

Abstract

Objectives: To understand the attributes youth coaches and talent scouts perceive as important when identifying skilled youth basketball players.

Method: Youth coaches and talent scouts ($n = 40$) from Australia, Canada, the United Kingdom, and United States with an average of 14.09 (± 9.77) years of experience completed an online questionnaire. The questionnaire asked participants to rank and justify attributes for identifying potentially talented youth basketball players according to their perceived importance. In addition, five youth coaches and talent scouts completed a semi-structured interview that elaborated on how they identify these attributes in national level youth players.

Results: Results from the questionnaire indicate a hierarchy of attributes coaches/scouts perceive as important for youth basketball performance, including tactical (i.e., decision-making ability), technical (i.e., lay-up, shooting in the paint, jump shot, rebounding), and psychological attributes (i.e., composure, concentration, adaptability). In addition, the results from the interviews provided more detailed justification for the importance of these attributes within the talent identification process.

Conclusions: It is believed talent scouts apply a holistic multidisciplinary approach to talent identification, with the current findings potentially providing evidence to suggest coaches/scouts consider a wide range of tactical, technical, psychological, and physical attributes when identifying youth players.

Keywords: Talent selection, sport development, coaching, adolescent, performance

46 There has been an increased interest in the processes and practices of scouts and coaches
47 undertaking talent identification. For example, in soccer there have been a number of studies
48 that have sought to understand the process and function of talent identification (Reeves et al.,
49 2018), the attributes that are used to identify potential talent (i.e., decision-making; technical
50 skills; psychological skills) (Larkin and O'Connor, 2017; Roberts et al., 2019), and the
51 cognitive processes, such as focusing on the individual or the team, that underpin talent scouts'
52 decisions (Reeves et al., 2019). Whilst these studies have been useful in advancing soccer-
53 specific understanding of talent identification, further research is required to examine talent
54 identification in other sports. One sport that has received less attention within the talent
55 identification literature is basketball.

56 As a dynamic and complex technical game, basketball combines explosive movements
57 such as short accelerations, abrupt stops, fast change of directions, and vertical jumps (Erčulj,
58 Blas, & Bračić, 2010; Rösch, Ströbele, Leyhr, Ibáñez, & Höner, 2022; Scanlan, Humphries,
59 Tucker & Dalbo, 2014). To understand the impact of these physical game performance
60 attributes, researchers have investigated how physical capabilities may differentiate talented
61 and less-talented basketballers (Hoare, 2000; Rogers, Crozier, Schranz, Eston, & Tomkinson,
62 2021). Additionally, recent research has focused on maturation highlighting that youth
63 basketball players who are more biologically mature have a greater chance to be selected for a
64 national team and display greater technical, tactical and physical performance (Arede, Ferreria,
65 Gonzalo-Skok, & Leite, 2019; Arede, Fernades, Moran, Norris, & Leite, 2021). Moreover,
66 individual and team success in basketball at youth and senior levels of competition has been
67 shown to be related to anthropometric and fitness attributes (Angyan et al., 2003; Arede,
68 Oliveira, Gomez, Leite, 2021; Groves & Gayle, 1993; Hoare, 2000). For example, the best
69 teams at national and international tournaments generally have taller players (Carter, Ackland,
70 Kerr, & Stapff, 2005; Garcia-Gil, Torres-Unda, Esain, Duñabeitia, Gil, Gil, & Irazusta, 2017;

71 Torres-Unda, et al., 2013; Zarić, Kukić, Jovićević, Zarić, Marković, Toskić, & Dopsaj, 2020),
72 with this attribute being significantly related to scoring and rebounding performance (Garcia-
73 Gil, Torres-Unda, Esain, Duñabeitia, Gil, Gil, & Irazusta, 2017; Torres-Unda, et al., 2013;
74 Zhang et al., 2018). These findings are also supported by tacit and craft knowledge from within
75 the basketball coaching community (Drinkwater et al., 2008), whereby there is potential for
76 coaches/scouts to overlook smaller individuals for taller and heavier players (Carvalho et al.,
77 2011; 2012). While this may suggest there is a bias toward identifying and selecting these
78 individuals (see Torres-Unda et al., 2013), there is still limited understanding related to
79 coaches' and scouts' knowledge, understanding, and perceptions of the importance of
80 anthropometric and fitness attributes when identifying youth athletes.

81 While previous investigations in basketball have assessed factors that differentiate skilled
82 performance (Carter et al., 2005; Carvalho et al., 2011; Garcia-Gil et al., 2017; Guimarães, et
83 al., 2019; Scanlan et al. 2015; Spiteri et al. 2019; Torres-Unda et al., 2013) and age and
84 maturational-related differences (Arede et al., 2021; Guimarães, Baxter-Jones, Williams,
85 Tavares, Janeira, & Maia, 2021); there is limited understanding of the perceptions of youth
86 basketball coaches relating to identifying and selecting talented athletes (Rogers et al., 2021).
87 This gap was highlighted in soccer by Larkin and Reeves (2018) who called for a shift in
88 perspective when conducting talent identification research towards understanding the
89 processes, observations, and perceptions of coaches/scouts when making talent identification
90 decisions. A recent study by Rogers and colleagues (2021) addressed this by highlighting that
91 youth level basketball coaches considered several psychological constructs (i.e.,
92 competitiveness, work ethic, attitude, resilience, coachability) as extremely important for
93 identifying talented basketball players. In addition, physical attributes (i.e., agility; reaction
94 time) and game intelligence (i.e., basketball intelligence, decision-making) were rated as very
95 important by the coaches. These findings, while specific to basketball, corroborate with other

96 invasion sport studies which emphasise the importance of psychological and tactical (i.e., game
97 intelligence) attributes for identifying talented youth athletes (Larkin & O'Connor, 2017;
98 Roberts et al., 2019).

99 In basketball, youth coaches are continually evaluating the attributes and qualities that
100 may predispose individuals to a successful career (Arede et al., 2022; Figueiredo et al., 2009;
101 Huijgen, Elferink-Gemser, Post, & Visscher, 2009). Holistic and multidisciplinary approaches
102 to talent identification have been advocated (Hoare & Warr, 2000; Unnithan et al., 2012),
103 though there remains limited understanding of how youth coaches/scouts identify future talent
104 (Larkin & O'Connor, 2017; Larkin & Reeves, 2018). One means of improving this
105 understanding is by conducting mixed methods research to generate data that offer greater
106 depth and richness in helping to explain the underlying reasons used by coaches when
107 identifying talent (for an overview of mixed methods, see Kelle, 2006). Therefore, this study
108 used a mixed methodology to understand youth basketball coaches' perceptions of talent with
109 a focus on the attributes they perceive as important when identifying potentially talented young
110 basketballers.

111 **Methodology**

112 **Design**

113 This was an observational, cross-sectional study, with data collected using two data collection
114 methods including surveys and semi-structured interviews. The study protocol was approved
115 by a university human research ethics committee (Ref: HRE20-077). Written informed consent
116 was obtained from all participants, and the research was conducted in accordance with the
117 Declaration of Helsinki.

118 **Setting**

119 This study was conducted across four basketball playing countries: Australia (International
120 Basketball Federation [FIBA] ranking; men = 3; women = 3); Canada (FIBA ranking men =

121 18; women = 4); Great Britain (FIBA ranking men = 45; women = 21); and the United States
122 of America (FIBA ranking men = 1; women = 1). For each nation, data were collected at the
123 start of the 2021 competitive regular season.

124 **Participants**

125 Participants were recruited using the following inclusion criteria: (1) adults aged 18 or over;
126 (2) at least two years' experience working in high performance youth basketball, and currently
127 working in a role that identifies talented basketball players; (3) current coaching director, head
128 coach, or assistant coach; and (4) capacity to consent and communicate in English.

129 **Sampling**

130 Participants were sampled using two approaches: snowball (Parker, Scott & Geddes, 2019) and
131 probability-based via social media (Berzofsky et al., 2018). Snowball sampling was achieved
132 through initial contact being made with individuals known to the research team. Those contacts
133 were also asked to recommend others from within their own networks who might be interested
134 in participating in the study, forwarding them the invite to participate and requesting that they
135 contact the study authors if they were interested (Parker, Scott, & Geddes, 2018). Probability-
136 based sampling via social media was achieved through distribution of the invitation to
137 participate via the social media platform Twitter, targeting specific users or organisations. Use
138 of the retweet function between research team members was also adopted to boost visibility of
139 the tweets amongst and across multiple users.

140 All individuals who expressed an interest in the study and met the participant inclusion
141 criteria were included in the sample. In total, 40 youth basketball coaches (age 42.8 ± 12.1
142 years; min = 22 years, max = 63 years) and talent scouts were sampled from Australia (n = 23),
143 Canada (n = 8), Great Britain (n = 4), and the United States (n = 5). In terms of coaching
144 qualifications, as the participants came from a range of countries, with differing qualification
145 requirements, we have aggregated the qualification into three levels, with Level III being the

146 highest youth basketball qualification. Overall, 11 participants held a Level I qualification, 15
147 held a Level II qualification and seven participants were Level III qualified. It should be noted,
148 seven participants did not report their formal level of accreditation; however, five of these
149 participants were from the United States, where coach accreditation is available through USA
150 Basketball, but is often not a requirement for coaching at a high school or collegiate level,
151 where these participants were sampled. On average, the participants had been in a position
152 involved in the identification and development of youth basketballers for 14.1 (± 9.7 ; minimum
153 = 2; maximum = 43) years.

154 **Procedure**

155 The research team approached potential participants about the study via email or social
156 media as outlined above. The invitation outlined the two-stage data collection process and
157 potential participants were informed that their invitation might potentially include involvement
158 in either one or two phases of data collection.

159 All participants who consented to be involved in the study completed stage one of the
160 data collection procedures that included completing a survey about the attributes of talented
161 youth basketballers. The survey was adapted from previous studies of player attributes in
162 invasion sports (Larkin & O'Connor, 2016; Reeves et al., 2019), further refined through a
163 scoping of the extant basketball talent literature. The survey was also informally pilot tested
164 and extensively discussed with three high-performance youth basketball coaches in Australia,
165 who currently coach at the club representative level and have been in their role for greater than
166 1 year. Those three coaches were not involved in the final data collection procedure.

167 The survey included a list of 48 attributes across technical (e.g., lay-up, jump shot,
168 rebounding; $n = 19$), tactical (e.g., decision-making, game awareness, anticipation; $n = 6$),
169 physical (e.g., agility, acceleration, core strength; $n = 12$), psychological (e.g., determination,
170 leadership, aggression; $n = 8$), and miscellaneous (e.g., consistency, versatility, adaptability; n

171 = 3) domains. Participants were asked to consider each attribute and their perceived importance
172 of the attribute when identifying talented youth basketballers (i.e., 16 – 18 years of age).
173 Participants provided a rating of the attribute according to Miller’s Scale Battery of
174 International Patterns and Norms (Miller, 1972), which provides an indication of degree of
175 importance on a scale from 0 to 9. The scale uses three anchor points of reference with a
176 bandwidth of three points between each anchor including least important (i.e., 1-3 points),
177 moderately important (i.e., 4-6 points), and most important (i.e., 7-9 points). Any attribute the
178 participant believed did not have any importance in identifying talented youth basketball
179 players was given a score of zero.

180 At the conclusion of the survey, participants had an option to select whether they would
181 be interested in participating in stage two of the study, a semi-structured interview. Seven
182 participants indicated they were interested in the interview stage of the project, with five
183 agreeing/consenting to participate following subsequent contact. The purpose of this stage was
184 to further explore the importance of each attribute in terms of its role in skilled youth
185 performance and talent identification. Inductive semi-structured interviews were conducted as
186 this approach allows participants more scope to develop a rationale for their opinions and to
187 provide greater detail in an open conversation to explain why they valued a given attribute and
188 how they assessed that attribute (Cupples & O’Connor, 2011; Larkin & O’Connor, 2016).

189 Open-ended questions within a semi-structured framework were adopted to promote
190 discussion in order to identify the key attributes participants valued when identifying talented
191 youth basketballers, including technical, physiological, physical, psychological, and tactical
192 attributes (e.g., what are some of the qualities you look for when you are identifying youth
193 talent?). Probing questions were used to understand why the participant thought the attribute
194 was important (e.g., why is this attribute important when identifying players? How do you
195 identify this in a player?). Interviews ranged from 30 to 45 minutes ($M= 41.15; \pm 2.53$) and

196 were conducted, by the second and third author's, via video-based conferencing (Zoom Video
197 Communication, San Jose, USA). All interviews were recorded by the interviewer and
198 transcribed verbatim, by a professional transcription service.

199 **Data Analysis**

200 Quantitative data were downloaded from the online portal (onlinesurveys.ac.uk) in a
201 Microsoft Excel spreadsheet for descriptive analysis of the rating for each attribute. The mean
202 (\pm SD) was determined for each of the 48 attributes. Attributes with a mean rating of ≥ 6.0
203 (very important or above) were retained for discussion (Larkin & O'Connor, 2017).

204 All interviews were digitally recorded and transcribed verbatim. Participants were
205 assigned pseudonyms during transcription. Open coding was conducted to identify meaning
206 units (i.e., sentences or ideas that described a specific attribute) from the data (Creswell, 2007).
207 The four pillars of trustworthiness proposed by Guba (1981) including credibility,
208 transferability, confirmability, and dependability were applied. To establish credibility, we
209 used prolonged engagement in the field, internal peer debriefing, and member checking.
210 Engagement in the field translates to researchers spending time in the field of inquiry (Bitsch,
211 2005). The research team has engaged intensively within the basketball industry. In particular,
212 three of the team (MS, ST, ADG) have been professionally immersed into the basketball talent
213 development pathway for a combined total of 45 years. We contend that this sustained
214 involvement with basketball coaches and players has been central to establishing a deep
215 understanding of the participants' culture, context, and core issues in basketball talent
216 identification. Furthermore, we utilised peer debriefing and reflexive conversations as an
217 internal loop to discuss and modify all aspects of the study. Member checking involved all
218 participants receiving copies of their transcripts and providing feedback on the accuracy of the
219 data; though offered this opportunity, no participants offered any changes, expansions, or
220 clarifications to the data provided.

221 To establish transferability, we used purposive sampling to recruit national basketball
222 talent scouts as a discrete group of informants because of their likely capacity to provide in-
223 depth information on all aspects of the basketball talent pathway. We then adopted stepwise
224 replication and peer examination to determine dependability. Here, each author independently
225 analysed the data and compared their interpretations to determine (in)consistencies in thematic
226 structure, coding, and representative quotations selected. Finally, we have attempted to
227 establish confirmability by cross-referencing our results and findings with similar studies. For
228 data reporting purposes, all participants have been provided a pseudonym.

229 **Results and Discussion**

230 The purpose of this study was to understand the attributes that basketball coaches perceive as
231 important when identifying skilled players. Survey and interview data collected from coaches
232 who had experience in identifying and/or developing young basketball players provided
233 valuable information to guide the ways in which key stakeholders might prepare young players
234 for higher levels of competition. Overall, the survey data showed that coaches rated 15 of the
235 attributes as very important or higher. In particular, decision-making received the highest rating
236 with a mean score of 6.58 (\pm 0.68). Of the 15 attributes rated very important and above, five
237 were categorised as technical (lay up; shooting (in the paint, 2 points); rebounds; jump shot;
238 dribbling); five as psychological (adaptability; composure; consistency; concentration;
239 determination); three as tactical (decision-making game awareness; teamwork); and two as
240 physical (balance; work rate). Table 1 presents the top 15 attributes and their associated
241 categories as indicated by the responding coaches to the survey.

242 *(Insert Table 1. About Here)*

243 It can be seen that coaches rated both psychological and technical qualities highly, with
244 this category of attributes accounting for over 65% of the top 15 attributes; suggesting that
245 coaches prioritise inter-personal and technical skill capabilities when identifying talented

246 basketball players, and those attributes are perceived to be more important than physical and
247 anthropometric traits. While basketball researchers have explored the influence of
248 anthropometric attributes on performance (Abdelkrim, Chaouachi, Chamari, Chtara, &
249 Castagna, 2010; Hoare, 2000; Joseph, McIntyre, Joyce, Scanlan, & Cripps, 2021; Ramos,
250 Volossovitch, Ferreira, Fragoso, & Massuça, 2019), the current study found the participants
251 did not consider, or highly rate, anthropometric attributes when considering potential
252 basketball talent. Previous studies corroborate these findings, as coaches believe they can
253 improve abilities such as strength and speed once a player is within a talent development system
254 and is therefore not a pre-requisite for entry (Larkin & O'Connor, 2017). Thus, as the results
255 of the survey indicate, whilst physical ability may still be perceived as valuable, these abilities,
256 in isolation, do not appear to be a priority when identifying talented basketball players which
257 aligns with research in other sports (see Gucciardi, Gordon, & Dimmock, 2008; Larkin &
258 O'Connor, 2017).

259 *Technical Attributes*

260 Technical attributes was one of the most highly rated categories, with five attributes
261 found to be highly important for youth basketball talent identification purposes. The five
262 technical abilities considered important by participants included lay-ups, rebounds, jump shots,
263 dribbling, and shooting (two points in the paint). These are, except for rebounding, purely
264 offensive skills, potentially highlighting a bias in the selection process, with participants more
265 interested in identifying players who are better offensively than defensively. Given the
266 objective of the game is to score more points than the opposition, it seems logical that coaches
267 might be more focused on offensive abilities (see also Arede, Fernandes, Moran, Norris, &
268 Leite, 2021). This is highlighted through the quantitative results, with shooting ability being
269 rated the number one technical attribute, and supported by the qualitative results, with one of
270 the coaches indicating, “*So not only for the fact to be able to make shots but also being able to*

271 *engage the defender to open up the floor for dribble penetration makes shooting, one of the*
272 *most invaluable things players can offer. Straight away we're looking at that and that really*
273 *is the master skill, we could very quickly, potentially overlook a lot of other issues if a player*
274 *can shoot the ball, especially well, consistently and under pressure” **Stephen, National Junior***
275 ***Head Coach, Australia.** Therefore, it is possible that players who are offensively minded, may*
276 *be able to compensate for other limitations in their performance, if they are effective at the*
277 *offensive end of the court.*

278 In relation to the type of shot a player can make, participants indicated that they look
279 more for players who can shoot effective two-point shots, over players who can make three
280 point shots; *“I still believe the mid-range jump shot has value, I'd rather have a guy who's*
281 *going to shoot 50% from mid-range than 28% from three” **Simon, Collegiate Head Coach,***
282 ***Canada.** Additionally, dribbling ability was a highly valued technical attribute: “You've got to*
283 *be able to dribble in traffic, you've got to be able to dribble under pressure, you've got to be*
284 *able to change pace, change direction very well to be able to do all those things and to create*
285 *space, to create advantage, to create good open looks,” **Simon, Collegiate Head Coach,***
286 ***Canada.** In addition to offensive actions, coaches also highlighted the ability of players to*
287 *effectively rebound the ball, especially in an offensive manner, “It's an aggressive, crazy*
288 *game, but getting yourself into positions to be able to rebound and finish at the basket off of a*
289 *good shot, I mean, you're gonna get a lot of points that way too.” **Mark – High School Coach,***
290 ***USA.** Indeed, the literature has shown that offensive skills such as dribbling and shooting*
291 *ability are skills that differentiate between selected and non-selected regional level junior*
292 *basketball players (Guimaraes et al., 2019) and, therefore, with an understanding of the game,*
293 *coaches may emphasise the selection of players who demonstrate excellence in these skills. As*
294 *a result, it seems from the data that offensive technical abilities are considered important by*
295 *coaches and scouts.*

296 *Psychological Attributes*

297 The psychological attributes including composure, adaptability, determination,
298 consistency, and concentration accounted for five of the top 15 attributes overall. These
299 findings align with previous studies that have identified psychological characteristics such as
300 concentration, resilience, handling pressure, positive attitude, determination, and commitment
301 as important attributes in other sports (e.g., Gucciardi, Gordon & Dimmock, 2008). Indeed,
302 talent scouts and recruiters in soccer and Australian Football have previously highlighted the
303 importance of understanding athletes' psychological attributes when making talent
304 identification decisions and, in some cases, this is one of the critical determinants for an athlete
305 being selected into a talent development program (Larkin & O'Connor, 2016; Larkin,
306 Marchant, Syder, & Farrow, 2021).

307 The importance of an athlete's psychological attributes was further expressed in the
308 qualitative data, with participants highlighting the importance of athletes' composure, and
309 being able to cope under game pressures; *"Players are guarded (in the game), players are*
310 *under pressure, and that now comes back to our TID in how are these players (performing)*
311 *under pressure, how are they in game situations?"* **Stephen, National Junior Head Coach,**
312 **Australia.** With basketball being a dynamic game where players are required to perform a
313 range of skills in pressured open and closed skill contexts, there is the possibility for athletes
314 to choke or not perform to their maximum ability during the game (Gomez et al., 2015).

315 Adaptability was also a key attribute that was further extolled in the qualitative data. It
316 was presented as the players' ability to adjust to changing game dynamics, but also being able
317 to adapt to different roles within the game. For example, **Stephen, National Junior Head**
318 **Coach, Australia,** stated, *"Importantly, how are they, in terms of their decision making, once*
319 *the defence is on the floor and their ability to adapt?"* This highlighted the ability of the players
320 to adjust to changing game situations. In relation to positional adaptability, **John, a collegiate**

321 **head coach from Canada**, stated, *“I like players that can play multiple positions”*. Findings
322 emphasise that players must have developed sufficiently robust skills to ensure they can adapt
323 to the changing game context, but also demonstrate a range of skills, which may make them an
324 asset to their team by being adaptable to different game situations.

325 Concentration, determination, and consistency were the other psychological traits that
326 were valued highly by participants during the talent identification process. This was supported
327 by **Stephen, a National Junior Head Coach from Australia** who reinforced the value placed
328 on an athlete’s determination; *“Is this kid going to get up at 5:30 in the morning, if that’s what
329 it takes? Instead of playing video games are they going to shoot a thousand shots because we
330 know without that intrinsic motivation, without that deep-seated passion they will never be
331 good enough to get to the level that they are talking about.”* This highlights the importance of
332 the athlete’s determination to consistently improve (see also Gonçalves, Coelho e Silva,
333 Carvalho, & Gonçalves, 2011); promoting notions, to coaches and others, that athletes often
334 make sacrifices within their daily routines, which is supported by previous literature that has
335 emphasised that elite sporting performance typically involves significant sacrifice and
336 dedication (Carless, & Douglas, 2013; Warriner & Lavalley, 2008).

337 Qualitative data highlighted the interaction between the psychological attributes and how
338 they might contribute to athlete identification. Indeed, this interaction has been identified
339 within the literature as “coachability”, whereby a positive attitude and matching personality
340 traits, coupled with a desire to learn new skills, is seen as desirable for talent scouts (Larkin &
341 O’Connor, 2017). In the current study, participants indicated that athletes who are adaptable to
342 change, composed during criticism, determined to be the best, consistent in their training, and
343 focused on the game and the team, are seen as possessing desirable traits that coaches look to
344 identify when making talent identification decisions.

345 *Tactical Attributes*

346 The tactical attributes identified by participants as important for talent identification
347 included teamwork, game awareness, and decision-making; with decision-making being the
348 number one rated quality. This finding supports other talent identification research in other
349 sports, with decision-making being a skill which can differentiate skilled performance
350 (Sherwood, Smith & Masters, 2019) and acknowledged by scouts/recruiters as being an
351 important attribute for athletes (Larkin & O'Connor, 2017). The perceived importance of
352 decision-making for basketball talent was further described in the interview data, with all
353 coaches highlighting its importance within the talent identification process. Whilst it is
354 acknowledged in the current study that on-court decision-making is of importance, several
355 coaches also highlighted the significance of off-court decision-making, *“If you’re talking about*
356 *decision-making, like having a really high IQ that will not only help them on the court in terms*
357 *of the right decision at the right time, but will genuinely translate to great decisions off it, ‘I’m*
358 *going to eat right, I’m going to sleep right, I’m going to take care of my body’”* **Stephen,**
359 **National Junior Head Coach, Australia.** This finding goes beyond current discussions around
360 decision-making and talent identification, with the coaches acknowledging that the lifestyle
361 choices an athlete makes may assist in the decision-making process. However, it should be
362 noted that promotion of personal engagement should be a priority in youth basketball and
363 players should be provided with opportunities to develop on and off the court through their
364 participation (DiFiori, Güllich, Brenner, Côté, Hainline, Ryan, & Malina, 2018).

365 In addition to decision-making ability, game awareness was also a highly-rated attribute
366 amongst participants. This supports previous empirical research exploring expert athlete’s
367 ability to read and understand game play situations (Lex et al., 2015). This was supported by
368 the interview data where basketball “IQ” was described by the coaches when referring to the
369 interaction between decision-making and game awareness and their combined influence on in-
370 game performance. *“If you have the decision making and the basketball IQ we can work to fill*

371 *in around it because I think that can overcome a lot of the other deficiencies that might exist*
372 *in your game.” Simon, Collegiate Head Coach, Canada.* Game awareness was acknowledged
373 by the coaches who indicated it is important for players to be aware of the surroundings and
374 the game situation.

375 Overall, the third highest ranked attribute was teamwork. Teamwork is recognised as a
376 dynamic process where team members make a shared effort to effectively undertake the
377 independent and interdependent behaviours required to maximize team success (McEwan &
378 Beauchamp, 2014). As basketball is a team sport, it is essential all team members are working
379 together to ensure the maximum success of the team, within the game or across the competitive
380 season. The importance of teamwork is reinforced with a quote from **Laura, National Junior**
381 **Development Coach, Canada** *“Why'd you choose this kid? She runs weird. But she just has*
382 *this amazing team bonding thing where she just brought everybody together. She got ran on*
383 *the court probably like three times, but she was all smiles. And she was that glue off the court*
384 *for the girls. If they were in tears or something happened, she was always that teammate. So,*
385 *I chose her for that reason and it was different, but she was definitely needed to help us as a*
386 *team.”* Participants also highlighted that overly selfish athletes would be unlikely to help create
387 a positive team environment and culture, and are less likely to be recruited, especially at the
388 elite level. *“You can be as talented as you are, but if you can't help your teammates and put*
389 *them in positions to help the team then you're useless.”*

390 In addition to the on-court interactions between teammates, participants also referenced
391 the importance of the off-court social interactions amongst teammates. The team’s social
392 dynamic was perceived to benefit team performance and comradery between the players, with
393 participants indicating; *“Being a team player fits in to the social, emotional aspect. Back in the*
394 *day when I was coaching I'd put very, very little importance on the social aspect of sport, but*
395 *I have since found out, through a few grey hairs that it is so incredibly important for kids, a lot*

396 *of them are there for the social aspect, we have to see that and recognise and support that.”*

397 ***Cameron, National Junior Development Coach, Canada.*** This emphasised that teamwork not
398 only influences the in-game team dynamic, but also the added social elements of sport, and
399 being able to integrate with teammates outside of the court (Burns, Weissensteiner, & Cohen,
400 2019).

401 *Physical Attributes*

402 An interesting aspect from the results was the limited acknowledgement, in both the
403 survey and interview data, of physical attributes for identifying talented youth basketball
404 players. This finding is in contrast to the majority of the youth basketball literature, which
405 highlights physical attributes, such as height, limb-length, flexibility, agility, and sprint
406 performance, as important determinants of success in basketball (Garcia-Gil et al., 2018;
407 Hoare, 2000; Pino-Ortega, Rojas-Valverde, Gómez-Carmona, & Rico-González, 2021; Rogers
408 et al., 2021). However, the finding does support research in other sports, investigating talent
409 scouts' perspectives of factors important for talent identification (e.g., Larkin & O'Connor,
410 2017). For example, Larkin and O'Connor (2017) found youth soccer coaches put greater value
411 on other attributes, as there was the perception that physical attributes can be developed once
412 the player was in the talent development program. Furthermore, the finding highlights the
413 disconnect between research and practice, where anthropometrics and physical attributes may
414 demonstrate discriminative capabilities in quantitative research (Abdelkrim, Chaouachi,
415 Chamari, Chtara, & Castagna, 2010; Hoare, 2000; Joseph, McIntyre, Joyce, Scanlan, & Cripps,
416 2021; Ramos, Volossovitch, Ferreira, Fragoso, & Massuça, 2019), but are not what coaches
417 actually consider to be important.

418 The physical attributes that were deemed important for talent identification were work-
419 rate and balance. In terms of work-rate, participants explained this as the player's ability to
420 repeatedly complete the physical requirements of the game at a high intensity. From the

421 interviews, coaches indicated that they look for players who have well-developed endurance
422 capabilities, as *John, a Collegiate Head Coach from Canada* explained “*The last thing I really*
423 *want to see is a kid hunched over with hands on the knees, or in the superman pose on the hips.*
424 *Being exhausted after running up and down a couple of times, that would be concerning to*
425 *me.” *Simon, Collegiate Head Coach, Canada* reinforced the importance of endurance for the
426 players he coaches with this statement “*We look at conditioning as a factor, in regards to if we*
427 *have to I don't want to say weed out, but individuals who are not able to compete or stay at*
428 *that level of conditioning.” This finding aligns with current literature at a senior elite*
429 performance level, as elite male players have been shown to produce higher work rates than
430 sub-elite players when jogging or running during game play (Scanlan et al., 2011).*

431 Balance, as related to a player’s ability to remain upright and steady, has been discussed
432 in the literature in terms of its importance for injury prevention (McGuine et al., 2000) and
433 performance (Spiteri et al., 2019). Specifically, balance has been shown to mitigate the risk of
434 ankle injuries and allow for more effective changes of direction (McGuine et al., 2000; Spiteri
435 et al 2019). Despite participants highlighting the importance of balance in the survey, this was
436 never specifically mentioned during the interviews. A potential reason for this may be the
437 participant’s ability to clearly articulate what they look for during the talent identification
438 process in terms of balance. Further, the low number of physical attributes reported in both the
439 qualitative and quantitative data could reflect the coaches using more holistic approaches to
440 talent identification and selection, rather than primarily relying upon isolated physical
441 assessments such as a physical testing combine. Therefore, coaches may place more emphasis
442 on assessing and measuring these aspects within the dynamic game environment, rather than
443 within isolated assessment protocols. This provides a more holistic assessment of performance
444 and may focus on more game like skills and attributes using an integrated approach. This
445 holistic approach may help to reduce the bias described by Torres-Unda et al. (2013) who found

446 that the players selected as the best for their region were also the players who were more
447 advanced in their maturational development.

448 **Limitations**

449 A limitation of this investigation is the high representation of basketball scouts who
450 responded to the survey from Australia compared to other countries. It is possible that if there
451 was greater representation from other countries the results of the survey may have been
452 different. Further, the results asked the participants to reflect on what they believed to be their
453 talent identification process. Furthermore, this study considered the coaches retrospectively
454 identifying the attributes they consider important to skilled youth performance. It may be
455 possible that when undertaking this process within an applied setting, several other
456 considerations or justifications that were not identified in the current study may also be shown
457 to influence the talent identification process. As such, future studies should consider the talent
458 identification process within an applied environment, when the coaches are making their
459 decisions, to better understand the applied importance of certain attributes when they are
460 making the talent identification decisions.

461 **Practical Implications**

462 The findings also provide some practical applications in relation to coaching and
463 recruitment. By understanding the attributes which high performance youth coaches consider
464 important, it enables coaches within the development pathway to potentially shape and guide
465 training programs to develop these attributes. For example, as decision-making is rated the
466 most important attribute in the talent identification process, coaches could consider developing
467 training programs and activities, which provide a focus on decision-making skill development.
468 Further, it may provide more of a focus on the development of objective instruments or testing
469 procedures, which may clarify the talent identification and selection process for all key
470 stakeholders. Another practical implication relates to the high rankings coaches provided for

471 psychological attributes. It may be important for coaches in the developmental pathway to
472 consider using practice tasks that provide opportunities for players to develop their
473 psychological skills (see Headrick, Renshaw, Davids, Pinder, & Araujo, 2015), as well as
474 providing players with opportunities to work with individuals who can support their
475 psychological development (see Fletcher & Sarkar, 2016).

476 **Conclusion**

477 Based on the current findings, participants appear to consider a range of tactical,
478 technical, psychological, and physical attributes during talent identification. The findings show
479 that decision-making was rated as the most important attribute. Given the range of attributes
480 highlighted as important, this also confirms the current perspective that coaches need to
481 consider player's abilities holistically when identifying potential sporting talent. This might
482 suggest that coaches should consider a more ecologically based approach to talent
483 identification, whereby these attributes are assessed within the game environment rather than
484 in isolated assessments (see also Vilar, Araújo, Davids, & Renshaw, 2012). However, further
485 research is needed to fully understand this process within basketball and to corroborate the
486 current findings in an applied assessment environment.

487

488 **References**

- 489 Abbott, A., Button, C., Pepping, G. J., & Collins, D. (2005). Unnatural selection: Talent
490 identification and development in sport. *Nonlinear Dynamics, Psychology, and Life*
491 *Sciences, 9*(1), 61-88.
- 492 Abdelkrim, N. B., Chaouachi, A., Chamari, K., Chtara, M., & Castagna, C. (2010). Positional
493 role and competitive-level differences in elite-level men's basketball players. *The Journal*
494 *of Strength & Conditioning Research, 24*(5), 1346-1355.
- 495 Angyan, L., Teczely, T., Zalay, Z., & Karsai, I. (2003). Relationship of anthropometrical,
496 physiological and motor attributes to sport-specific skills. *Acta Physiologica Hungarica,*
497 *90*(3), 225-231.
- 498 Anney, V. N. (2014). Ensuring the quality of the findings of qualitative research: Looking at
499 trustworthiness criteria. *Journal of Emerging Trends in Educational Research and Policy*
500 *Studies, 5*(2), 272–281.
- 501 Arede J., Fernandes J., Moran J., Norris J., & Leite N. (2021). Maturity timing and performance
502 in a youth national basketball team: Do early-maturing players dominate? *International*
503 *Journal of Sport Science and Coaching. 16*(3), 772-730.
- 504 Arede J., Ferreira AP., Gonzalo-Skok O., & Leite N. (2019). Maturation development as a key
505 aspect in physiological performance and national-team selection in elite make basketball
506 players. *International Journal of Sports Physiology and Performance. 14*(7), 902-910.
- 507 Arede, J., Freitas, T. T., Johnson, D., Fernandes, J. F., Williams, S., Moran, J., & Leite, N.
508 (2022). Training load, maturity timing and future national team selection in national youth
509 basketball players. *Journal of Functional Morphology and Kinesiology, 7*(1), 21.
- 510 Arede J., Oliveira I., Gomez MA., Leite N. (2021). A multi-block multivariate analysis to
511 explore the influence of the somatic maturation in youth basketball. *Frontiers in*
512 *Psychology. 12*: 602576.

- 513 Araya, J., & Larkin, P. (2013). Key performance variables between the top 10 and bottom 10
514 teams in the English Premier League 2012/13 season. *University of Sydney Papers in*
515 *Human Movement, Health & Coach Education*, 2(1), 17-29.
- 516 Berzofsky, M. E., McKay, T., Hsieh, Y. P., & Smith, A. (2018). Probability-based samples on
517 Twitter: Methodology and application. *Survey Practice*, 11(2), 4936.
- 518 Bitsch, V. (2005). Qualitative research: A grounded theory example and evaluation criteria.
519 *Journal of Agribusiness*, 23, 75–91
- 520 Brooks, M. A., Boleach, L. W., & Mayhew, J. L. (1987). Relationship of specific and
521 nonspecific variables to successful basketball performance among high school players.
522 *Perceptual & Motor Skills*, 64(3), 823-827.
- 523 Burns, L., Weissensteiner, J.R., Cohen, M. (2019). Supportive interpersonal relationships: a
524 key component to high performance sport. *British Journal of Sports Medicine*, 53(22),
525 1387-1390.
- 526 Carless, D., & Douglas, K. (2013). Living, resisting, and playing the part of athlete: Narrative
527 tensions in elite sport. *Psychology of Sport & Exercise*, 14(5), 701-708.
- 528 Carter, J. E. L., Ackland, T. R., Kerr, D. A., & Stapff, A. B. (2005). Somatotype and size of
529 elite female basketball players. *Journal of Sports Sciences*, 23(10), 1057–1063.
- 530 Carvalho, H. M., Gonçalves, C. E., Collins, D., & Paes, R. R. (2018). Growth, functional
531 capacities and motivation for achievement and competitiveness in youth basketball: An
532 interdisciplinary approach. *Journal of Sports Sciences*, 36(7), 742–748.
- 533 Carvalho, H. M., Silva, M., Figueiredo, A. J., Gonçalves, C. E., Philippaerts, R. M., Castagna,
534 C., & Malina, R. M. (2011). Predictors of maximal short term power outputs in basketball
535 players 14-16 years. *European Journal of Applied Physiology*, 111(5), 789–796.
- 536 Carvalho, H. M., Silva, M., Santos, J., Gonçalves, R. S., Philippaerts, R., & Malina, R. (2012).
537 Scaling lower-limb isokinetic strength for biological maturation and body size in

- 538 adolescent basketball players. *European Journal of Applied Physiology*, 112(8), 2881–
539 2889.
- 540 Cogley, S. P., Hanratty, M., O'Connor, D., & Cotton, W. (2014). First club location and relative
541 age as influences on being a professional Australian rugby league player. *International*
542 *Journal of Sports Science and Coaching*, 9(2), 335-346.
- 543 Cogley, S. P., Schorer, J., & Baker, J. (2008). Relative age effects in professional German
544 soccer: A historical analysis. *Journal of Sports Sciences*, 26(14), 1531-1538.
- 545 Coelho e Silva, M., Figueiredo, A. J., Simões, F., Seabra, A., Natal, A., Vaeyens, R.,
546 Philippaert, R., Cumming, S. P., & Malina, R. M. (2010). Discrimination of U-14 soccer
547 players by level and position. *International Journal of Sports Medicine*, 31(11), 790-796.
- 548 Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five*
549 *approaches* (2nd ed.). Thousand Oaks, CA: Sage Publications.
- 550 Cupples, B., & O'Connor, D. (2011). The development of position-specific performance
551 indicators in elite youth rugby league: A coach's perspective. *International Journal of*
552 *Sports Science & Coaching*, 6(1), 125-142.
- 553 Cushion, C. J., Ford, P. R., & Williams, A. M. (2012). Coach behaviours and practice structures
554 in youth soccer: Implications for talent development. *Journal of Sports Sciences*, 30(15),
555 1631-1641.
- 556 DiFiori, J. P., Güllich, A., Brenner, J. S., Côté, J., Hainline, B., Ryan, E., & Malina, R. M.
557 (2018). The NBA and youth basketball: recommendations for promoting a healthy and
558 positive experience. *Sports Medicine*, 48(9), 2053-2065.
- 559 Drinkwater, E. J., Pyne, D. B., & McKenna, M. J. (2008). Design and interpretation of
560 anthropometric and fitness testing of basketball players. *Sports Medicine*, 38(7), 565-578.
- 561 Dweck, C. (2006). *Mindset*. New York, NY: Ballantine Books.

- 562 Erčulj, F., Blas, M., & Bračić, M. (2010). Physical demands on young elite European female
563 basketball players with special reference to speed, agility, explosive strength, and take-off
564 power. *Journal of Strength & Conditioning Research*, 24, 2970–2978.
- 565 Favor, J. K. (2011). The relationship between personality traits and coachability in NCAA
566 divisions I and II female softball athletes. *International Journal of Sports Science &*
567 *Coaching*, 6(2), 301-314.
- 568 Figueiredo, A. J., Gonçalves, C. E., Coelho e Silva, M. J., & Malina, R. M. (2009).
569 Characteristics of youth soccer players who drop out, persist or move up. *Journal of Sports*
570 *Sciences*, 27(9), 883-891.
- 571 Fletcher, D., & Sarkar, M. (2016). Mental fortitude training: An evidence-based approach to
572 developing psychological resilience for sustained success. *Journal of Sport Psychology in*
573 *Action*, 7(3), 135-157.
- 574 Ford, P., Carling, C., Garces, M., Marques, M., Miguel, C., Farrant, A., Stenlin, A., Moreno,
575 J., Le Gall, F., Holmström, S., Salmela, J. H., & Williams, A. M. (2012). The
576 developmental activities of elite soccer players aged under-16 years from Brazil,
577 England, France, Ghana, Mexico, Portugal and Sweden. *Journal of Sport Sciences*,
578 30(15), 1653-1663.
- 579 Gál-Pottyondy, A., Petró, B., Czétényi, A., Négyesi, J., Nagatomi, R., & Kiss, R. M. (2021).
580 Field Testing Protocols for Talent Identification and Development in Basketball - A
581 Systematic Review. *Applied Sciences*, 11(10), 4340.
- 582 Garcia-Gil, M., Torres-Unda, J., Esain, I., Duñabeitia, I., Gil, S. M., Gil, J., & Irazusta, J.
583 (2017). Anthropometric parameters, age, and agility as performance predictors in elite
584 female basketball players. *Journal of Strength & Conditioning Research*, 32(6), 1723-
585 1730.

- 586 Gil, S. M., Zabala-Lili, J., Bidaurrezaga-Letona, I., Aduna, B., Lekue, J. A., Santos-Concejero,
587 J., & Granados, C. (2014). Talent identification and selection process of outfield players
588 and goalkeepers in a professional soccer club. *Journal of Sports Sciences*, 32(20), 1931-
589 1939.
- 590 Gómez, M. Á., Lorenzo, A., Jiménez, S., Navarro, R. M., & Sampaio, J. (2015). Examining
591 choking in basketball: effects of game outcome and situational variables during last 5
592 minutes and overtimes. *Perceptual & Motor Skills*, 120(1), 111-124.
- 593 Gonçalves, C. E., Coelho e Silva, M. J., Carvalho, H. M., & Gonçalves, Â. (2011). Why do
594 they engage in such hard programs? The search for excellence in youth basketball. *Journal*
595 *of Sports Science & Medicine*, 10(3), 458.
- 596 Groves, B., & Gayle, R. (1993). Physiological changes in male basketball players in year-round
597 strength training. *Journal of Strength & Conditioning Research*, 7, 30 – 33.
- 598 Guba E. G. (1981). Criteria for assessing the trustworthiness of naturalistic inquiries.
599 *Educational Communication and Technology Journal*, 29(2), 75–91
- 600 Gucciardi, D. F., Gordon, S., & Dimmock, J. A. (2008). Towards an understanding of mental
601 toughness in Australian football. *Journal of Applied Sport Psychology*, 20(3), 261-281.
- 602 Guimarães, E., Baxter-Jones, A., Maia, J., Fonseca, P., Santos, A., Santos, E., Tavares, F., &
603 Janeira, M. A. (2019). The roles of growth, maturation, physical fitness, and technical
604 skills on selection for a Portuguese Under-14 years basketball team. *Sports*, 7(3), 61.
- 605 Guimarães, E., Baxter-Jones, A. D., Williams, A. M., Tavares, F., Janeira, M. A., & Maia, J.
606 (2021). The role of growth, maturation and sporting environment on the development of
607 performance and technical and tactical skills in youth basketball players: The INEX study.
608 *Journal of Sports Sciences*, 39(9), 979-991.
- 609 Güllich, A. (2014). Selection, de-selection and progression in German football talent
610 promotion. *European Journal of Sport Science*, 14(6), 530-537.

- 611 Headrick, J., Renshaw, I., Davids, K., Pinder, R. A., & Araújo, D. (2015). The dynamics of
612 expertise acquisition in sport: The role of affective learning design. *Psychology of Sport
613 and Exercise, 16*, 83-90.
- 614 Helsen, W. F., Van Winckel, J., & Williams, A. M. (2005). The relative age effect in youth
615 soccer across Europe. *Journal of Sports Sciences, 23*(6), 629-636.
- 616 Hoare, D. G. (2000). Predicting success in junior elite basketball players - the contribution of
617 anthropometric and physiological attributes. *Journal of Science & Medicine in Sport, 3*(4),
618 391-405.
- 619 Hoare, D. G., & Warr, C. R. (2000). Talent identification and women's soccer: An Australian
620 experience. *Journal of Sports Sciences, 18*(9), 751-758.
- 621 Huijgen, B. C., Elferink-Gemser, M. T., Post, W. J., & Visscher, C. (2009). Soccer skill
622 development in professionals. *International Journal of Sports Medicine, 30*(8), 585-591.
- 623 Joseph, J., McIntyre, F., Joyce, C., Scanlan, A., & Cripps, A. (2021). A comparison of
624 multidimensional qualities discriminant of selection in elite adolescent Australian
625 basketball athletes. *Plos One, 16*(8), e0256032.
- 626 Kelle, U. (2006). Combining qualitative and quantitative methods in research practice:
627 Purposes and advantages. *Qualitative Research in Psychology, 3*, 293-311.
- 628 Krefting, L. (1991). Rigor in qualitative research: The assessment of trustworthiness. *American
629 Journal of Occupational Therapy, 45*(3):214-222.
- 630 Lago-Peñas, C. & Dellal, A. (2010). Ball possession strategies in elite soccer according to the
631 evolution of the match-score: the influence of situational variables. *Journal of Human
632 Kinetics, 25*, 93-100.
- 633 Larkin, P., Marchant, D., Syder, A., & Farrow, D. (2020). An eye for talent: The recruiters'
634 role in the Australian Football talent pathway. *PloS One, 15*(11), e0241307.

- 635 Larkin, P., & O'Connor, D. (2017). Talent identification and recruitment in youth soccer:
636 Recruiter's perceptions of the key attributes for player recruitment. *PLOS One*, *12*(4),
637 e0175716.
- 638 Larkin, P., & Reeves, M. J. (2018). Junior-elite football: time to re-position talent
639 identification? *Soccer & Society*, *19*(8), 1183-1192.
- 640 Lex, H., Essig K., Knoblach A., & SchackT. (2015). Cognitive representations and cognitive
641 processing of team-specific tactics in soccer. *PLOS One*, *10*(2), e0118219
- 642 Li, D. (2004). Trustworthiness of think-aloud protocols in the study of translation processes.
643 *International Journal of Applied Linguistics*, *14*(3), 301–313.
- 644 Malina, R. M., Ribeiro, B., Aroso, J., & Cumming, S. P. (2007). Characteristics of youth soccer
645 players aged 13–15 years classified by skill level. *British Journal of Sports Medicine*,
646 *41*(5), 290-295.
- 647 McEwan, D., & Beauchamp, M. R. (2014). Teamwork in sport: A theoretical and integrative
648 review. *International Review of Sport & Exercise Psychology*, *7*(1), 229-250.
- 649 McGuine, T.A., Greene, J.J., Best, T., & Levenson, G. (2000). Balance as a predictor of ankle
650 injuries in high school basketball players. *Clinical Journal of Sports Medicine*. *10*, 239-
651 244.
- 652 Meylan, C., Cronin, J., Oliver, J., & Hughes, M. (2010). Talent identification in soccer: The
653 role of maturity status on physical, physiological and technical characteristics.
654 *International Journal of Sports Science & Coaching*, *5*(4), 571-592.
- 655 Miller, D. C. (1972). Measuring cross-national norms: Methodological problems in identifying
656 patterns in Latin American and Anglo-Saxon countries. *International Journal of*
657 *Comparative Sociology*, *13*(3), 201-216.

- 658 Mills, A., Butt, J., Maynard, I., & Harwood, C. (2012). Identifying factors perceived to
659 influence the development of elite youth football academy players. *Journal of Sports*
660 *Sciences*, 30(15), 1593-1604.
- 661 Morris, G., & O'Connor, D. (2016). Key attributes of expert NRL referees. *Journal of Sports*
662 *Sciences*, 1-6.
- 663 O'Connor, D., Larkin, P., & Mark Williams, A. (2016). Talent identification and selection in
664 elite youth football: An Australian context. *European Journal of Sport Science*, 1-8.
- 665 Parker C, Scott S, & Geddes A. (2019). Snowball sampling. In: Atkinson Paul, Delamont Sara,
666 Cemat Alexandru, Sakshaug Joseph W, Williams RA, editors. SAGE research methods
667 foundations. <https://doi.org/10.4135/9781526421036831710>.
- 668 Partington, M., & Cushion, C. (2013). An investigation of the practice activities and coaching
669 behaviors of professional top-level youth soccer coaches. *Scandinavian Journal of*
670 *Medicine & Science in Sports*, 23(3), 374-382.
- 671 Pinder, R. A., Davids, K., Renshaw, I., & Araújo, D. (2011). Representative learning design
672 and functionality of research and practice in sport. *Journal of Sport & Exercise*
673 *Psychology*, 33(1), 146-155.
- 674 Pino-Ortega, J., Rojas-Valverde, D., Gómez-Carmona, C. D., & Rico-González, M. (2021).
675 Training design, performance analysis, and talent identification—A systematic review
676 about the most relevant variables through the principal component analysis in Soccer,
677 Basketball, and Rugby. *International Journal of Environmental Research and Public*
678 *Health*, 18(5), 2642.
- 679 Ramos, S., Volossovitch, A., Ferreira, A. P., Fragoso, I., & Massuça, L. (2019). Differences in
680 maturity, morphological and physical attributes between players selected to the primary
681 and secondary teams of a Portuguese Basketball elite academy. *Journal of Sports Sciences*,
682 37(15), 1681-1689.

- 683 Rebelo, A., Brito, J., Maia, J., Coelho-e-Silva, M. J., Figueiredo, A. J., Bangsbo, J., & Seabra,
684 A. (2013). Anthropometric characteristics, physical fitness and technical performance of
685 under-19 soccer players by competitive level and field position. *International Journal of*
686 *Sports Medicine*, 34(4), 312-317.
- 687 Reeves, M. J., Littlewood, M. A., McRobert, A. P., & Roberts, S. J. (2018). The nature and
688 function of talent identification in junior-elite football in English category one academies.
689 *Soccer & Society*, 19(8), 1122-1134.
- 690 Reeves, M. J., McRobert, A. P., Lewis, C. J., & Roberts, S. J. (2019). A case study of the use
691 of verbal reports for talent identification purposes in soccer: A Messi affair!. *PloS One*,
692 14(11), e0225033.
- 693 Reilly, T., Williams, A. M., Nevill, A., & Franks, A. (2000). A multidisciplinary approach to
694 talent identification in soccer. *Journal of Sports Sciences*, 18(9), 695-702.
- 695 Roberts, S. J., McRobert, A. P., Lewis, C. J., & Reeves, M. J. (2019). Establishing consensus
696 of position-specific predictors for elite youth soccer in England. *Science & Medicine in*
697 *Football*, 3(3), 205-213.
- 698 Rogers, M., Crozier, A. J., Schranz, N. K., Eston, R. G., & Tomkinson, G. R. (2021). Player
699 Profiling and Monitoring in Basketball: A Delphi Study of the Most Important Non-
700 Game Performance Indicators from the Perspective of Elite Athlete Coaches. *Sports*
701 *Medicine*, 1-13.
- 702 Rösch, D., Hodgson, R., Peterson, L., Graf-Baumann, T., Junge, A., Chomiak, J., & Dvorak,
703 J. (2000). Assessment and evaluation of football performance. *The American Journal*
704 *of Sports Medicine*, 28(Suppl. 5), S29-39.
- 705 Rösch, D., Ströbele, M. G., Leyhr, D., Ibáñez, S. J., & Höner, O. (2022). Performance
706 differences in male youth basketball players according to selection status and playing

- 707 position: An evaluation of the Basketball Learning and Performance Assessment
708 Instrument. *Frontiers in Psychology*, 1815.
- 709 Ross, S., Metcalf, A., Bulger, S. M., & Housner, L. D. (2014). Modified Delphi Investigation
710 of Motor Development and Learning in Physical Education Teacher Education. *Research*
711 *Quarterly for Exercise & Sport*, 85(3), 316-329.
- 712 Scanlan, A., Humphries, B., Tucker, P. S., & Dalbo, V. (2014). The influence of physical and
713 cognitive factors on reactive agility performance in men basketball players. *Journal of*
714 *Sports Sciences*, 32(4), 367-374
- 715 Sheppard, J. M., & Young, W. B. (2006). Agility literature review: Classifications, training
716 and testing. *Journal of Sports Sciences*, 24(9), 919-932.
- 717 Sheppard, J. M., Young, W. B., Doyle, T. L. A., Sheppard, T. A., & Newton, R. U. (2006). An
718 evaluation of a new test of reactive agility and its relationship to sprint speed and change
719 of direction speed. *Journal of Science & Medicine in Sport*, 9(4), 342-349.
- 720 Sherwood, S., Smith, T., & Masters, R. W. (2019). Pattern recall, decision making and talent
721 identification in rugby union. *European Journal of Sport Science*, 19(6), 834-841.
- 722 Solomon, G. B., & Rhea, D. J. (2008). Sources of expectancy information among college
723 coaches: A qualitative test of expectancy theory. *International Journal of Sports Science*
724 *& Coaching*, 3(2), 251-268.
- 725 Spiteri, T., Binetti, M., Scanlan, A.T., dalbo, V.J., Filippo, D., Specos, C. (2019). Physical
726 determinants of division 1 collegiate basketball, women's national basketball league, and
727 women's national basketball association athletes: with reference to lower-body sidedness.
728 *Journal of Strength & Conditioning Research*, 33(1), 159-166.
- 729 Suppiah, H. T., Low, C. Y., & Chia, M. (2015). Detecting and developing youth athlete
730 potential: different strokes for different folks are warranted. *British Journal of Sports*
731 *Medicine*, 49, 878-882.

- 732 Thomas, C., Fellingham, G., & Vehrs, P. (2009). Development of a notational analysis system
733 for selected soccer skills of a women's college team. *Measurement in Physical Education*
734 *& Exercise Science*, 13(2), 108-121.
- 735 Toering, T. T., Elferink-Gemser, M. T., Jordet, G., & Visscher, C. (2009). Self-regulation and
736 performance level of elite and non-elite youth soccer players. *Journal of Sports Sciences*,
737 27(14), 1509-1517.
- 738 Torres-Unda, J., Zarrazquin, I., Gil, J., Ruiz, F., Irazusta, A., Kortajarena, M., Seco, J., &
739 Irazusta, J. (2013). Anthropometric, physiological and maturational characteristics in
740 selected elite and non-elite male adolescent basketball players. *Journal of Sports Sciences*,
741 31(2), 196–203.
- 742 Unnithan, V., White, J., Georgiou, A., Iga, J., & Drust, B. (2012). Talent identification in youth
743 soccer. *Journal of Sports Sciences*, 30(15), 1719-1726.
- 744 Vaeyens, R., Malina, R. M., Janssens, M., Van Renterghem, B., Bourgois, J., Vrijens, J., &
745 Philippaerts, R. M. (2006). A multidisciplinary selection model for youth soccer: the
746 Ghent Youth Soccer Project. *British Journal of Sports Medicine*, 40(11), 928-934.
- 747 Van Yperen, N. W. (2009). Why some make it and others do not: Identifying psychological
748 factors that predict career success in professional adult soccer. *The Sport Psychologist*,
749 23(3), 317-329.
- 750 Vilar, L., Araújo, D., Davids, K., & Renshaw, I. (2012). The need for ‘representative task
751 design’ in evaluating efficacy of skills tests in sport: A comment on Russell, Benton and
752 Kingsley (2010). *Journal of Sports Sciences*, 30(16), 1727-1730.
- 753 Ward, P., Ericsson, K. A., & Williams, M. A. (2013). Complex perceptual-cognitive expertise
754 in a simulated task environment. *Journal of Cognitive Engineering & Decision Making*,
755 7(3), 231-254.

- 756 Ward, P., & Williams, A. M. (2003). Perceptual and cognitive skill development in soccer: The
757 multidimensional nature of expert performance. *Journal of Sport & Exercise*
758 *Psychology*, 25(1), 93-111.
- 759 Warriner, K. & Lavallee, D. (2008). The retirement experiences of elite female gymnasts: self
760 identity and the physical self. *Journal of Applied Sport Psychology*, 20,301-317.
- 761 Williams, A. M., & Franks, A. (1998). Talent identification in soccer. *Sports, Exercise &*
762 *Injury*, 4, 159-165.
- 763 Williams, A. M., Ford, P. R., & Drust, B. (2020). Talent identification and development in
764 soccer since the millennium. *Journal of Sports Sciences*, 38(11-12), 1199-1210.
- 765 Williams, A. M., Hodges, N. J., North, J. S., & Barton, G. (2006). Perceiving patterns of play
766 in dynamic sport tasks: Investigating the essential information underlying skilled
767 performance. *Perception*, 35(3), 317-332.
- 768 Williams, A. M., & Reilly, T. (2000). Talent identification and development in soccer. *Journal*
769 *of Sports Sciences*, 18, 657-667.
- 770 Wiseman, A. C., Bracken, N., Horton, S., & Weir, P. L. (2014). The difficulty of talent
771 identification: Inconsistency among coaches through skill-based assessment of youth
772 hockey players. *International Journal of Sports Science & Coaching*, 9(3), 447-456.
- 773 Zarić, I., Kukić, F., Jovićević, N., Zarić, M., Marković, M., Toskić, L., & Dopsaj, M. (2020).
774 Body height of elite basketball players: do taller basketball teams rank better at the
775 FIBA World Cup?. *International Journal of Environmental Research & Public Health*,
776 17(9), 3141.
- 777 Zhang, S., Lorenzo, A., Gómez, M., Mateus, N., Gonçalves, B., Sampaio, J. (2018). Clustering
778 performances in the NBA according to players ' anthropometric attributes and playing
779 experience and playing experience. *Journal of Sports Sciences*, 32(22), 2511-2520.

780 Ziglio, E. (1996). The Delphi method and its contribution to decision-making. In M. Adler &
781 E. Ziglio (Eds.), *Gazing into the oracle: The Delphi method and its application to social*
782 *policy and public health*, (pp. 3-33). Bristol, PA: Jessica Kingsley.
783

784 **Table 1.** Attributes rated very important and above by responding coaches; and all other
 785 attributes.

Rank	Attribute	Average	SD	Category
1	Decision making	6.58	0.68	Tactical
2	Lay up	6.48	0.64	Technical
3	Teamwork	6.35	0.98	Tactical
4	Composure	6.28	0.75	Psychological
5	Shooting (in the paint, 2 point)	6.28	0.78	Technical
6	Adaptability	6.2	0.72	Psychological
7	Concentration	6.15	0.74	Psychological
8	Work-rate	6.15	0.77	Physical
9	Game awareness	6.15	0.83	Tactical
10	Rebounds	6.13	0.76	Technical
11	Determination	6.05	0.81	Psychological
12	Jump shot	6.05	0.81	Technical
13	Balance	6	0.88	Physical
14	Dribbling	6	0.82	Technical
15	Consistency	6	0.75	Psychological
All Other Attributes				
Agility; Vision; Anticipation; Versatility; Stamina; Core Strength; Stance; Steals 3 Point Shooting; Receiving a pass on the move; Short Passing; Injury Proneness Shooting (outside the paint, 2 point); Acceleration; Deceleration; Positioning; Front Pivot; Back Pivot; Off the Ball Movement; Jump Stop; Screening; Flair Pace; Long Passing; Stride Stop; Jumping Reach; Aggression; Leadership; Dirtiness 5 Match Performance; Bravery; Natural Fitness; Upper body Strength				

786