316 pathway, whereby PSCs appeared to be promoted and reinforced by others, such as parents,  
317 teachers, and coaches, throughout the early years of athletes' development and self-initiated

318 by athletes in their later performance years. Despite this change of behaviour depending  
319 strongly on athletes' age, the demands of athletes' performance environment can also effect  
320 the development and deployment of PSCs. For instance, athletes who have to specialise early  
321 in sports such as gymnastics or ballet appeared to develop the ability to self-regulate the  
322 deployment of PSCs earlier than athletes who specialised later in their development  
323 (MacNamara et al., 2010b). Finally, it cannot be assumed that equipping talented athletes  
324 with PSCs will automatically create elite performers. There is a wide range of other  
325 contextual and environmental factors that can significantly affect athletes' chances of  
326 reaching the elite level, such as finances, health, and other personal circumstances (Henriksen  
327 et al., 2010).

328         Although PSCs are dependent on athletes' individual differences and affected by  
329 contextual variables, youth development systems should not shy away from their  
330 development, as it can only benefit athletes (MacNamara & Collins, 2015). Specifically, in  
331 addition to positively influencing youth athletes' athletic development, research suggested  
332 that PSCs can be successfully transferred to other life domains, such as music, school, and  
333 family life; consequently facilitating athletes' development as performers and lifelong  
334 learners (e.g., Bean, Kendellen, & Forneris, 2016; Gould & Carson, 2008; Pierce, Kendellen,  
335 Camiré, & Gould, 2018). In sum, the systematic development of PSCs appears to have  
336 various positive effects on youth athletes and should thus be developed throughout the  
337 lifespan, starting as early as possible. Considering the temporality of athletes' cognitive  
338 development, it is recommended that the development of PSCs is scaffolded, increasing in  
339 complexity over time, and matches the challenges faced by athletes at specific points in their  
340 development (MacNamara et al., 2010b).

341 An additional observation gained through this review, is that approximately half of  
342 the reviewed papers referred to a distinct relationship between PSCs (e.g., Connaughton,  
343 Wadey, Hanton, & Jones, 2010; Cook, Crust, Littlewood, Nesti, & Allen-Collinson, 2014;  
344 Durand-Bush & Salmela, 2002; Howells, 2017). Butt et al. (2010) for example stated "... the  
345 psychological skill of positive self-talk is one effective way to build and maintain  
346 confidence" (p. 328). Nevertheless, evidence of causality was sparse, as causal relationships  
347 between PSCs were not explicitly examined. A potential explanation for this lack of evidence  
348 could be that no guiding framework in relation to the distinction and relationship between  
349 categories of PSCs existed until recently (Dohme et al., 2017). Furthermore, as illustrated in  
350 Tables 1 and 2, several synonyms were used in the reviewed literature to describe one and the  
351 same PSC. These PSCs and their hypothetical development were rarely explained, nor good  
352 practice examples offered. This lack of insight impedes a clear identification of each PSCs'  
353 purpose and development. To facilitate the practical implementation of the current findings,  
354 future research is warranted that explores which psychological skills regulate and facilitate  
355 particular psychological characteristics.

356 In relation to the applied implications of these findings, it is envisaged that an  
357 effective talent development approach would be to systematically develop the 19 PSCs  
358 identified within this review early on during aspiring elite athletes' development  
359 (MacNamara & Collins, 2015). Helping young developing athletes to fill and refine their  
360 "athletic locker" (Figure 2) with appropriate PSCs could equip them with skills that will  
361 enable them to deal more effectively with anticipated challenges. As suggested by  
362 MacNamara and Collins (2015), it appears that this proactive approach to youth athletes'  
363 development would be more appropriate than trying to "quick-fix" problems when they  
364 occur. Nevertheless, it is important to note that talented athletes should not be selected or

365 deselected for performance programs based on their possession of the 19 PSCs (Abbott &  
366 Collins, 2002; MacNamara et al., 2010b). Yet, given the current lack of emphasis on the  
367 systematic development of PSCs in youth athletes (Larsen et al., 2012) and research  
368 highlighting the need to develop athletes not only physically, but also psychologically and  
369 socially (Janelle & Hillman, 2003), the current findings contribute to the education of  
370 governing bodies and athletes' supportive others, such as coaches and parents. Specifically, it  
371 is envisaged that the current findings will enable a more strategic development of youth  
372 athletes' PSCs by offering a succinct overview of the PSCs that should be developed during  
373 youth athletes' early engagement in sports (MacNamara & Collins, 2015).

374         Together, the reviewed literature has significantly enhanced our understanding of the  
375 importance of developing PSCs in talented youth athletes. Nonetheless, a number of  
376 methodological issues which are worth outlining were noticed when reviewing the literature.  
377 For instance, some procedural methods were identified that potentially obscured our ability to  
378 appropriately interpret the research findings. Firstly, when considering the quantitative  
379 measures of PSCs, typically only a selected number of PSCs were researched. Specifically,  
380 some studies used measures that assessed a range of specific PSCs (e.g., Test of Performance  
381 Strategies: Thomas, Murphy, & Hardy, 1999), whereas others focused on only one particular  
382 PSC (e.g., the Multidimensional Perfectionism Scale: Frost, Marten, Lahart, & Rosenblate,  
383 1990). This can lead to an imbalance in the depth and quality with which certain PSCs are  
384 researched. Secondly, questionnaires chosen to assess athletes' PSCs are often designed for  
385 adult athletes. Consequently, they may not be suitable for the use with young or adolescent  
386 athletes, as they do not fulfil the ecological needs of the youth context (MacNamara &  
387 Collins, 2015). Finally, it is plausible that other important PSCs may have not yet been  
388 identified. After all, researchers typically only identify the PSCs they are looking for. For

389 example, Gould et al. (2002) argued that a number of PSCs considered important in the  
390 general psychological literature, have not yet been explored in the sport context. As a result,  
391 Gould and colleagues (2002) investigated the importance of optimism, perfectionism, and  
392 hope in relation to youth athletes' development. Overall, this highlights that research in this  
393 area has not yet been exhaustive, wherefore the list of PSCs established within this review is  
394 perhaps incomplete.

395         With regards to studies using qualitative research methods, it is possible that  
396 researchers' use of language impacted the current findings (Anshel & Lidor, 2012). For  
397 instance, when aiming to explore athletes' perceptions and development of mental toughness,  
398 Butt, Weinberg, and Clup (2010) provided participants with a specific definition of mental  
399 toughness to establish an understanding of the phenomenon before discussing it. Priming  
400 participants with this information has the potential to bias their answers and in turn impact  
401 research findings. In comparison, some researchers avoided the explicit introduction of  
402 academic terms and did not inquire about participants' understanding of them. Unless  
403 participants expand upon their thoughts, it is however hard for researchers to interpret what  
404 participants mean when using compound terms such as mental toughness or resilience. In a  
405 bid to reduce influencing participants' natural jargon and increase our understanding of  
406 participants' choice of terms, researchers are encouraged to consider the information they  
407 give to and receive from participants more carefully. To do so several strategies can be  
408 implemented. For instance, instead of providing participants with definitions of subject  
409 specific terms from the onset, researchers could inquire about participants' understanding of  
410 the terms first. Similarly, if participants repeatedly refer to a subject specific term, such as  
411 mental toughness, it could be helpful to ask participants for an example of mental toughness,  
412 such as a situation in which they saw mentally tough behaviour being displayed. Another

413 issue of qualitative research studies was that they frequently offered insufficient amounts of  
414 transparency that gave insight into how researchers had arrived at their conclusions.  
415 Specifically, authors tended to identify more PSCs than were reported in the results or  
416 discussion sections. For example, Gould et al. (2002) identified 47 subthemes that  
417 represented important PSCs of developing athletes. The 47 subthemes were clustered into 40  
418 higher-order themes and categorised into eight umbrella categories. Despite creating a figure  
419 that illustrates this categorisation, no written explanation was offered that gave insight into  
420 why the authors perceived this categorisation to be final. In addition, a battery of  
421 psychological inventories was administered to athletes which created complimentary, but also  
422 additional results. Finally, findings from interviews and psychological inventories were  
423 summarised into 12 characteristics that were perceived to facilitate athletes' development, yet  
424 it is not clear why these particular 12 PSCs were favoured over others. To conclude, it  
425 appears that authors frequently cluster findings into higher and lower ordered themes without  
426 explaining reasons for this behaviour. Future research should aim to offer more transparency  
427 in light of these decisions.

428         In relation to the design of studies included within this review, several  
429 recommendations for improvement can be made. First, samples of athletes that combined a  
430 mixture of variables such as gender, types of sport (i.e., individual or team sport), sport (e.g.,  
431 tennis & football), and ages were frequently used. As outlined by MacNamara et al. (2010b),  
432 combining and generalising results from these various different contexts without explicitly  
433 referring to their differences can obscure the quality of results. For example, similar to  
434 physical demands, psychological demands can vary depending on the sport one engages in.  
435 For athletes involved in team sports PSCs such as interpersonal competencies may be more  
436 important than for athletes involved in individual sports. Hence, aggregating results across

437 different contexts serves to undermine our possible understanding of PSCs. Future research  
438 should aim to identify which specific PSCs facilitate the development of athletes in different  
439 sport contexts, as well as developmental stages. Second, the reviewed studies frequently  
440 employed retrospective methods, thus relying strongly on participants' memory. Despite this  
441 being a valuable and appropriate method to gather information, it can obscure the in-depth  
442 understanding of a phenomenon, as participants may be prone to recall bias. On the flipside,  
443 researchers who employed non-retrospective methods rarely engaged in follow up research.  
444 To improve research within this area, future studies might combine several research  
445 approaches (i.e., retro- and non-retrospective). Third, it appears that some studies gathered  
446 information from only one participant population (e.g., athletes or coaches). To strengthen the  
447 quality of results, future research should aim to collect data from several populations that  
448 influence athletes' development. Fourth, the majority of studies focused on athletes from  
449 specific developmental stages, yet generalised their findings. This may obscure our  
450 understanding of the development and deployment of PSCs during athletes' development.  
451 Studying the acquisition and deployment of PSCs across different ages and stages of athletes'  
452 development would be a valuable undertaking in the future.

### 453 **Strengths and limitations**

454         This systematic review has three main strengths. First, by synthesising, summarising,  
455 and explicitly stating the PSCs identified to facilitate youth athletes' development, this  
456 review brings much needed clarity, transparency, and simplicity to this research area. Second,  
457 this review is based on rigorous inclusion and exclusion criteria, which led to the inclusion of  
458 current, relevant, and robust studies. Finally, despite the tentative and provisional nature of  
459 this categorisation, this review offers a coherent summary of the extant literature and  
460 provides a stimulus for reflection, discussion, and debate amongst the academic community.

461           Balanced against these strengths, limitations need to be acknowledged. First, the  
462 inclusion and exclusion criteria of this review may have led to the exclusion of potentially  
463 relevant literature. Specifically, two of the most frequent reasons for excluding papers from  
464 this review was authors' focus on adult elite athletes and PSCs that allowed elite athletes to  
465 maintain their status, rather than focusing on PSCs that helped to develop athletes. Second,  
466 the systematic review process identified studies that are diverse in their research approach  
467 (e.g., different designs, methodological quality, types and stages of athletes, etc.). Inevitably,  
468 this can impact the validity of the reviews' findings. Specifically, generalising findings from  
469 different contexts (e.g., sports or ages) can undermine our understanding of the psychological  
470 demands different developmental contexts offer. In addition, it was important to ensure the  
471 validity of the diverse methodological approaches used. As a result, the quality assessment of  
472 the papers was an ongoing and important process, during which an expert panel constantly  
473 checked the quality of papers based on their professional expertise across a range of  
474 methodologies. Nevertheless, to make this process more replicable and robust, future  
475 systematic reviews should consider the use of quality assessment tools, such as the Mixed  
476 Method Appraisal Tool by Pluye et al. (2011). Third, while the review offers a succinct  
477 overview of PSCs that should be fostered within talented youth athletes, it was not possible to  
478 provide detailed insight into the make-up and development of each PSC. Consequently,  
479 future publications should offer an in-depth overview of each PSC and how it can be  
480 developed to expand upon the somewhat simplistic overview of PSCs within this review.  
481 Finally, some of the PSCs identified as important for youth athletes' development may match  
482 or vary from the PSCs facilitative of elite athletic performance. Despite alluding to this  
483 phenomenon, this review was unable to offer a detailed comparison of the PSCs that are

484 important across athletes' lifespan. As this is an important and worthwhile endeavour, future  
485 research is encouraged to explore this topic in more depth.

486 **Conclusion**

487 The talent development literature is a diverse and evolving body of research. To  
488 increase the practical utility of research findings, this review aimed to address calls for more  
489 synergy and simplicity. Specifically, the review identified, critically analysed, summarised,  
490 synthesised, and described PSCs perceived to increase talented youth athletes' likelihood of  
491 fulfilling their athletic potential. It is envisioned that this synthesis will help athletes'  
492 supportive others to proactively and systematically foster athletes' positive psychological  
493 development. In addition, the findings may encourage and assist researchers in provoking  
494 valuable discussions (or even collaborations) across disciplinary and paradigmatic borders.

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**Table 1**

Identification, Grouping, Labelling, Categorisation, and Definition of Psychological Skills that Increase Athletes' Likelihood to Achieve Athletic Excellence

<b>Psychological Skills</b> (Learned skills that regulate and facilitate the development of psychological characteristics)			
<b>Umbrella Term</b>	<b>Encompassed Terms:</b> Antecedents, Synonyms, & Associated Behaviours/Outcomes	<b>Authors</b>	<b>Definition</b>  Summarised based on information from included studies.
<b>Goal - Setting</b>	<b>Antecedents:</b> • N/A	Butt et al., (2010); Connaughton et al., (2008; 2010); Cook et al., (2014); Durand-Bush and Salmela, (2002); Gould et al., (2002); Harwood (2008); Hill et al., (2015); Holt and Dunn (2004); Howells (2017); Jones and Lavallee (2009); Jonker et al., (2010); Kruger et al., (2012); Larsen et al., (2012); MacNamara et al., (2010b); Mills et al., (2012); Toering et al., (2009); Van Yperen, (2009); Weinberg et al., (2011); Woodcock et al., (2011)  <b>n = 20 out of 25</b>	<p>The term “goal-setting” describes “a motivational technique widely used in sport which involves the assigning and choosing of specific goals which an athlete strives to achieve” (Kent, 1996, p. 190). Goal -setting can help athletes to stay focused, motivated, determined, confident, and evaluate themselves. Commonly athletes use three types of goals to guide and enhance their performance, including outcome, performance, and process goals.</p> <p>Outcome goals focus on the outcome of events or competitive results, such as winning a match or beating an opponent (e.g., “I want to win the Olympics in 2020”). Despite motivating, a sole focus on outcome goals can have its pitfalls, as these goals are not only dependent on athletes’ personal performance, but also factors that lie outside athletes’ control (e.g., the opponent’s performance, or financial, academic and physical constrains).</p> <p>Performance goals focus on achieving performance objectives that are independent of other competitors. Therefore, performance goals focus on personal accomplishments, such as beating one’s personal best or learning a new skill (e.g., “I aim to increase my basketball field goal shooting percentage from 45 to 50 percent”). As a result,</p>
	<b>Synonyms:</b> • Mental planning		
	<b>Associated behaviours/outcomes:</b> • N/A		

			<p>performance goals tend to be more flexible and under athletes' control than outcome goals.</p> <p>Process goals focus on the actions athletes' need to take to achieve their performance goals. Consequently, they are focused on the behaviours an athlete needs to engage in to achieve a specific performance target. For example, if an athlete aims to improve his/her basketball field goal shooting percentage by 5%, it could be an athlete's performance goal to practice goal shooting in their own time for at least one hour, three times a week, over the next month.</p> <p>It is recommended to set and frequently reflect upon a combination of the three goal types, as they all play a fundamental role in motivating athletes and directing their behaviours.</p>
<b>Social Support Seeking</b>	<b>Antecedents:</b>	<p>Butt et al., (2010); Connaughton et al., (2008; 2010); Cook et al., (2014); Durand-Bush and Salmela (2002); Gould et al., (2002); Holland et al., (2010); Holt and Dunn (2004); Jones and Lavallee, (2009); Larsen et al., (2012); MacNamara et al., (2010b); Mills et al., (2012); Van Yperen, (2009); Woodcock et al., (2011)</p> <p style="text-align: center;"><b>n = 14 out of 25</b></p>	<p>The term "social support seeking" describes athletes' ability and willingness to ask for and receive help and advice from others such as coaches, parents, teammates, or teachers. Holt and Dunn (2004) identified three different types of support namely emotional support (i.e., the ability to turn to others for comfort and security during times of stress), informational support (i.e., advice and guidance about possible issues), and tangible support (i.e., concrete assistance). Seeking social support is perceived to facilitate athletes' resilience, ability to overcome obstacles and help them to balance sport and other life responsibilities.</p>
	<b>Synonyms:</b>		
	<b>Associated behaviours/outcomes:</b>		
<b>Realistic Self-Evaluation</b>	<b>Antecedents:</b>	<p>Connaughton et al., (2008; 2010); Cook et al., (2014); Durand-Bush and Salmela (2002); Hill et al., (2015); Jonker et al., (2010); Larsen et al., (2012); MacNamara et al., (2010b); Mills et al., (2012); Toering et al., (2009)</p> <p style="text-align: center;"><b>n = 10 out of 25</b></p>	<p>The term "realistic self-evaluation" describes a key process of expert learning that athletes use to recapture experiences and assess performance outcomes after training and competition. It enables athletes to assess their progress and identify strengths and areas of improvement to generate new goals for personal development. It facilitates learning and helps athletes to refocus on their development and cope with various events such as losses or de-selection. This process can be conducted in an informal (e.g., talking a game through with a parent or coach) or structured manner (e.g., reflective diaries).</p>
	<b>Synonyms:</b>		
	<b>Associated behaviours/outcomes:</b>		

	<p>process outcomes effectively</p> <ul style="list-style-type: none"> <li>• Realistic performance evaluations</li> <li>• Self-reflection</li> <li>• Reflection on action</li> <li>• Self-monitoring</li> <li>• Being able to keep things in perspective</li> <li>• Awareness of weaknesses</li> </ul>		
<b>Imagery</b>	<p><b>Antecedents:</b></p> <ul style="list-style-type: none"> <li>• N/A</li> </ul>	<p>Connaughton et al., (2008; 2010); Durand-Bush and Salmela (2002); Howells, (2017); Jooste et al., (2013); MacNamara et al., (2010a; 2010b)</p> <p><b>n = 7 out of 25</b></p>	<p>The term “imagery” describes a technique athletes can use to acquire new skills and maintain, review, and rehearse already existing skills, techniques, or routines. It can help athletes to familiarize themselves with important parts of their performance, even when physical execution is not possible, and fosters their confidence, motivation, and ability to focus.</p> <p>Imagery involves the production of vivid images of situations or skills in athletes’ minds using all senses including sounds, smells, visuals, and feelings. The key is to create an image that is as close to reality as possible. Imagery can be used prior to matches/training (e.g., to reduce nervousness), during matches/training (e.g., to refocus or boost motivation), or after matches/training (e.g., to review a match). In order for imagery to enhance performance, athletes have to envisage themselves performing effectively (i.e., using a good technique and feeling confident in their performance), producing clear, vivid, and controllable images.</p>
	<p><b>Synonyms:</b></p> <ul style="list-style-type: none"> <li>• Visualization</li> <li>• Mental planning</li> </ul>		
	<p><b>Associated behaviours/outcomes:</b></p> <ul style="list-style-type: none"> <li>• Positive images</li> <li>• Mental imagery</li> </ul>		
<b>Relaxation</b>	<p><b>Antecedents:</b></p> <ul style="list-style-type: none"> <li>• N/A</li> </ul>	<p>Connaughton et al., (2008; 2010); Durand-Bush and Salmela (2002); Holland et al., (2010); Howells (2017); Larsen et al., (2012)</p> <p><b>n = 6 out of 25</b></p>	<p>“Relaxation” frees athletes from tension, worry, stress, and anxiety. It can be used in a structured manner through progressive muscle relaxation or meditation, or in an informal manner to unwind from the stresses of being an athlete (e.g., spending time with family and friends), or to get into an appropriate mindset before a competition (e.g., keeping to oneself, or listening to music). It can prevent athletes from burning out and getting bored.</p>
	<p><b>Synonyms:</b></p> <ul style="list-style-type: none"> <li>• N/A</li> </ul>		
	<p><b>Associated behaviours/outcomes:</b></p> <ul style="list-style-type: none"> <li>• N/A</li> </ul>		

<b>Maintaining a Sense of Balance</b>	<b>Antecedents:</b> • N/A	Connaughton et al., (2008; 2010); Durand-Bush and Salmela (2002); Holland et al., (2010); Larsen et al., (2012) <b>n = 5 out of 25</b>	The term “maintaining a sense of balance” describes athletes’ ability to have other interests in their lives, such as school, friends, family, and other hobbies. It has been found to help athletes to stay motivated, not get bored of their sport, and develop an identity away from the sport context, which facilitates their ability to work through challenging phases such as injury, de-selection, or early retirement more effectively.
	<b>Synonyms:</b> • N/A		
	<b>Associated behaviours/outcomes:</b> • N/A		
<b>(Pre-) Performance Routines</b>	<b>Antecedents:</b> • N/A	Durand-Bush and Salmela (2002); Connaughton et al., (2008; 2010) Gould et al., (2002); Holt and Dunn (2004) <b>n = 5 out of 25</b>	The term “(pre-) performance routine” describes a set sequence of behaviours and thoughts that athletes engage in prior or during a performance of a specific skill or competition. In order for performance routines to be effective in competitions, they must be carefully planned and practiced in training. In addition, performance routines cannot be mistaken with superstitions, instead they must lie within athletes’ control. Commonly, routines are implemented consistently over a prolonged period of time. For example, a golfer might always approach his/her shots in the same manner. Nevertheless, they should also be flexible and adaptable in case the current routine is not helping the athlete to achieve the necessary state of readiness. (Pre-) performance routines are effective as they help athletes to focus on task-relevant information and block out distractions, thus increasing athletes’ concentration and confidence.
	<b>Synonyms:</b> • N/A		
	<b>Associated behaviours/outcomes:</b> • N/A		
<b>Self-Talk</b>	<b>Antecedents:</b> • N/A	Connaughton et al., (2008); Durand-Bush and Salmela (2002); Gould et al., (2002); Holland et al., (2010); Howells (2017) <b>n = 5 out of 25</b>	The term “self-talk” describes all spoken words and internal thoughts that are directed at the self. It is a continuous stream of random, conscious, or purposeful thoughts. Self-talk affects athletes’ emotional states, attitudes, confidence, concentration, and consequently performances. Self-talk can be positive and productive and help athletes to focus on appropriate cues (e.g., “Great effort”, “Move your feet”, or “Good job”) or negative and unproductive and ruin performance (e.g., “Why did you do that?” or “You are playing
	<b>Synonyms:</b> • N/A		

	<b>Associated behaviours/outcomes:</b> <ul style="list-style-type: none"><li>• Positive affirmation statements</li></ul>		rubbish today”). Negative self-talk often occurs when athletes dwell on the past or think about the future. It is thus important to (a) become aware of one’s self-talk, (b) “be in the here and now”, (c) learn how to control one’s thoughts, and (d) replace negative self-talk with positive or instructional self-talk.
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**Table 2**

Identification, Grouping, Labelling, Categorisation, and Definition of Psychological Characteristics that Increase Athletes' Likelihood to Achieve Athletic Excellence

<b>Psychological Characteristics</b> (Predisposed, fairly stable characteristics that can be regulated and facilitated through the use of psychological skills)			
<b>Umbrella Term</b>	<b>Encompassed Terms:</b> Antecedents, Synonyms, & Associated Behaviours/Outcomes	<b>Authors</b>	<b>Definition</b>  Summarised based on information from included studies.
<b>Hard-Work Ethic</b>	<b>Antecedents:</b> <ul style="list-style-type: none"> <li>• A vision of what it takes to succeed</li> <li>• Willingness to sacrifice</li> </ul>	Butt et al., (2010); Connaughton et al., (2008; 2010); Cook et al., (2014); Durand-Bush and Salmela (2002); Gould et al., (2002); Harwood (2008); Hill et al. (2015); Holland et al., (2010); Holt and Dunn (2004); Howells, (2017); Jones and Lavallee, (2009); Jonker et al., (2010); Larsen et al., (2012); MacNamara et al., (2010a; 2010b); Mills et al., (2012); Toering et al., (2009); Van Yperen (2009); Weinberg et al., (2011); Woodcock et al., (2011)  <b>n = 21 out of 25</b>	Athletes with a “hard work ethic” commonly possess a vision of what it takes to succeed. Consequently, they: (a) consistently invest high levels of effort into training and competition over a prolonged time even if success is not immediately visible; (b) sacrifice their social lives due to their dedication towards their sport; (c) stay committed even if tasks are difficult or not inherently motivating; (d) cope well with large amounts of practice; (e) set high demands for themselves; (f) accept challenges and sometimes even suffer without giving up or dropping out of the sport they want to excel in, and (g) balance their sport and other life responsibilities effectively.
	<b>Synonyms:</b> <ul style="list-style-type: none"> <li>• Commitment</li> <li>• Determination</li> <li>• Discipline</li> <li>• Dedication</li> </ul>		
	<b>Associated behaviours/outcomes:</b> <ul style="list-style-type: none"> <li>• Investment of high levels of effort</li> <li>• Pushing oneself to the limit</li> <li>• Striving to learn and improve</li> <li>• Willingness to sacrifice</li> <li>• Consistency</li> <li>• Quality practice</li> </ul>		

	<ul style="list-style-type: none"> <li>• Attention to detail</li> <li>• Persistence</li> <li>• Perseverance</li> <li>• Adaptive perfectionism</li> </ul>		
<b>Emotional Control</b>	<b>Antecedents:</b>	Butt et al., (2010); Connaughton et al., (2008; 2010); Cook et al., (2014); Durand-Bush and Salmela (2002); Gould et al., (2002); Harwood (2008); Hill et al., (2015); Holland et al., (2010); Holt and Dunn (2004); Höner & Feichtinger, (2016); Jooste et al., (2013); Kruger et al., (2012); Larsen et al., (2012); MacNamara et al., (2010a; 2010b); Mills et al., (2012); Van Yperen (2009), Weinberg et al., (2011); Woodcock et al., (2011)  <b>n = 20 out of 25</b>	“Emotional control” facilitates the regulation of arousal (e.g. before and during a competition). It describes athletes’ ability to cope effectively with stressors of development (e.g., transitions), adversity (e.g., low self-esteem), and feelings such as anxiety or pressure, which can negatively affect athletes’ performance. In addition, it is athletes’ ability to cope with various expectations and unforeseen circumstances (e.g., injury or de-selection).
	<b>Synonyms:</b>		
	<b>Associate behaviours/outcomes:</b>		
	<ul style="list-style-type: none"> <li>• N/A</li> </ul>		
<b>(Self-) Confidence</b>	<b>Antecedents:</b>	Butt et al., (2010); Durand-Bush and Salmela, (2002); Connaughton et al., (2008; 2010); Cook et al. (2014); Gould et al. (2002); Harwood (2008); Hill et al. (2015); Holland et al., (2010); Holt and Dunn (2004); Howells, (2017); Hörner and Feichtinger, (2016); Jooste et al., (2013); Kruger et al., (2012); Larsen et al., (2012); MacNamara et al., (2010a; 2010b); Mills et al., (2012); Weinberg et al., (2011); Woodcock et al., (2011)  <b>n = 20 out of 25</b>	The term “self-confidence” describes an inner conviction of personal competency and an ability to succeed. This conviction can be general or situation-specific. It refers to an athlete’s belief that he or she has the ability to successfully execute behaviours that are required to achieve certain outcomes.
	<b>Synonyms:</b>		
	<b>Associated behaviours/outcomes:</b>		
	<ul style="list-style-type: none"> <li>• N/A</li> </ul>		
<b>(Self-) Confidence</b>	<b>Antecedents:</b>	Butt et al., (2010); Durand-Bush and Salmela, (2002); Connaughton et al., (2008; 2010); Cook et al. (2014); Gould et al. (2002); Harwood (2008); Hill et al. (2015); Holland et al., (2010); Holt and Dunn (2004); Howells, (2017); Hörner and Feichtinger, (2016); Jooste et al., (2013); Kruger et al., (2012); Larsen et al., (2012); MacNamara et al., (2010a; 2010b); Mills et al., (2012); Weinberg et al., (2011); Woodcock et al., (2011)  <b>n = 20 out of 25</b>	The term “self-confidence” describes an inner conviction of personal competency and an ability to succeed. This conviction can be general or situation-specific. It refers to an athlete’s belief that he or she has the ability to successfully execute behaviours that are required to achieve certain outcomes.
	<b>Synonyms:</b>		
	<b>Associated behaviours/outcomes:</b>		
	<ul style="list-style-type: none"> <li>• N/A</li> </ul>		
<b>Interpersonal Competencies</b>	<b>Antecedents:</b>	Butt et al., (2010); Connaughton et al., (2010); Cook et al., (2014); Durand-Bush	The term “interpersonal competencies” describes athletes’ ability to interact effectively with others through the use of
	<ul style="list-style-type: none"> <li>• N/A</li> </ul>		

	<b>Synonyms:</b> <ul style="list-style-type: none"> <li>• The ability to utilize social skills</li> </ul>	and Salmela (2002); Gould et al., (2002); Harwood (2008); Hill et al., (2015); Holland et al., (2010); Holt and Dunn (2004); Howells (2017); Jones and Lavallee, (2009); Jooste et al., (2013); Kruger et al., (2012); Larsen et al., (2012); Mills et al., (2012); Weinberg et al., (2011); Woodcock et al., (2011)  <b>n = 17 out of 25</b>	social skills that allow them to get along with and function well in groups. This includes (a) respecting and expressing appreciation for others; (b) the ability to listen, give and receive feedback, and communicate effectively; (c) demonstrating context appropriate behaviours that are in line with social and cultural norms; and (d) using a range of methods to address and resolve conflicts.
<b>Associated behaviours/outcomes:</b> <ul style="list-style-type: none"> <li>• Positive social attributes such as squad spirit, leadership ability, good communication skills, being coachable, respect for others and the sport, and an ability to accept constructive criticism and advice</li> </ul>			
<b>Motivation</b>	<b>Antecedents:</b> <ul style="list-style-type: none"> <li>• N/A</li> </ul>	Butt et al., (2010); Connaughton et al., (2008; 2010); Cook et al., (2014); Durand-Bush and Salmela (2002); Forsman, Blomqvist, Davids, Liukkonen, and Kontinen (2016); Hill et al., (2015); Holland et al., (2010); Holt and Dunn (2004); Hörner and Feichtinger (2016); Jones and Lavallee (2009); Jooste et al., (2013); Larsen et al., (2012); Mills et al., (2012); Weinberg et al., (2011); Woodcock et al., (2011)  <b>n = 16 out of 25</b>	The term “motivation” describes a feeling that drives and directs an individual’s behaviour towards a goal. It is defined by two dimensions; direction and intensity. Direction is concerned with movement towards a particular goal, whereas intensity is concerned with the amount of activation or arousal an individual invests. Intrinsic motivation was identified as crucial for athletes’ successful development as it helps athletes to stay on the pathway to excellence despite setbacks.
<b>Synonyms:</b> <ul style="list-style-type: none"> <li>• Drive</li> <li>• Desire</li> </ul>			
<b>Associated behaviours/outcomes:</b> <ul style="list-style-type: none"> <li>• Passion</li> <li>• Inspiration</li> <li>• Goal orientation</li> <li>• Enjoyment</li> </ul>			
<b>Focus</b>	<b>Antecedents:</b> <ul style="list-style-type: none"> <li>• N/A</li> </ul>	Butt et al., (2010); Connaughton et al., (2008; 2010); Cook et al., (2014); Durand-Bush and Salmela (2002); Gould et al., (2002); Harwood (2008); Hill et al., (2015); Holland et al., (2010); Howells (2017);	The term “focus” describes athletes’ ability to concentrate attention on relevant cues in the environment even when distractions are present. This includes athletes’ ability to narrow, but also broaden attention if necessary and maintain concentration over the course of a whole game, event, and
<b>Synonyms:</b> <ul style="list-style-type: none"> <li>• Concentration</li> </ul>			

	<b>Associated behaviours/outcomes:</b> <ul style="list-style-type: none"> <li>• Attentional focus</li> <li>• Task focus</li> <li>• Distraction control</li> </ul>	Jooste et al., (2013); Kruger et al., (2012); Larsen et al., (2012); MacNamara et al., (2010b); Mills et al., (2012); Weinberg et al., (2011) <p style="text-align: center;"><b>n = 16 out of 25</b></p>	season. Further, it describes athletes' determination to engage in activities that are either beneficial or at least not interfering with their responsibilities of being an athlete (e.g., sacrificing social life).
<b>Competitiveness</b>	<b>Antecedents:</b> <ul style="list-style-type: none"> <li>• N/A</li> </ul>	Connaughton et al., (2008; 2010); Cook et al., (2014); Durand-Bush and Salmela, (2002); Gould et al., (2002); Hill et al., (2015); Holt and Dunn (2004); Hörner and Feichtinger (2016); Jones and Lavallee (2009); Larsen et al., (2012); MacNamara et al., (2010a); Mills et al., (2012); Weinberg et al., (2011); Woodcock et al., (2011) <p style="text-align: center;"><b>n = 14 out of 25</b></p>	The term "competitiveness" describes athletes' strong motivational desire to outperform or beat others during training and competitions. In addition, it describes an inherent urge that motivates people to compete against and compare themselves with others. Having a competitive nature drives individuals to get immersed in challenges and invest maximum levels of effort.
	<b>Synonyms:</b> <ul style="list-style-type: none"> <li>• Competitive orientation</li> </ul>		
	<b>Associated behaviours/outcomes:</b> <ul style="list-style-type: none"> <li>• N/A</li> </ul>		
<b>Positivity</b>	<b>Antecedents:</b> N/A	Butt et al., (2010); Connaughton et al., (2008; 2010); Durand-Bush and Salmela (2002); Gould et al., (2002); Harwood (2008); Holland et al., (2010); Holt and Dunn (2004); Howells (2017); Hörner and Feichtinger (2016); Mills et al., (2012); Weinberg et al., (2011); Woodcock et al., (2011) <p style="text-align: center;"><b>n = 13 out of 25</b></p>	The term "positivity" describes the frequent experience of pleasant emotions that enables athletes to overcome obstacles or negative events (e.g., losses, injury or hardship). A high degree of positivity enables individuals to interpret negative events in an optimistic manner and view these as opportunities for personal growth.
	<b>Synonyms:</b> <ul style="list-style-type: none"> <li>• Positive mindset</li> <li>• Optimism</li> </ul>		
	<b>Associated behaviours/outcomes:</b> <ul style="list-style-type: none"> <li>• Hope (for success)</li> <li>• Open-mindedness</li> <li>• Gratitude</li> </ul>		
<b>Resilience</b>	<b>Antecedents:</b> <ul style="list-style-type: none"> <li>• N/A</li> </ul>	Butt et al., (2010); Connaughton et al., (2008); Cook et al. (2014); Gould et al. (2002); Harwood (2008); Hill et al. (2015); Holland et al., (2010); Holt and Dunn (2004); Jones and Lavallee, (2009); Mills et al., (2012); Weinberg et al., (2011); Woodcock et al., (2011) <p style="text-align: center;"><b>n = 12 out of 25</b></p>	The term "resilience" describes athletes' ability to overcome and recover quickly ("bounce back") from setbacks and adversity without suffering from any negative impact of the particular experience. It allows athletes to overcome personal and contextual obstacles and stay on the pathway to excellence without major setbacks (i.e., burning out).
	<b>Synonyms:</b> <ul style="list-style-type: none"> <li>• The ability to bounce back after setbacks</li> <li>• The ability to overcome obstacles</li> </ul>		
	<b>Associated behaviours/outcomes:</b> <ul style="list-style-type: none"> <li>• Overcoming obstacles more readily</li> </ul>		

	<ul style="list-style-type: none"> <li>• Adaptability</li> <li>• Flexibility</li> <li>• Bouncing back after setbacks</li> <li>• Reacting positively to setbacks</li> <li>• Accepting mistakes and moving on</li> </ul>		
<b>Independence</b>	<b>Antecedents:</b> <ul style="list-style-type: none"> <li>• N/A</li> </ul>	Connaughton et al. (2010); Cook et al., (2014); Durand-Bush and Salmela (2002); Hill et al., (2015); Holland et al., (2010); Holt and Dunn (2004); Howells (2017); Jones and Lavallee, (2009); Larsen et al., (2012); Mills et al., (2012); Woodcock et al., (2011)  <b>n = 11 out of 25</b>	The term “independence” describes athletes’ ability to take personal responsibility for their development and learning. Independent athletes conduct themselves in a manner that is supportive of their development (e.g., getting enough sleep, eating well, and not drinking alcohol) and thrive to realise every developmental opportunity they are afforded. It is athletes’ ability to make decisions and act free from outside control (e.g., engaging in additional individual training without being told to do so).
	<b>Synonyms:</b> <ul style="list-style-type: none"> <li>• N/A</li> </ul>		
	<b>Associated behaviours/outcomes:</b> <ul style="list-style-type: none"> <li>• Taking responsibility</li> <li>• Self-organisation</li> <li>• Self-reliance</li> </ul>		
<b>Sport Intelligence</b>	<b>Antecedents:</b> <ul style="list-style-type: none"> <li>• N/A</li> </ul>	Connaughton et al., (2008; 2010); Durand-Bush and Salmela (2002); Gould et al. (2002); Hill et al., (2015); Holland et al., (2010); MacNamara et al., (2010a); Mills et al., (2012); Weinberg et al., (2011)  <b>n = 9 out of 25</b>	The term “sport intelligence” describes athletes’ mental ability to (a) fully understand the nature of their sport; (b) make the right decision in the right moments; (c) anticipate opponents moves; (d) have great awareness of the environmental space they are engaging in; (e) learn quickly; (f) implement new information into practice; (g) analyse game situations quickly; and (h) be innovative.
	<b>Synonyms:</b> <ul style="list-style-type: none"> <li>• Game sense</li> <li>• Game knowledge</li> <li>• Game understanding</li> </ul>		
	<b>Associated behaviours/outcomes:</b> <ul style="list-style-type: none"> <li>• Anticipation</li> <li>• Creativity</li> <li>• Innovation</li> </ul>		

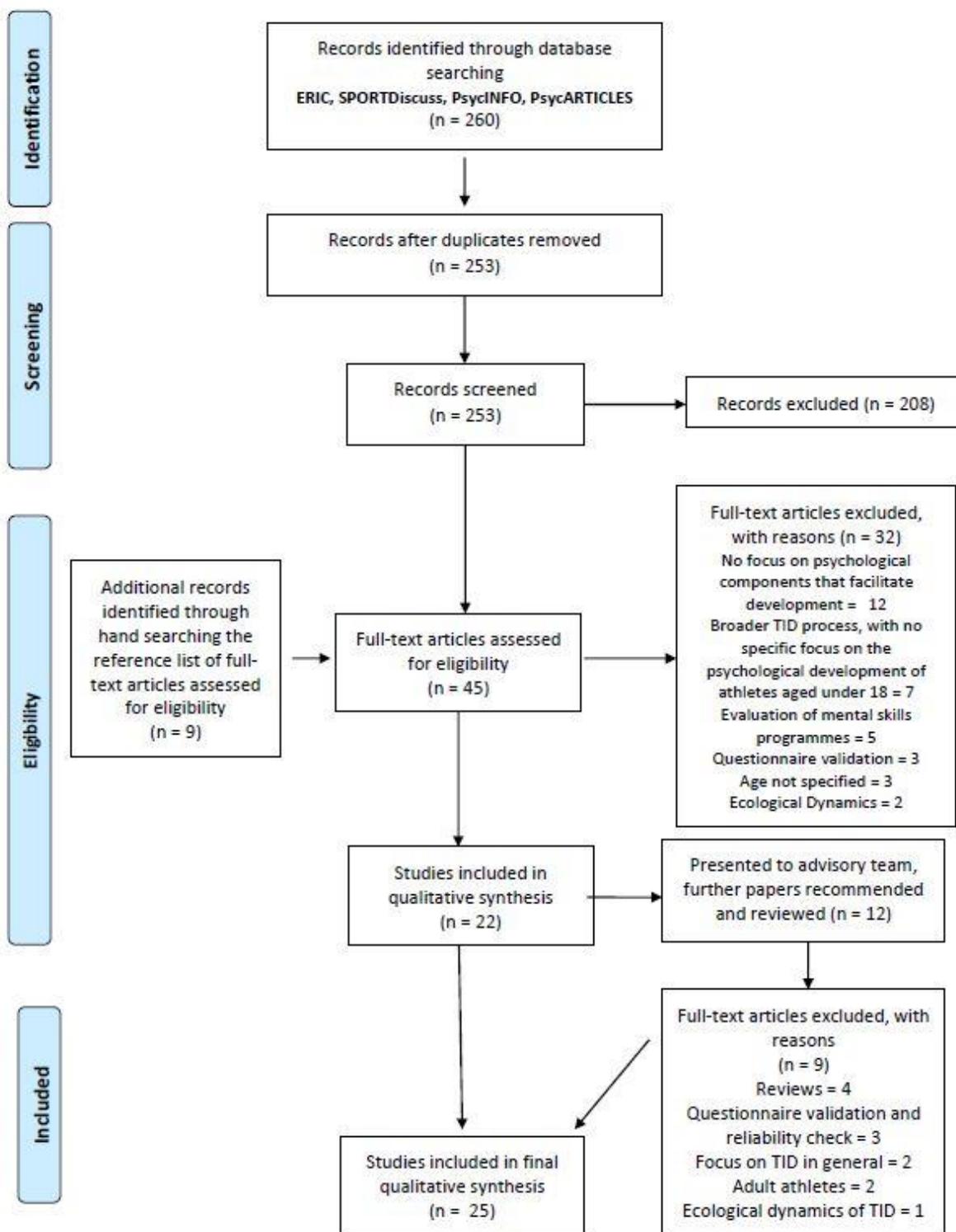


Figure 1. PRISMA flow diagram.

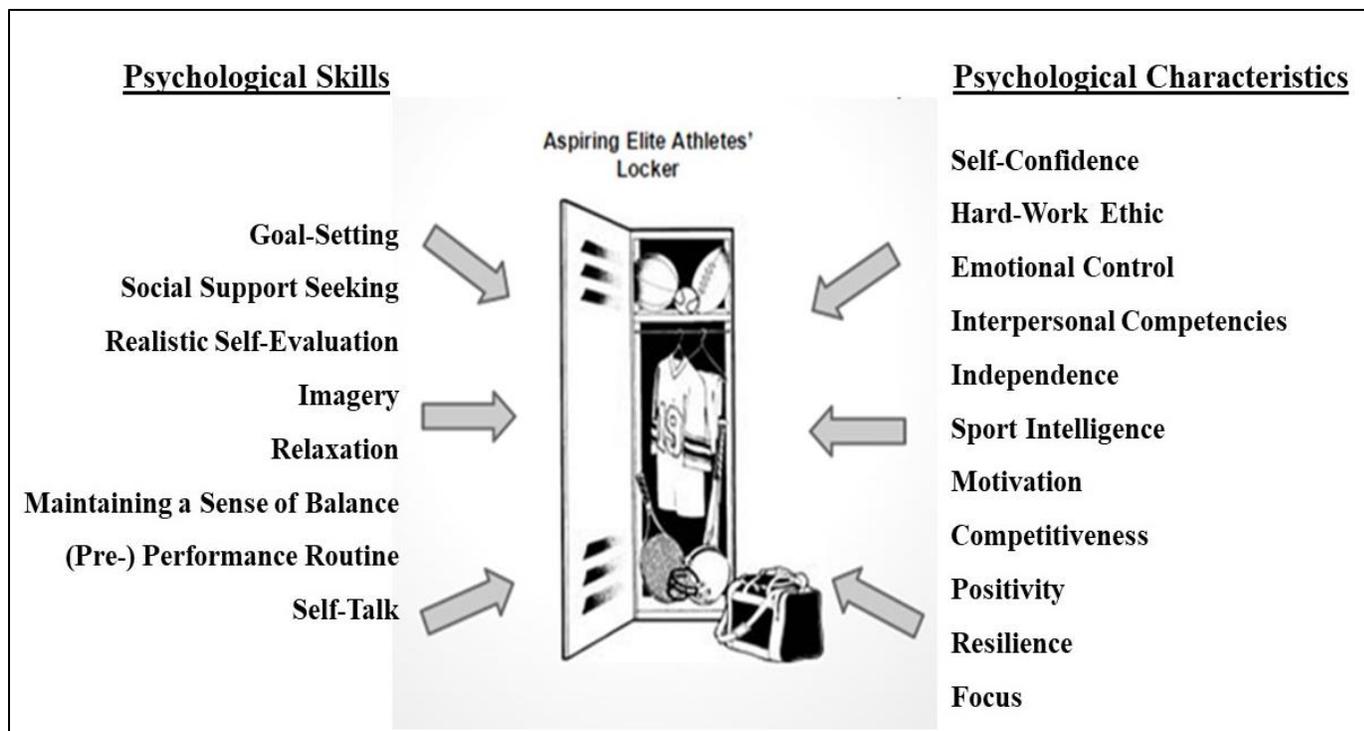


Figure 2. Aspiring Elite Athletes' Locker.