

1 RUNNING HEAD: Practitioners' Perspectives of Soccer Talent

2

3 **Practitioners' multi-disciplinary perspectives of soccer talent according to phase of**  
4 **development and playing position**

5 By

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**Abstract:**

27 The study aimed to establish the perceived importance that academy soccer practitioners placed on  
28 technical/tactical, physical, psycho-social player attributes during player selection, and explore if  
29 perceptions change according to Elite Player Performance Plan (EPPP) phase. Seventy academy  
30 practitioners working within EPPP programs (Category 1: n = 29; Category 2: n = 13; Category 3: n  
31 = 28,) completed an online survey. Psychological factors were rated significantly ( $p \leq 0.01$ ) higher  
32 than sociological, technical/tactical, and physical factors, with recruitment staff specifically valuing  
33 psychological factors significantly ( $p \leq 0.01$ ) more than medical staff. Youth development phase  
34 practitioners valued sociological factors significantly ( $p < 0.05$ ) more than in the Foundation phase,  
35 which was also true for physical factors. Practitioners indicated significant positional differences for  
36 most physical and technical/tactical attributes. There was no playing position effect for relative  
37 (RAE) age or maturity. Between playing position variance of outfield players for most technical and  
38 physical attributes increased according to advancing EPPP phase. Attitudes to holistic talent  
39 identification criteria likely change according to practitioner role. Therefore, this study provides  
40 evidence to suggest that EPPP practitioners place less perceived importance on enhanced maturity  
41 status and relative age of players, but does indicate an enhancing and significant positional preference  
42 for physical and technical/tactical attributes. Suggesting that practitioners are less likely to (de)select  
43 players based on transient, maturity related attributes and instead place greater emphasis on specialist  
44 physical/technical position specific attributes as players navigate the EPPP pathway towards  
45 professional status.

46

47 **Keywords:** Talent Identification, Soccer, Maturity, Relative Age Effect, Elite Player Performance  
48 Plan

## Introduction

49  
50  
51 In 2012, the English Premier League in conjunction with its clubs, the English Football League, and  
52 the English Football Association (FA) developed the Elite Player Performance Plan (EPPP) (The  
53 English Premier League, 2011). The basis for the EPPP was to address the need to develop more  
54 and better home-grown players (The English Premier League, 2011). This development was in part  
55 aimed to improve the quality and number of ‘home-grown’ player’s available for both domestic  
56 senior and international soccer selection, but also an attempt to meet the Union of Europeans  
57 Football Associations (UEFA) financial fair play requirements (UEFA, 2012). Although talent  
58 identification (ID) practices have long been a fundamental component of soccer, the introduction of  
59 the EPPP and its long-term aim of increasing the number of better ‘home-grown’ soccer players,  
60 who are eligible for international representation (The English Premier League, 2011), has perhaps  
61 initiated relatively high levels of research attention being paid to talent ID process and the EPPP  
62 (Lovell et al, 2015; Read et al, 2018; Tears et al, 2018; Towlson et al, 2017). Such attention is likely  
63 due to the significant playing and financial benefits that can be accrued through clubs having talent  
64 ID strategies that result in a high number of academy graduates making the transition to playing first-  
65 team, professional soccer for their parent club and subsequently enhancing the pool of players  
66 available for international selection. It is through this drive for clubs and national governing bodies  
67 to select the ‘very best’ players that the talent space has become highly contested and competitive  
68 (Bailey & Collins, 2013). However, it is not altogether clear as to how, what and why soccer talent  
69 practitioners are identifying.

70  
71 It is well-recognized that attempts to identify ‘talented’ soccer players can be reduced to little more  
72 than ‘guess work’ (Bailey & Collins, 2013), as decisions are based on coaches’ and talent scouts’  
73 ‘gut-feeling’, intuition, knowledge and experiences of player movement patterns, gained from being  
74 players and coaches, them-selves (Christensen, 2009; Christensen & Henriksen, 2012). This has led

75 to (sub)-conscious selection philosophies that seemingly place more emphasis on discrete  
76 components of players physical and anthropometrical characteristics (Deprez et al., 2014; Lovell et  
77 al., 2015; Malina et al., 2004; Towlson et al., 2017) that can often result in the biggest, fastest, and  
78 strongest children being selected in preference for their less biologically mature counterparts (Deprez  
79 et al., 2014; Lovell et al., 2015; Malina et al., 2004; Towlson et al., 2017). That said, talent ID  
80 practitioners have also shown to be characterized by their preference for soccer players, who are  
81 perceived as being hard-working, dedicated and possess a willingness to learn (Christensen, 2009).  
82 In recognition of this, holistic approaches to talent ID have been called for, which appreciate players'  
83 psychological and social characteristics, as well as the technical/tactical and physical components of  
84 performance (Reilly et al, 2000; Unnithan et al, 2012). Such philosophy, is evidenced through the  
85 FAs Four-Corner model for player development (The Football Association, 2014) that advocates the  
86 assessment and development of players according to their technical/tactical, physical, psychological  
87 and sociological characteristics. While the FA has long encouraged this holistic approach to player  
88 development, it is not well understood how this has filtered down into the practices of those  
89 responsible for identifying talent working within the EPPP.

90  
91 One reason why it is so challenging for soccer clubs and governing bodies to employ talent ID  
92 strategies that will ensure identified players' progress to the elite, professional and international level  
93 is because child development is non-linear, and therefore players develop at different rates (Malina  
94 et al, 2004a). Nonetheless, some recommendations have been made that could assist in helping clubs  
95 make more informed decisions regarding their talent ID strategies. For example, where clubs take a  
96 singular approach to talent ID (i.e. a focus on one area of performance), there is concern that players  
97 who are relatively younger (i.e. born later in the selection period), who can sometimes also be  
98 biologically less mature can either be prematurely deselected, drop-out or overlooked in favour of  
99 players who possess relatively more mature physical and anthropometric characteristics, which are

100 particularly pronounced within the Foundation (under 5 to 11 years) phase of the EPPP (Lovell et  
101 al, 2015). It has been established in team-based sports, such as soccer, that a selection bias exists  
102 towards those players who are relatively older (i.e. born earlier in the selection period) (Carling et al,  
103 2009; Hirose, 2009; Mujika et al, 2009) and those who are often more anthropometrically mature  
104 (Deprez et al, 2014; Lovell et al, 2015; Malina et al, 2000). Indeed, Towlson et al (2017) have  
105 demonstrated that there is a bias towards selecting soccer players for specific playing positions  
106 dependent on their physical characteristics prior to the adolescent growth spurt, commonly referred  
107 to within research literature as peak height velocity (PHV) (Fransen et al, 2018; Mirwald et al, 2002;  
108 Moore et al, 2015; Towlson et al, 2018). For example, relatively older and more mature players who  
109 sometimes possess enhanced anthropometric characteristics (in particular, stature) are more likely to  
110 be recruited into the positions of goalkeeper or central-defence (Deprez et al, 2014; Towlson et al,  
111 2018). However, given the transient nature of physical and anthropometrical development, these  
112 characteristic enhancements will likely to dissipate when players' reach PHV and indeed full  
113 maturation (Lovell et al, 2015). As such, talent ID practitioners should perhaps be considerate of  
114 other characteristics as players navigate the player development pathway. For example, Larkin &  
115 O'Connor (2017) identified that talent ID practitioners demonstrated hierarchical perceived  
116 importance for player technical/tactical and psychological attributes during talent selection processes.  
117 Although informative, given the somewhat narrow (n = 20) and limited (under 13 age group only)  
118 sample of soccer talent ID practitioners and the absence of information pertaining to players  
119 biological maturity, relative age and playing position, further exploration and implementation of  
120 talent ID processes across the EPPP are required. Without developing a better understanding of the  
121 talent ID practices of those who are principally responsible for identifying soccer talent, it is difficult  
122 to comprehend the appropriateness of clubs and governing body talent ID practices, and just how  
123 well informed those responsible for identifying talent are (Miller et al, 2015). Invariably, it is the talent  
124 scout who is tasked with this initial responsibility of identifying players for development programs.

125 However, if a genuinely holistic approach to talent ID is to be adopted, it seems reasonable to argue  
126 that sport science, technical match-play, fitness and social science experts should be included within  
127 this process to work alongside coaches and talent scouts. So, this study is not only making attempts  
128 to address a gap in the literature related to the perspectives of talent ID practitioners operating across  
129 the EPPP, but also moves beyond a focus solely on coaches, to appreciate other staff who are integral  
130 to the employment of clubs talent ID strategies. Therefore, the principle aims of this study were to:  
131 1) examine the perceived importance that academy soccer practitioners' place on specific sub-  
132 components of the widely endorsed FA Four Corner Model for long-term player development (The  
133 Football Association, 2014) as a framework for talent practitioners to apply to player selection and  
134 position allocation, and 2) investigate if these perceptions change according to the role and the EPPP  
135 phase of player development that practitioners primarily work within.

## 136 **Methods**

### 137 *Participants*

138 Having gained local ethical consent, seventy UK soccer academy practitioners, working within  
139 EPPP academy development programs (Category 1: n = 29, 41.4 %; Category 2: n = 13, 18.6 %;  
140 Category 3: 28, 40.0 %) attached to clubs competing within the 2016-17 English Premier League (n  
141 = 14, 20.0%), Championship (n = 34, 48.6%), League One (n = 11, 15.7%), and League Two (n =  
142 11, 15.7%) soccer leagues completed an online survey (surveymonkey.com, California, Palo Alto,  
143 USA) taking approximately 30 minutes. To prevent duplicate responses, respondents were required  
144 to answer *No* and then *Yes* to; *Have you previously completed (and submitted) responses to this*  
145 *survey?*; *Are you currently working within an elite youth soccer academy participating in the Elite*  
146 *Player Performance Plan)?* Failure to adhere to these criteria resulted in the responses being  
147 excluded from the final data set. Survey respondents consisted of talent scouts (n = 25, 35.7 %),  
148 heads' of recruitment (n = 14, 20.0 %), sport scientists' (n = 13, 18.6 %), dedicated EPPP phase

149 (Foundation, Youth, Professional development phase) coaches (n = 9, 12.9 %), lead coaches (n = 5,  
150 7.1 %), head coaches (n = 2, 2.9 %), and an academy manger (n = 1, 1.4 %) who worked either full-  
151 time, permanent (n = 35, 50 %), part-time (n = 27, 38.6 %) or voluntary (n = 8, 11.4 %) within the  
152 Foundation (U9 to U11: n = 14, 21.4 %), Youth (U12 to U16: n = 37, 52.9 %), and Professional  
153 (U17 to U21: n = 18, 25.7%) development phases of the EPPP. Of which, 15 (21%) and 27 (38%)  
154 respondents possessed either (or both) FA Level 4 and (or) Level 3 coaching qualifications, in  
155 addition to also holding a FA Talent ID Level 1 (n = 32, 46%) and Level 2 (n = 23, 33%)  
156 certifications. In addition to soccer specific qualifications, 21 (30%) and 13 (19%) respondents had  
157 completed relative undergraduate and postgraduate degrees.

158 The survey was electronically distributed to prospective respondents during the in-season, second  
159 trimester (January to May) of the 2016/17 English soccer season to ensure that responses reflected  
160 normal in-season practices (Towilson et al, 2013). This was accompanied by a second electronic  
161 invitation for practitioners to complete the survey during latter weeks of the soccer season (April  
162 2017) to those practitioners who had not previously responded, resulting in a 41.6 % survey  
163 completion rate. The content validity of the survey was assessed via discussion with both academic  
164 (n = 5) and soccer academy (Category 1: n = 4; Category 2: n = 1) practitioners (n = 5) respondents.  
165 This resulted in only physical and technical/tactical player attributes being evaluated according to  
166 playing position, as feedback suggested that many of the psychological and social characteristics  
167 were unlikely to be playing position specific. In addition, 3 questions were removed due them being  
168 deemed repetitive. Lastly, two new themed questions (biological maturity and relative age) were  
169 included, and 26 questions were rephrased to include agreed definitions for key terms to reduce  
170 question and response ambiguity (see Table 1). Once modified, the survey was redistributed to the  
171 focus group for approval.

172 **\*\*\* INSERT TABLE 1 NEAR HERE \*\*\***

173 *Survey content*

174 Given that the strategic plan of the EPPP is to develop more and better ‘home grown’ players who  
175 are eligible for international representation and the widely used FA Four (Technical/Tactical,  
176 Psychological, Physical and Sociological) Corner Model for long-term player development (The  
177 Football Association, 2014), it was considered appropriate that the survey structure was based upon  
178 this framework. To reduce survey ‘fatigue’, the 232 questions were categorized in to five smaller  
179 individual sections (Section 1: ‘*General information*’; Section 2: *Foundation Phase*; Section 3:  
180 *Youth Development Phase*; Section 4: *Professional Development Phase*; Section 5: *Self-competency*  
181 *and club philosophy profile*), using the FA ‘Four Corner Model’ for long-term player development  
182 as a framework. All the information disclosed within *Section 1* of the survey directly related to the  
183 general characteristics of the responder. *Sections 2-4* of the survey examined which discrete  
184 components of the FA Four Corner Model (physical, tactical/technical, psychological, and social)  
185 the responder perceived as the most (or least) important for player selection during each phase  
186 (Foundation, Youth and Professional) of the EPPP. The survey was distributed via email using the  
187 FAs educations’ directorate for past and prospective attendees of the FA talent ID education courses.  
188 Furthermore, professional soccer clubs were invited to distribute the survey internally to appropriate  
189 staff. Lastly, a link and associated recruitment posts were shared on Twitter.

190 *Section 1: General information*

191 This section was comprised of 9 multiple-choice questions, designed to ascertain the eligibility,  
192 suitability and additional practitioner characteristics, which were considered important to  
193 contextualize talent ID philosophy. Required information included: The league in which the senior  
194 first team competes in, the academy EPPP category rating (category 1, 2, 3 or 4), employment status  
195 (full/part time etc.), primary role (academy manager, scout, sport scientist etc.), which phase of the



196 EPPP do you primarily work within (Foundation, Youth or Professional phases) and relevant  
197 professional qualifications (F.A. coaching, talent ID awards etc.).

198 *Sections 2 to 4: Player selection philosophy according to EPPP phase*

199 As per previous survey design (Malone et al, 2018), responders' were required to use blinded, sliding  
200 0-100 scales (0 = *least important*; 50 = *undecided*; 100 = *most important*) to evaluate the level of  
201 importance they gave to discrete physical (e.g. *Please indicate how important you feel endurance*  
202 *(e.g. the ability to exercise continuously for long periods of time without fatiguing) is on player*  
203 *selection for each playing position?*), technical/tactical, (e.g. *Please indicate how important you feel*  
204 *vision (e.g. ability to identify possible passes , shots etc.) is on player selection for each playing*  
205 *position?*) psychological , (e.g. *Please indicate how important you feel creativity (e.g. the use of*  
206 *imagination and inventiveness etc.) is on player selection for each playing position?* and sociological  
207 (e.g. *Please indicate how important you feel accountability is on player selection for each playing*  
208 *position?*) player characteristics during player selection according to the phase (Foundation, Youth  
209 and Professional) of the EPPP they primarily work in. Each section was concluded by ascertaining  
210 the respondents' global perceptions of the importance each section of the FA 'Four Corner Model'  
211 relative to the phase of the EPPP. This was achieved by having responders rank which attribute  
212 (technical/tactical, psychological, physical and sociological) they considered as the most important  
213 for soccer player selection within the particular EPPP phase.

214 *Statistical analyses*

215 Given that a principle aim of this study was to examine if the perceived importance that academy  
216 soccer practitioners' place on specific attributes when selecting players for different playing positions  
217 (Goalkeeper: GK; Full-back: FB; Central defender: CD; Wide midfielder: WM; Defensive central  
218 midfielder: DCM; Attacking central midfielder: ACM; Forward: FWD) changes according to their

219 job title, it was considered appropriate to generalise practitioners' roles into three categories  
220 (recruitment n = 39, 55.7%; coaching: n = 16, 22.9%; medicine: n = 14, 21.4%) to enable statistical  
221 analysis. These sub-groups were chosen to best reflect the core departments in which the respondents  
222 likely resided. Preliminary screening of data examined missing data, outliers, and normality. Given  
223 that the survey was designed for this study and had therefore not been previously validated, we tested  
224 internal consistency using omega point estimates and bootstrapped confidence intervals. This  
225 method was preferred to Cronbach's alpha, as it holds fewer assumptions (Dunn, Baguley, &  
226 Brunsten, 2013). For the main analyses, we examined a series of general linear models with post-  
227 hoc tests and 1,000 bootstrap samples. To correct for type 1 error as a result of multiple comparisons  
228 in all statistical analyses, Benjamini-Hochberg  $q$  was derived from calculating the False Discovery  
229 Rate (FDR; (Benjamini & Hochberg, 1995). The null hypothesis was rejected if and only if  $p < q$   
230 and the 95% confidence interval did not contain zero. A series of one-way ANOVAs examined  
231 multiple comparisons with Sidak post-hoc test of perceptions of technical/tactical and physical  
232 attributes by position, with 95% confidence intervals derived from 1,000 bootstrapped samples. A  
233 two-way ANOVA examined position by phase effects on all attributes. Effect sizes were calculated  
234 as Cohen's  $d$ , which was interpreted in accordance with the recommendations of Cohen (1988) of  
235 0.20 = *small*, 0.50 = *medium*, 0.80 = *large*, and 1.30 = *very large*.

236

## 237 **Results:**

### 238 *Perceptions of FA Four Corner importance*

239 ANOVA multiple comparisons revealed significant effects for overall value, primary role and EPPP  
240 phase. Overall, psychological factors were rated significantly ( $p \leq 0.01$ ) higher than sociological,  
241 technical/tactical, and physical factors. Technical/tactical factors were rated significantly higher ( $p \leq$

242 0.01) than sociological and physical factors. Specifically, recruitment staff valued psychological  
243 factors ( $82.61 \pm 10.42$ ) significantly ( $p \leq 0.01$ ) more than medical staff did ( $68.53 \pm 21.10$ ;  $d = .85$ ).  
244 Similarly, recruitment staff valued sociological factors ( $70.95 \pm 14.89$ ) significantly ( $p \leq 0.05$ ) more  
245 than medical staff did ( $58.86 \pm 19.44$ ;  $d = 0.70$ ). A similar finding was evident for valuing maturity  
246 ( $M_{\text{diff}} = 20.22$ ,  $p < .05$ ,  $d = 0.75$ ) and relative age ( $M_{\text{diff}} = 23.74$ ,  $p < .05$ ,  $d = 0.81$ ). In terms of EPPP  
247 phase, staff involved in the Youth Development phase valued sociological factors ( $71.43 \pm 13.44$ )  
248 significantly ( $p \leq 0.05$ ) more than in the Foundation phase ( $59.53 \pm 14.09$ ,  $d = 0.86$ ). The same was  
249 true for physical factors (Youth Development =  $70.39 \pm 11.85$ ; Foundation =  $56.78 \pm 15.77$ ,  $d =$   
250  $0.98$ ).

251

#### 252 *Positional effect*

253 For technical/tactical attributes, all presented a statistically significant effect ( $p < q$ ) with the exception  
254 of tactical awareness. Specifically, all comparisons with a *medium* or *larger* effect size in Table 1  
255 were statistically significantly different. Within the technical/tactical corner, practitioners working in  
256 the Youth phase of the EPPP placed significantly ( $p < q$ ) greater value on players having enhanced  
257 aerial ability in comparison to their Foundation phase counterparts (GK:  $M_{\text{diff}} = 18.84$ ,  $d = .67$ ; FB:  
258  $M_{\text{diff}} = 24.40$ ,  $d = .87$ ; CD:  $M_{\text{diff}} = 28.59$ ,  $d = 1.10$ ; DCM:  $M_{\text{diff}} = 20.43$ ,  $d = .73$ ; ACM:  $M_{\text{diff}} = 17.97$ ,  
259  $d = .65$ ; FWD:  $M_{\text{diff}} = 27.17$ ,  $d = 1.02$ ). Differences between the Youth and Professional phases were  
260 not statistically significant for this attribute.

261

262 Table 2 presents data pertaining to comparisons for physical attributes by position. All attributes  
263 indicated significant positional differences ( $p < q$ ) except for agility, balance, coordination and  
264 muscular endurance. *Medium* and *larger* effect sizes as indicated in Table 2 are statistically  
265 significantly different. There was no positional effect for relative age or maturity. Figure 1 illustrates  
266 a clear increase in the relative variance in perceived importance placed on each discrete

267 technical/tactical attribute (except tactical awareness) from Foundation, to Youth, to Professional  
268 development phases. For enhanced body mass, Foundation phase coaches rated this as significantly  
269 less important for CD than both Youth ( $M_{\text{diff}} = -24.07, d = 0.96$ ) and Professional ( $M_{\text{diff}} = -30.34, d =$   
270 1.52).

271

272 Maximum sprint speed was more important for GK in Foundation phase (Youth  $M_{\text{diff}} = 12.94, d =$   
273 0.59; Professional  $M_{\text{diff}} = 29.27, d = 1.55$ ), while vertical jump ability was less important for GK  
274 (Youth  $M_{\text{diff}} = -16.40, d = 0.86$ ; Professional  $M_{\text{diff}} = -14.97, d = 0.81$ ), CD (Youth  $M_{\text{diff}} = -20.40, d =$   
275 0.90; Professional  $M_{\text{diff}} = -21.67, d = 0.99$ ), and FWD (Youth  $M_{\text{diff}} = -16.46, d = 0.64$ ). In general,  
276 Foundation phase coaches did not place a high value on repeated sprint ability. Specifically, they  
277 indicated statistically significantly ( $p < q$ ) values for FB (Youth  $M_{\text{diff}} = -28.10, d = 1.13$ ; Professional  
278  $M_{\text{diff}} = -27.30, d = 1.14$ ), WM (Youth  $M_{\text{diff}} = -26.22, d = 1.04$ ; Professional  $M_{\text{diff}} = -26.94, d = 1.08$ ),  
279 DCM (Youth  $M_{\text{diff}} = -22.27, d = 0.92$ ), ACM (Youth  $M_{\text{diff}} = -18.04, d = 0.69$ ), and FWD (Youth  
280  $M_{\text{diff}} = -23.53, d = 0.90$ ; Professional  $M_{\text{diff}} = -19.46, d = 0.76$ ).

281

282 **\*\*\* INSERT TABLE 2 NEAR HERE \*\*\***

283 **\*\*\* INSERT TABLE 3 NEAR HERE \*\*\***

284 **\*\*\* INSERT TABLE 4 NEAR HERE \*\*\***

285 **\*\*\* INSERT FIGURE 1 NEAR HERE\*\*\***

## 286 **Discussion**

287 The principle aims of this study were to: 1) examine the perceived importance that academy soccer  
288 practitioners' place on specific sub-components of the widely endorsed FA Four Corner Model for

289 long-term player development (The Football Association, 2014) as a framework for talent  
290 practitioners to apply to player selection and role allocation, and 2) investigate if these perceptions  
291 change according to the role and the EPPP phase of player development that practitioners primarily  
292 work within. Key findings identified were: 1) with the exceptions of medical staff, psychological  
293 factors were rated significantly ( $p \leq 0.01$ ) higher than sociological, technical/tactical, and physical  
294 factors by practitioners, with recruitment staff specifically valuing psychological factors significantly  
295 ( $p \leq 0.01$ ) more than medical staff did; 2) Practitioners involved in the Youth Development phase  
296 valued sociological and physical factors significantly ( $p < 0.05$ ) more than in the Foundation phase  
297 3) Practitioners indicated significant positional differences ( $p < q$ ) for most physical (except agility,  
298 balance, coordination and muscular endurance) and technical/tactical (except tactical awareness)  
299 attributes; 4) There was no positional effect for relative age or maturity; 5) Between playing position  
300 variance of outfield players (FB, CD, WM, DCM, ACM and FWD) for each discrete  
301 technical/tactical (except tactical awareness) and physical (except muscular strength) attribute  
302 increases according to advancing EPPP phase (Foundation, Youth and Professional development  
303 phase). These findings then, serve as useful in enabling talent ID and recruitment practitioners to  
304 reflect on their talent ID and recruitment strategies, and whether these are aligned with the players  
305 they do identify and recruit into their academies.

#### 306 *Perceptions of Four Corner importance*

307 Overall, psychological factors were rated significantly ( $p < 0.01$ ) higher than sociological,  
308 technical/tactical, and physical factors. We postulate that increased opportunities to engage in  
309 formalized educational provision that relates to talent ID, such as the FA's talent ID courses have led  
310 to a greater awareness of psychological principles and their importance when identifying players.  
311 Indeed, from the sample of people who completed this survey, 46% ( $n = 32$ ) had attained the FA  
312 Level 1 in talent ID and 32% ( $n = 23$ ) the FA Level 2 in talent ID. In addition, a similar percentage

313 to those who had completed the talent ID Level 1 and 2 had completed the FA's Youth Awards 1  
314 and 2, where again, the focus of these awards were on developing a holistic learning environment  
315 and developing coaching practice accordingly. Although, it is positive to see those involved in talent  
316 ID are looking beyond technical/tactical and physical characteristics of performance, this finding  
317 does perhaps highlight a need to be cautious that these are not overlooked altogether. Therefore,  
318 practitioners should perhaps consider the manipulation of game format (i.e. bio-banding,  
319 categorizing players according to biological maturity status; See Cumming et al (2017a); Cumming  
320 et al (2017b)) during talent selection process (i.e. "Late" versus "Late", "Late" versus "Early",  
321 "Early" versus "Early" maturers) in order to tease out certain desirable player characteristics which  
322 might otherwise be masked during chronologically aged match-play (Cumming et al, 2018).

323 While using bio-banding for identifying talented young soccer players is very appealing, there is no  
324 soccer-specific objective evidence for its efficacy as a talent (de)selection tool. For bio-banding to be  
325 fully endorsed by UEFA and widely used by its national associations, its efficacy must be  
326 demonstrated from a multi-disciplinary (physical, technical, psychological) perspective (The Soccer  
327 Association, 2010; Unnithan et al, 2012). Moreover, as bio-banding is designed to group players  
328 together based on anthropometric characteristics, it is unknown if staff responsible for the  
329 (de)selection of players can effectively evaluate the key tactical (e.g. spatial exploration, creativity)  
330 and psychological (e.g. confidence, attitude, competitiveness) characteristics of players, as these are  
331 generally displayed in times of adversity, notably when competing against taller, stronger and faster  
332 players (i.e. more mature).

333 An interesting finding was that practitioners involved in the Youth Development phase valued  
334 sociological factors significantly more than in the Foundation phase. There is a consensus within the  
335 literature that sociological factors are determinants of sport expertise. For example, Baker et al (2003)  
336 reported that cultural influences such as the importance that a country or society places on a particular

337 sport are a critical factor in sporting success, while Hopwood et al (2015) identified that the order of  
338 birth within their family influenced the likelihood of becoming an expert performer. Furthermore,  
339 Gagné (2004) theorised using the Differentiated Model of Giftedness and Talent that sociological  
340 factors were pivotal to enabling talent to be realised. However, literature exploring talent ID  
341 practitioners' views on the importance of sociological factors for player development are limited. In  
342 fact, we could not find one study that has investigated this. Therefore, it makes it challenging for us  
343 to explain why the practitioners in this study valued sociological factors as more important in the  
344 Youth Development phase than the Foundation phase.

#### 345 *Positional effect*

346 The present study supports findings from a previous study showing that there was a perception that  
347 enhanced stature had a *small* to *large* significant difference for GK compared with other outfield  
348 playing positions (Towlson et al., 2017). What was surprising was that no significant difference (all  
349  $p > q; d < 0.41^1$ ) was identified between GK and CD versus the remaining outfield playing positions  
350 for practitioners' perceived importance of player biological maturity, demonstrating only a *small*  
351 difference in perceived importance for biological maturity in playing positions typically associated  
352 (FB, WM and ACM) to smaller players (Towlson et al, 2017). This finding is interesting, given that  
353 key defensive playing positions (such as GK and CD) where enhanced stature is likely to be  
354 advantageous in aerial and physical duels with opponents have been shown to be typically allocated  
355 to earlier maturing soccer academy players. Such players have sometimes been shown to be born  
356 earlier in the selection years (Lovell et al, 2015; Towlson et al, 2017) and are can be beneficiaries of  
357 anthropometric and performance related advantages associated to early exposures to normative  
358 growth curves (Buchheit et al, 2010; Mendez-Villanueva et al, 2010; Philippaerts et al, 2006). These  
359 findings are in agreement with Larkin and O'Connor (2017), who have also stated that  
360 anthropometrical characteristics were among characteristics of least perceived importance, which

361 might suggest that practitioners feel they are either unable to identify how close players are to  
362 achieving full maturational status within a match (and talent ID) context, or that enhanced stature was  
363 an important attribute for certain playing positions (i.e. GK and CD), it was not a determining factor  
364 in whether players were identified into those positions. That said, practitioners primarily operating  
365 within the Foundation phase of the EPPP reassuringly demonstrated the lowest level ( $56.78 \pm 15.77$   
366 AU) of perceived importance for physical factors.

367 Although few, and *small* physical differences have been shown to exist between a representative  
368 sample ( $n = 1,212$ ) of EPPP academy soccer players who are born early (versus late) in the EPPP  
369 Foundation selection year (Lovell et al 2015), it has been shown that those relatively younger players  
370 can often possess an advanced growth status. This likely contributes toward a homogenous physical  
371 player phenotype (Lovell et al 2015). Such disparity within the literature and the present study might  
372 suggest that although practitioners are aware of the complexities of selecting players based on  
373 potentially transient physical enhancements, the temptation to select a player based on absolute terms  
374 in order to facilitate on field success may well remain too great. This notion is supported by the  
375 increase in between playing position variance (see Figure 2) for the perceived importance placed on  
376 discrete physical attributes (except muscular endurance) of outfield players (FB, CD, WM, DCM,  
377 ACM and FWD) according to advancing EPPP phase (Foundation, Youth and Professional  
378 development phase). This was demonstrated for technical/tactical attributes (except tactical  
379 awareness) as depicted in Figure 1.

380 In a similar manner to the physical data, there was less variance in how those working in the  
381 Foundation phase perceived the importance of technical/tactical playing attributes compared with  
382 those working within the Youth development and Professional development phases. This could  
383 suggest greater perceived importance is placed on position specific attributes within the Youth  
384 development and Professional development phases compared with the Foundation phase. Of course,



385 a certain level of variance will always exist, as the data shows (i.e. practitioners place a *small to large*  
386 difference of perceived importance on GK and CD having to be taller than other playing positions)  
387 and that is to be expected given that players will already have been identified based on their  
388 performance within a certain playing position. However, the fact this variance is low suggests that  
389 recruitment practitioners do not appear to be selecting the youngest players based on their  
390 technical/tactical characteristics that would typically be associated to specific playing-positions (i.e.  
391 tackling for defenders). We would caution against an approach where practitioners identify players'  
392 technical/tactical attributes for specific playing positions in the Foundation and even Youth  
393 development phase, given that UK EPPP soccer academy players are likely to undergo a period of  
394 accelerated growth (10.7 to 15.2 years) that spans these phases (Towlson et al, 2018).

395 Although we consider that the design and content of the survey has added to the fields understanding  
396 of what attributes practitioners across numerous roles involved in talent ID and recruitment consider  
397 important, we do acknowledge that the cross-sectional survey design does limit the generalizations  
398 and assertions that can be made to the sample of practitioners who participated within the study only.  
399 soccer. We acknowledge that although the survey specifically requested practitioners to state their  
400 personal level of perceived importance they place on each of the player attributes during initial player  
401 selection, we do anticipate that the club talent ID and player selection philosophies may have  
402 (sub)consciously influenced responses and therefore consider this as a limitation. Also, we  
403 acknowledge the work conducted by Zuber et al (2016) who identified that late maturing,  
404 achievement orientated and highly skilled players failed to transition from the under 14 to 15 age  
405 groupings. This might suggest that although practitioners sampled within this study do place greater  
406 importance on psychological characteristics as opposed to possible transient physical, maturity and  
407 relative age characteristics, this awareness alone may not be great enough to prevent the early  
408 deselection of late maturing players from the prospective international talent selection pool and this  
409 finding should be treated with some caution. Lastly, given the emphasis of personal 'intuition' (or

410 'gut feeling') and previous experience of practitioners (Christensen, 2009; Christensen & Henriksen,  
411 2012), we consider the omission of measuring the level of perceived importance placed on personal  
412 'intuition' (or 'gut feeling') by practitioners as a limitation. This selection phenomena, was seemingly  
413 of importance to some practitioners and should be accounted for within future studies.

#### 414 **Conclusion**

415 Findings identified that talent ID practitioners rated players' psychological characteristics  
416 significantly ( $p \leq 0.01$ ) higher than any other corner (sociological, technical/tactical, and physical) of  
417 the FAs Four Corner approach to player development (The Soccer Association, 2014).  
418 Demonstrating that attitudes to holistic talent ID criteria likely change according to practitioner role,  
419 emphasized by recruitment staff placing significantly ( $p \leq 0.01$ ) more value on psychological factors  
420 than medical staff. Such fluidity of perception is development phase specific, with practitioners also  
421 showing that those involved in the Youth development phase placed significantly ( $p < 0.05$ ) greater  
422 emphasis on sociological factors than colleagues in the foundation phase which was also true for  
423 physical factors. Lastly, practitioners indicated significant positional differences ( $p < q$ ) for most  
424 physical and technical/tactical attributes. Showing playing position specificity for most discrete  
425 technical and physical attributes to increase according to advancing EPPP phase (Foundation, Youth  
426 and Professional development phase). However, there was no evidence of positional effect for  
427 relative age or maturity, suggesting that talent ID practitioners are aware of the transient bias that are  
428 typically associated to some criteria in which players are benchmarked against and (de)selected.

#### 429 *Applications for coaches*

430 If governing bodies, professional soccer clubs and their associated talent ID practitioners are to  
431 employ a more holistic and multi-disciplinary approach to talent ID, the findings from this paper  
432 suggest that there must be willingness for individuals responsible for (de)selecting talent to (1)

433 recognize and understand the multifaceted nature of player development, with a particular reference  
434 (but not exclusive to) to the four constituents of the FA Four Corner Model for long-term player  
435 development (2) understand their (sub)conscious bias for what constitutes talent, this in some  
436 instances might be inherent to the persons area of expertise (3) Be considerate of new and innovative  
437 ways (i.e. bio-banding etc.) to manipulate talent selection processes in order to afford players greater  
438 opportunity to showcase tactical/technical, physical, psychological and sociological attributes (4)  
439 employ an inclusive approach to talent (de)selection and identify the practitioners within the club and  
440 personnel further afield (such as academics and industry) who possess the necessary expert  
441 knowledge and experiences that are specific to one (or more) of the areas associated to a multi-  
442 disciplinary approach to talent ID.

#### 443 **Declaration of Conflicting Interests**

444 The author(s) declared no potential conflicts of interests relative to the funding, authorship and  
445 subsequent publication of the research.

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Table 1. Terms and associated operational definitions of each characteristic for each sub component of the F.A. Four Corner (e.g. Technical/Tactical, Physical, Psychological and Sociological) Model, accompanied by maturity and relative age components of player development.

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### **Technical/Tactical**

Receiving the ball  
 Turning with the ball  
 Dribbling with the ball  
 Short passing (e.g. less than 10 m)  
 Long passing (e.g. greater than 10 m)  
 Shooting  
 Tackling  
 Aerial ability (e.g. heading for outfield players and catching etc. for goalkeepers)  
 Tactical awareness (e.g. the ability for a player to know their role and have positional awareness on the field, and possessing the ability make good decisions)  
 Vision (e.g. ability to identify possible passes/shots)  
 Anticipation (e.g. ability to read and predict passages of match-play)

### **Physical**

Enhanced body-mass (e.g. a greater mass than what you would perceive as the 'norm')  
 Enhance standing height (e.g. a greater standing height than what you would perceive as the 'norm')  
 Endurance (e.g. ability to exercise continuously for longer periods of time without fatiguing)  
 Acceleration  
 Maximal sprinting speed  
 Vertical jumping ability  
 Repeated sprint ability (e.g. ability to perform repeated bouts of high intensity running with minimal recovery)  
 Agility, Balance and Coordination (ABC)  
 Muscular strength (e.g. amount of force a muscle or group of muscles can produce with a single maximal effort)  
 Muscular endurance (e.g. ability of a muscle or group of muscles to repeatedly exert force against a resistance)

### **Psychological**

On pitch confidence  
 On pitch creativity (e.g. the use of imagination and inventiveness)  
 Self-discipline (e.g. the ability to control ones feelings and overcome weaknesses)  
 Commitment (e.g. dedication to the cause, activity, objective)  
 Intrinsic motivation (e.g. own enjoyment and love etc.)  
 Extrinsic motivation (e.g. trophies, praise, bonuses etc.)  
 On pitch bravery (e.g. willingness to block a shot with own body etc.)  
 Positive attitude  
 Resilience (e.g. to bounce back from defeat or disappointment)  
 Calm under pressure.

### **Sociological**

Self-reflection (e.g. critically assessing one's own performance)  
 Teamwork (e.g. willingness to work within a team towards a common goal)  
 Positive relationships with team-mates and staff  
 Accountability (e.g. taking responsibility for own performance and actions)  
 Leadership (e.g. ability to lead a group of players)  
 Communication  
 Supportive family life (e.g. Parent/guardians actively engaging in players development)  
 Healthy socioeconomic background (e.g. players family perceived economic and social position in relation to others, based on income, education and occupation etc.)  
 City/town of residence

### **Maturity and Relative Age Characteristics**

Enhanced player biological maturity (e.g. players who you might consider as being nearer to achieving an adult status [i.e. full maturation])  
 Relative age (e.g. the month in which the player was born within the football selection year)

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**Table 2.** Mean (95% confidence intervals) level of perceived importance (0 = *least important*, 50 = *undecided*, 100 = *most important*) and associated effect sizes for between playing position difference for Technical components of the FA Four Corner Model.

Variable	<i>n</i>	Cohort	GK	FB	CD	WM	DCM	ACM	FWD
Receiving the ball (AU)	70	77.1 (75.7 to 78.4)	67.5 (63.0 to 71.9) FB <sup>S</sup> , CD <sup>S</sup> , WM <sup>M</sup> , DCM <sup>M</sup> , ACM <sup>M</sup> , FWD <sup>M</sup>	74.1 (70.4 to 77.7) GK <sup>S</sup> , WM <sup>F</sup> , DCM <sup>F</sup> , ACM <sup>F</sup> , FWD <sup>M</sup>	72.3 (68.7 to 75.9) GK <sup>S</sup> , WM <sup>F</sup> , DCM <sup>M</sup> , ACM <sup>M</sup> , FWD <sup>M</sup>	78.5 (75.5 to 81.5) GK <sup>M</sup> , FB <sup>S</sup> , DCM, ACM <sup>S</sup> , FWD <sup>S</sup>	80.4 (77.6 to 83.3) GK <sup>M</sup> , FB <sup>S</sup> , DCM, ACM <sup>S</sup> , FWD <sup>S</sup>	83.3 (80.6 to 86.0) GK <sup>M</sup> , FB <sup>M</sup> , DCM, WM <sup>S</sup> , DCM <sup>S</sup>	83.4 (80.6 to 86.2) GK <sup>M</sup> , FB <sup>M</sup> , DCM WM <sup>S</sup> , DCM <sup>S</sup>
Turning with the ball (AU)	70	70.1 (68.1 to 72.2)	39.8 (33.3 to 46.3) FB <sup>M</sup> , DCM, WM <sup>L</sup> , DCM <sup>L</sup> , ACM <sup>L</sup> , FWD <sup>VL</sup>	65.4 (60.8 to 70.5) GK <sup>M</sup> , WM <sup>M</sup> , DCM <sup>S</sup> , ACM <sup>M</sup> , FWD <sup>L</sup>	63.7 (59.1 to 68.5) GK <sup>M</sup> , WM <sup>M</sup> , DCM <sup>M</sup> , ACM <sup>L</sup> , FWD <sup>L</sup>	79.1 (75.8 to 82.4) GK <sup>L</sup> , FB <sup>M</sup> , DCM, DCM <sup>S</sup> , ACM <sup>S</sup> , FWD <sup>S</sup>	75.5 (71.2 to 79.7) GK <sup>L</sup> , FB <sup>S</sup> , DCM, WM <sup>S</sup> , ACM <sup>S</sup> , FWD <sup>S</sup>	82.9 (80.0 to 85.8) GK <sup>VL</sup> , FB <sup>M</sup> , CD <sup>L</sup> , WM <sup>S</sup> , DCM <sup>S</sup>	84.5 (82.0 to 87.7) GK <sup>VL</sup> , FB <sup>L</sup> , CD <sup>L</sup> , WM <sup>S</sup> , DCM
Dribbling (AU)	70	67.8 (65.5 to 70.1)	31.9 (25.6 to 38.2) FB <sup>L</sup> , DCM, WM <sup>VL</sup> , DCM <sup>M</sup> , ACM <sup>M</sup>	73.1 (69.2 to 76.9) GK <sup>L</sup> , DCM <sup>S</sup> , ACM <sup>S</sup> ,	56.7 (51.5 to 62.0) GK <sup>M</sup> , FB <sup>M</sup> , WM <sup>L</sup> , DCM <sup>S</sup> , ACM <sup>L</sup> , FWD <sup>L</sup>	87 (84.4 to 89.9) GK <sup>VL</sup> , FB <sup>M</sup> , CD <sup>L</sup> , DCM <sup>L</sup> , ACM <sup>S</sup> , FWD <sup>S</sup>	62.2 (57.6 to 66.8) GK <sup>L</sup> , FB <sup>M</sup> , CD <sup>S</sup> , WM <sup>L</sup> , ACM <sup>M</sup> , FWD <sup>M</sup>	81.6 (77.9 to 85.2) GK <sup>VL</sup> , FB <sup>S</sup> , CD <sup>L</sup> , WM <sup>S</sup> , DCM <sup>M</sup>	82.1 (78.3 to 85.9) GK <sup>VL</sup> , FB <sup>S</sup> , CD <sup>L</sup> , WM <sup>S</sup> , DCM
Short passing (AU)	70	77.8 (76.5 to 79.2)	70.3 (65.4 to 75.1) FB <sup>S</sup> , CD <sup>S</sup> , WM <sup>S</sup> , DCM <sup>L</sup> , ACM <sup>VL</sup> , FWD <sup>VL</sup>	76.4 (72.8 to 79.9) GK <sup>S</sup> , DCM <sup>S</sup> , ACM <sup>S</sup>	77.8 (74.6 to 81.1) GK <sup>S</sup> , DCM <sup>S</sup> , ACM <sup>S</sup>	76.5 (73.0 to 80.0) GK <sup>S</sup> , DCM <sup>S</sup> , ACM <sup>S</sup>	82.6 (79.5 to 85.7) GK <sup>M</sup> , FB <sup>S</sup> , CD <sup>S</sup> , WM <sup>S</sup>	82.0 (78.7 to 85.2) GK <sup>M</sup> , FB <sup>S</sup> , CD <sup>S</sup> , WM <sup>S</sup>	79.5 (75.9 to 83.0) GK <sup>L</sup> , FB <sup>L</sup> , CD <sup>L</sup> , WM <sup>M</sup> , DCM <sup>M</sup> , ACM <sup>L</sup>
Long passing (AU)	70	72.6 (70.8 to 74.4)	81.1 (76.7 to 85.4) FB <sup>VL</sup> , DCM, WM <sup>M</sup> , DCM <sup>S</sup> , ACM <sup>M</sup> , FWD <sup>L</sup>	76.0 (71.4 to 80.5) GK <sup>VL</sup> , CD <sup>L</sup> , WM <sup>S</sup> , ACM <sup>M</sup> , FWD <sup>L</sup>	79.3 (75.5 to 83.0) GK <sup>M</sup> , FB <sup>S</sup> , WM <sup>M</sup> , DCM <sup>S</sup> , ACM <sup>M</sup> , FWD <sup>L</sup>	70.7 (65.8 to 75.7) GK <sup>M</sup> , FB <sup>S</sup> , DCM, DCM <sup>S</sup> , FWD <sup>M</sup>	77.1 (73.2 to 80.9) GK <sup>S</sup> , CD <sup>S</sup> , WM <sup>S</sup> , ACM <sup>S</sup> , FWD <sup>M</sup>	68.4 (63.4 to 73.3) GK <sup>M</sup> , FB <sup>M</sup> , DCM, DCM <sup>M</sup> , FWD <sup>S</sup>	55.8 (50.3 to 61.4)
Shooting (AU)	70	61.1 (58.3 to 63.8)	21.1 (15.0 to 27.3) FB <sup>L</sup> , DCM, WM <sup>VL</sup> , DCM <sup>L</sup> , ACM <sup>VL</sup> , FWD <sup>VL</sup>	51.4 (45.4 to 57.3) GK <sup>M</sup> , CD <sup>S</sup> , WM <sup>M</sup> , DCM <sup>S</sup> , ACM <sup>L</sup> , FWD <sup>VL</sup>	45.6 (39.4 to 51.8) GK <sup>M</sup> , FB <sup>S</sup> , WM <sup>L</sup> , DCM <sup>S</sup> , ACM <sup>L</sup> , FWD <sup>VL</sup>	75.1 (71.4 to 78.7) GK <sup>VL</sup> , FB <sup>M</sup> , CD <sup>L</sup> , DCM <sup>M</sup> , ACM <sup>M</sup> , FWD <sup>L</sup>	57.2 (51.8 to 62.6) GK <sup>L</sup> , FB <sup>S</sup> , CD <sup>S</sup> , WM <sup>M</sup> , ACM <sup>L</sup> , FWD <sup>VL</sup>	83.4 (80.5 to 86.3) GK <sup>VL</sup> , FB <sup>L</sup> , CD <sup>L</sup> , WM <sup>M</sup> , DCM <sup>L</sup> , FWD <sup>M</sup>	93.7 (91.3 to 96.1) GK <sup>VL</sup> , FB <sup>VL</sup> , CD <sup>VL</sup> WM <sup>L</sup> , DCM <sup>VL</sup> , ACM <sup>VL</sup>
Tackling (AU)	70	69.3 (67.0 to 71.5)	38.4 (31.6 to 45.1) FB <sup>VL</sup> , CD <sup>VL</sup> , WM <sup>M</sup> , DCM <sup>VL</sup> , ACM <sup>M</sup> , FWD <sup>M</sup>	84.1 (80.7 to 87.4) GK <sup>VL</sup> , CD <sup>S</sup> , WM <sup>M</sup> , ACM <sup>M</sup> , FWD <sup>L</sup>	88.1 (85.1 to 91.2) GK <sup>VL</sup> , FB <sup>S</sup> , WM <sup>L</sup> , DCM <sup>S</sup> , ACM <sup>L</sup> , FWD <sup>L</sup>	65.6 (60.8 to 70.5) GK <sup>M</sup> , FB <sup>M</sup> , CD <sup>L</sup> , DCM <sup>M</sup> , FWD <sup>S</sup>	84.6 (81.5 to 87.7) GK <sup>VL</sup> , CD <sup>S</sup> , WM <sup>M</sup> , ACM <sup>L</sup> , FWD <sup>L</sup>	64.0 (59.0 to 69.0) GK <sup>M</sup> , FB <sup>M</sup> , CD <sup>L</sup> , DCM <sup>L</sup>	60.1 (54.2 to 65.9) GK <sup>M</sup> , FB <sup>L</sup> , CD <sup>L</sup> , WM <sup>S</sup> , DCM <sup>L</sup>
Aerial ability (AU)	70	73.3 (71.1 to 75.5)	80.3 (74.0 to 86.6) FB <sup>S</sup> , CD <sup>S</sup> , WM <sup>M</sup> , DCM <sup>S</sup> , ACM <sup>M</sup>	71.2 (65.3 to 77.0) GK <sup>S</sup> , DCM, WM <sup>S</sup> , ACM <sup>S</sup> , FWD <sup>S</sup>	85.9 (80.8 to 91.0) GK <sup>S</sup> , FB <sup>M</sup> , WM <sup>L</sup> , DCM <sup>S</sup> , ACM <sup>M</sup> , FWD <sup>S</sup>	58.5 (52.9 to 64.0) GK <sup>M</sup> , FB <sup>S</sup> , CD <sup>L</sup> , DCM <sup>M</sup> , ACM <sup>S</sup> , FWD <sup>M</sup>	73.2 (67.7 to 78.6) GK <sup>S</sup> , CD <sup>S</sup> , WM <sup>M</sup> , ACM <sup>S</sup> , FWD <sup>S</sup>	64.5 (58.7 to 70.3) GK <sup>M</sup> , FB <sup>S</sup> , DCM, WM <sup>S</sup> , DCM <sup>S</sup> , FWD <sup>M</sup>	79.7 (74.5 to 84.9) FB <sup>S</sup> , CD <sup>S</sup> , WM <sup>M</sup> , DCM <sup>S</sup> , ACM <sup>M</sup>
Tactical awareness (AU)	70	83.4 (81.9 to 84.9)	80.2 (75.7 to 84.6) FB <sup>S</sup> , CD <sup>S</sup> , DCM <sup>S</sup> , FWD <sup>S</sup>	84.5 (80.5 to 88.4) GK <sup>S</sup>	85.5 (81.7 to 89.2) GK <sup>S</sup> , WM <sup>S</sup>	81.4 (76.8 to 86.0) CD <sup>S</sup> , DCM <sup>S</sup>	85.3 (81.5 to 89.0) GK <sup>S</sup> , WM <sup>S</sup>	83.1 (78.9 to 87.3)	84.0 (80.1 to 87.9) GK <sup>S</sup>
Vision (AU)	70	80.5 (78.8 to 82.2)	76.3 (71.2 to 81.4) WM <sup>S</sup> , DCM <sup>S</sup> , ACM <sup>M</sup> , FWD <sup>S</sup>	77.7 (73. to 81.9) WM <sup>S</sup> , DCM <sup>S</sup> , ACM <sup>M</sup> , FWD <sup>S</sup>	75.6 (70.5 to 80.8) WM <sup>S</sup> , DCM <sup>S</sup> , ACM <sup>M</sup> , FWD <sup>S</sup>	81.7 (77.8 to 85.5) GK <sup>S</sup> , FB <sup>S</sup> , CD <sup>S</sup> , ACM <sup>S</sup>	83.0 (79.3 to 86.7) GK <sup>S</sup> , FB <sup>S</sup> , CD <sup>S</sup> , ACM <sup>L</sup>	87.5 (83.9 to 91.0) GK <sup>M</sup> , FB <sup>M</sup> , DCM, WM <sup>S</sup> , DCM <sup>S</sup> , FWD <sup>S</sup>	81.6 (77.5 to 85.6) GK <sup>S</sup> , FB <sup>S</sup> , CD <sup>S</sup> , ACM <sup>S</sup>
Anticipation (AU)	70	81.2 (79.8 to 82.6)	80.9 (76.8 to 84.9) WM <sup>S</sup> , DCM <sup>S</sup> , FWD <sup>S</sup>	79.4 (75.9 to 82.9) CD <sup>S</sup> , WM <sup>S</sup> , DCM <sup>S</sup> , FWD <sup>S</sup>	83.4 (79.9 to 86.9) FB <sup>S</sup> , WM <sup>S</sup> , ACM <sup>S</sup>	75.4 (70.7 to 80.0) GK <sup>S</sup> , FB <sup>S</sup> , CD <sup>S</sup> , DCM <sup>S</sup> , ACM <sup>S</sup> , FWD <sup>S</sup>	84.3 (80.8 to 87.7) GK <sup>S</sup> , FB <sup>S</sup> , WM <sup>S</sup> , ACM <sup>S</sup>	80.2 (76.6 to 83.7) CD <sup>S</sup> , WM <sup>S</sup> , DCM <sup>S</sup> , FWD <sup>S</sup>	84.9 (81.5 to 88.3) GK <sup>L</sup> , FB <sup>L</sup> , WM <sup>S</sup> , ACM <sup>S</sup>

Note. Statistically significant difference ( $p < q$ ) denoted in bold; GK = goalkeeper, FB = full back, CD = central defence, WM = wide midfield, DCM = defensive central midfielder, ACM = attacking central midfielder, FWD = forward/striker. Observed effect magnitudes are denoted as small (<sup>S</sup>), moderate (<sup>M</sup>), large (<sup>L</sup>), very large (<sup>VL</sup>). AU = Arbitrary units.

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**Table 3.** Mean (95% confidence intervals) level of perceived importance (0 = *least important*; 50 = *undecided*; 100 = *most important*) and associated effect sizes for between playing position difference for Physical components of the FA Four Corner Model.

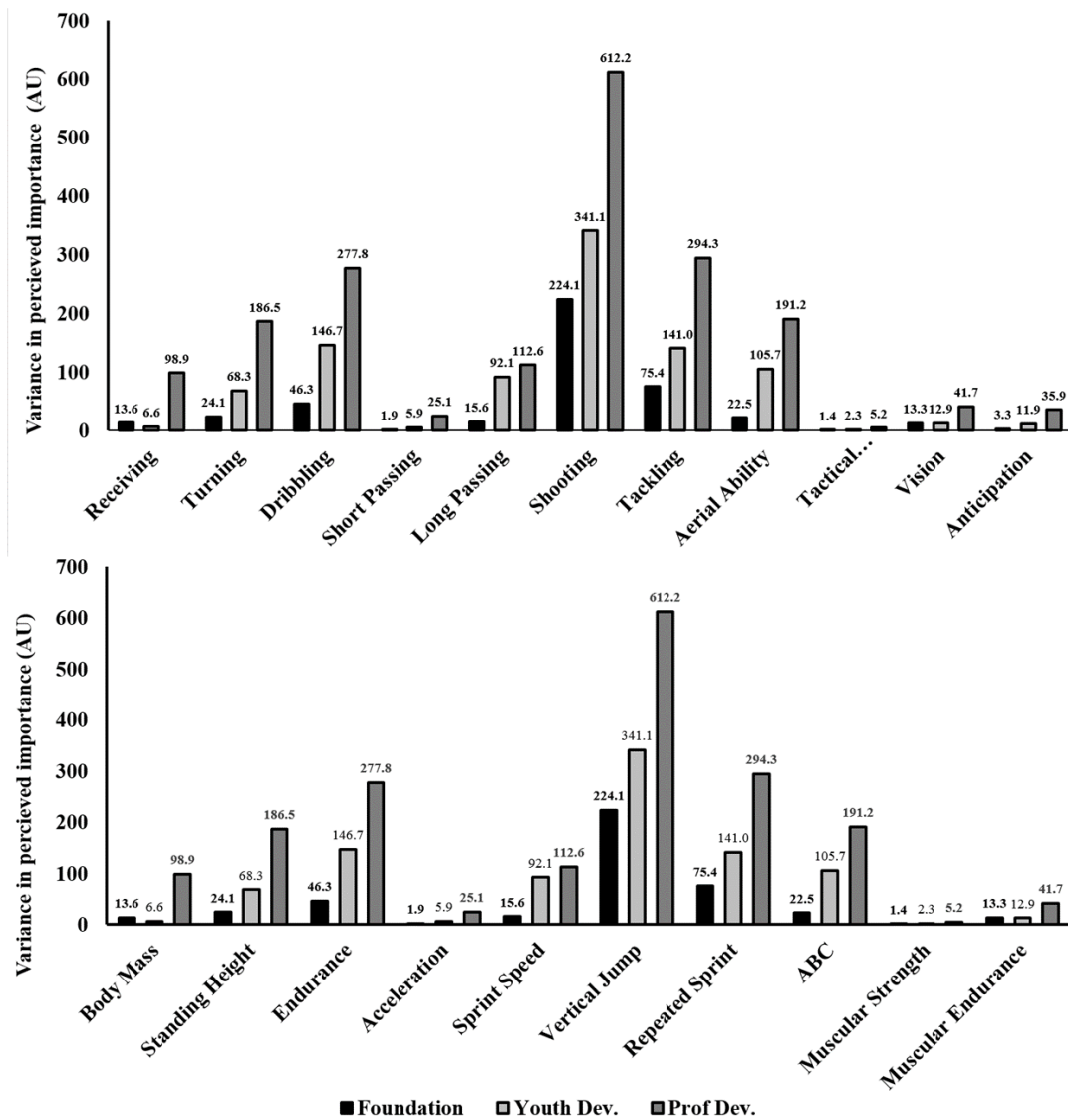
Variable	n	Cohort	GK	FB	CD	WM	DCM	ACM	FWD
<b>Enhanced body-mass (AU)</b>	70	50.0 (47.6 to 52.3)	55.1 (48.5 to 61.7) FB <sup>S</sup> , WM <sup>S</sup> , ACM <sup>S</sup>	44.8 (39.0 to 50.6) GK <sup>S</sup> , CD <sup>S</sup> , DCM <sup>S</sup> , FWD <sup>S</sup>	60.1 (53.7 to 66.6) FB <sup>S</sup> , WM <sup>M</sup> , DCM <sup>S</sup> , ACM <sup>M</sup> , FWD <sup>S</sup>	41.9 (36.6 to 47.1) GK <sup>S</sup> , DCM <sup>S</sup> , FWD <sup>S</sup>	51.1 (44.8 to 57.4) FB <sup>S</sup> , CD <sup>S</sup> , WM <sup>S</sup> , ACM <sup>S</sup> ,	43.7 (37.7 to 49.6) GK <sup>S</sup> , DCM, DCM <sup>S</sup> , FWD <sup>S</sup>	53.3 (46.4 to 59.9) FB <sup>S</sup> , CD <sup>S</sup> , WM <sup>S</sup> , ACM <sup>S</sup>
<b>Enhanced Stature (AU)</b>	70	54.2 (52.2 to 57.6)	79.8 (74.1 to 85.4) FB <sup>L</sup> , CD <sup>S</sup> , WM <sup>L</sup> , DCM <sup>M</sup> , ACM <sup>L</sup> , FWD <sup>M</sup>	45.3 (38.9 to 51.6) GK <sup>L</sup> , DCM, FWD <sup>S</sup>	72.1 (65.4 to 78.8) GK <sup>S</sup> , FB <sup>M</sup> , WM <sup>M</sup> , DCM <sup>M</sup> , ACM <sup>M</sup> , FWD <sup>S</sup>	40.8 (34.9 to 46.7) GK <sup>L</sup> , DCM <sup>S</sup> , FWD <sup>S</sup>	49.2 (42.6 to 55.9) GK <sup>M</sup> , DCM, WM <sup>S</sup> , ACM <sup>S</sup> , FWD <sup>S</sup>	41.9 (35.6 to 48.2) GK <sup>L</sup> , DCM, DCM <sup>S</sup> , FWD <sup>S</sup>	55.2 (47.8 to 62.6) GK <sup>M</sup> , FB <sup>S</sup> , CD <sup>S</sup> , WM <sup>S</sup> , DCM <sup>S</sup> , FWD <sup>S</sup>
<b>Endurance (AU)</b>	70	67.2 (64.8 to 69.6)	37.7 (31.7 to 43.7) FB <sup>L</sup> , DCM, WM <sup>L</sup> , DCM <sup>L</sup> , ACM <sup>L</sup> , FWD <sup>L</sup>	77.9 (72.4 to 83.4) GK <sup>L</sup> , DCM, DCM <sup>S</sup> , FWD <sup>VL</sup>	61.1 (55.6 to 66.6) GK <sup>M</sup> , FB <sup>M</sup> , WM <sup>M</sup> , DCM <sup>S</sup> , ACM <sup>S</sup> , FWD <sup>S</sup>	77.6 (72.0 to 83.1) GK <sup>L</sup> , DCM <sup>S</sup> , FWD <sup>S</sup>	72.0 (66.2 to 77.8) GK <sup>L</sup> , FB <sup>S</sup> , CD <sup>S</sup> , WM <sup>S</sup>	73.5 (67.7 to 79.1) GK <sup>L</sup> , CD <sup>S</sup> ,	70.6 (65.0 to 76.2) GK <sup>L</sup> , FB <sup>S</sup> , CD <sup>S</sup> , WM <sup>S</sup>
<b>Acceleration (AU)</b>	70	74.1 (72.3 to 75.9)	77.8 (73.8 to 81.7) FB <sup>M</sup> , DCM, WM <sup>L</sup> , DCM <sup>S</sup> , ACM <sup>M</sup> , FWD <sup>L</sup>	77.8 (73.8 to 81.7) GK <sup>M</sup> , CD <sup>S</sup> , WM <sup>S</sup> , DCM <sup>S</sup> , FWD <sup>S</sup>	71.6 (67.1 to 76.0) GK <sup>M</sup> , FB <sup>S</sup> , WM <sup>M</sup> , ACM <sup>S</sup> , FWD <sup>M</sup>	84.0 (80.3 to 87.8) GK <sup>L</sup> , FB <sup>S</sup> , DCM <sup>M</sup> , ACM <sup>S</sup>	68.0 (63.0 to 72.9) GK <sup>S</sup> , FB <sup>S</sup> , WM <sup>M</sup> , ACM <sup>S</sup> , FWD <sup>M</sup>	76.4 (72.4 to 80.4) GK <sup>M</sup> , CD <sup>S</sup> , WM <sup>S</sup> , DCM <sup>S</sup> , FWD <sup>S</sup>	84.6 (80.8 to 88.4) GK <sup>L</sup> , FB <sup>S</sup> , DCM, DCM <sup>M</sup> , ACM <sup>S</sup>
<b>Maximal sprint speed (AU)</b>	70	69.2 (67.0 to 71.4)	44.0 (38.0 to 49.9) FB <sup>L</sup> , DCM, WM <sup>L</sup> , DCM <sup>M</sup> , ACM <sup>M</sup> , FWD <sup>L</sup>	77.5 (72.7 to 82.3) GK <sup>L</sup> , CD <sup>S</sup> , WM <sup>S</sup> , DCM <sup>M</sup> , ACM <sup>S</sup> , FWD <sup>S</sup>	67.0 (61.8 to 72.2) GK <sup>M</sup> , FB <sup>S</sup> , WM <sup>M</sup> , DCM <sup>S</sup> , FWD <sup>M</sup>	83.1 (78.7 to 87.4) GK <sup>L</sup> , FB <sup>S</sup> , DCM <sup>M</sup> , ACM <sup>S</sup>	61.4 (55.7 to 67.0) GK <sup>M</sup> , FB <sup>M</sup> , CD <sup>S</sup> , WM <sup>M</sup> , ACM <sup>S</sup> , FWD <sup>M</sup>	69.5 (64.1 to 74.9) GK <sup>M</sup> , FB <sup>S</sup> , WM <sup>M</sup> , DCM <sup>S</sup> , FWD <sup>M</sup>	82.0 (77.7 to 86.3) GK <sup>S</sup> , FB <sup>S</sup> , CD <sup>S</sup> , WM <sup>M</sup> , DCM <sup>S</sup> , FWD <sup>S</sup>
<b>Vertical jump ability (AU)</b>	70	71.8 (69.7 to 73.9)	84.9 (80.5 to 89.4) FB <sup>M</sup> , WM <sup>L</sup> , DCM <sup>M</sup> , ACM <sup>M</sup> , FWD <sup>S</sup>	67.5 (62.3 to 72.7) GK <sup>M</sup> , DCM, WM <sup>S</sup> , ACM <sup>S</sup> , FWD <sup>S</sup>	82.4 (77.3 to 87.5) FB <sup>M</sup> , WM <sup>M</sup> , DCM <sup>M</sup> , ACM <sup>M</sup> , FWD <sup>S</sup>	58.9 (53.2 to 64.5) GK <sup>L</sup> , FB <sup>S</sup> , DCM <sup>S</sup> , FWD <sup>S</sup>	68.4 (62.9 to 74.0) GK <sup>M</sup> , CD, WM <sup>S</sup> , ACM <sup>S</sup> , FWD <sup>S</sup>	62.9 (57.2 to 68.5) GK <sup>M</sup> , FB <sup>S</sup> , DCM, DCM <sup>S</sup> , FWD <sup>M</sup>	77.7 (72.0 to 83.4) GK <sup>M</sup> , FB <sup>S</sup> , CD <sup>S</sup> , WM <sup>S</sup> , DCM <sup>S</sup> , FWD <sup>S</sup>
<b>Repeated Sprint Ability (AU)</b>	70	66.8 (63.8 to 68.8)	36.8 (30.9 to 42.6) FB <sup>VL</sup> , CD <sup>L</sup> , WM <sup>VL</sup> , DCM <sup>L</sup> , ACM <sup>VL</sup> , FWD <sup>VL</sup>	77.1 (71.1 to 83.1) GK <sup>VL</sup> , DCM <sup>S</sup> , ACM <sup>S</sup>	58.5 (52.3 to 64.6) GK <sup>L</sup> , FB <sup>M</sup> , WM <sup>M</sup> , ACM <sup>S</sup> , FWD <sup>M</sup>	80.5 (74.9 to 86.0) GK <sup>VL</sup> , DCM <sup>M</sup> , ACM <sup>S</sup>	62.4 (56.4 to 68.4) GK <sup>L</sup> , FB <sup>S</sup> , WM <sup>M</sup> , ACM <sup>S</sup> , FWD <sup>M</sup>	69.8 (63.9 to 75.7) GK <sup>VL</sup> , FB <sup>S</sup> , CD <sup>S</sup> , WM <sup>S</sup> , DCM <sup>S</sup> , FWD <sup>S</sup>	79.3 (73.8 to 84.8) GK <sup>VL</sup> , DCM, DCM <sup>M</sup> , ACM <sup>S</sup>
<b>A, B, C (AU)</b>	70	84.0 (82.4 to 85.5)	85.6 (80.8 to 90.4) DCM <sup>S</sup>	83.2 (79.1 to 87.3)	82.8 (78.6 to 86.9) FWD <sup>S</sup>	84.9 (80.9 to 88.8) DCM <sup>S</sup>	80.9 (76.4 to 85.4) GK <sup>S</sup> , WM <sup>S</sup> , FWD <sup>S</sup>	84.2 (80.2 to 88.2)	86.2 (82.4 to 89.9) CD <sup>S</sup> , DCM
<b>Muscular strength (AU)</b>	70	62.4 (60.1 to 64.8)	62.4 (55.9 to 68.8) CD <sup>S</sup> , WM <sup>S</sup> , FWD	58.8 (52.7 to 64.8) CD <sup>S</sup> , DCM <sup>S</sup> , FWD <sup>S</sup>	71.1 (65.0 to 77.1) GK <sup>S</sup> , FB <sup>S</sup> , WM <sup>M</sup> , DCM <sup>S</sup> , ACM <sup>S</sup>	54.5 (48.1 to 60.8) GK <sup>S</sup> , DCM <sup>S</sup> , FWD <sup>S</sup>	64.7 (58.4 to 71.1) FB <sup>S</sup> , CD <sup>S</sup> , WM <sup>S</sup> , ACM <sup>S</sup>	57.4 (50.9 to 63.8) CD <sup>S</sup> , DCM <sup>S</sup> , FWD <sup>S</sup>	68.3 (62.0 to 74.6) GK <sup>M</sup> , FB <sup>S</sup> , CD <sup>S</sup> , WM <sup>S</sup> , DCM <sup>S</sup> , FWD <sup>S</sup>
<b>Muscular endurance (AU)</b>	70	59.2 (56.8 to 61.7)	50.2 (43.8 to 56.5) FB <sup>S</sup> , CD <sup>S</sup> , WM <sup>S</sup> , DCM <sup>S</sup> , ACM <sup>S</sup> , FWD <sup>S</sup>	59.0 (52.4 to 65.5) GK <sup>S</sup>	64.3 (57.8 to 70.8) GK <sup>S</sup> , FB <sup>S</sup> , ACM <sup>S</sup>	57.9 (51.3 to 64.5) GK <sup>S</sup> , CD <sup>S</sup> , FWD <sup>S</sup>	60.9 (54.6 to 67.3) GK <sup>S</sup>	58.5 (51.9 to 65.1) GK <sup>S</sup> , CD <sup>S</sup> , FWD <sup>S</sup>	64.0 (57.4 to 70.6) GK <sup>S</sup> , WM <sup>S</sup> , FWD <sup>S</sup>

*Note.* Statistically significant difference ( $p < q$ ) denoted in bold; GK = goalkeeper, FB = full back, CD = central defence, WM = wide midfield, DCM = defensive central midfield, ACM = attacking central midfield, FWD = forward/striker, A, B, C = Agility, balance, coordination. Observed effect magnitudes are denoted as small (<sup>S</sup>), moderate (<sup>M</sup>), large (<sup>L</sup>), very large (<sup>VL</sup>). AU = Arbitrary units

**Table 4.** Mean (95% confidence intervals) level of perceived importance (0 = *least important*; 50 = *undecided*; 100 = *most important*) of practitioners (n = 70) for discrete psychological and sociological components of the FA Four Corner Model

Psychological		Sociological	
<b>On pitch confidence (AU)</b>	82.4 (78.5 to 86.2)	<b>Self-reflection (AU)</b>	72.1 (67.2 to 77.0)
<b>On pitch creativity (AU)</b>	79.2 (75.0 to 83.3)	<b>Teamwork (AU)</b>	79.2 (74.5 to 83.8)
<b>Self-discipline (AU)</b>	80.5 (76.3 to 84.8)	<b>Positive relationships with team (AU)</b>	78.2 (74.0 to 82.3)
<b>Commitment (AU)</b>	86.0 (82.0 to 90.0)	<b>Accountability (AU)</b>	80.9 (76.8 to 85.0)
<b>Intrinsic motivation (AU)</b>	83.8 (79.4 to 88.1)	<b>Leadership (AU)</b>	67.2 (62.1 to 72.4)
<b>Extrinsic motivation (AU)</b>	48.4 (41.4 to 55.3)	<b>Communication (AU)</b>	75.2 (70.6 to 79.8)
<b>On pitch bravery (AU)</b>	76.9 (72.4 to 81.4)	<b>Supportive family life (AU)</b>	70.9 (64.9 to 76.8)
<b>Positive attitude (AU)</b>	86.2 (82.3 to 90.1)	<b>Socioeconomic background (AU)</b>	41.6 (34.8 to 48.3)
<b>Resilience (AU)</b>	83.0 (79.1 to 87.4)	<b>City/town of residence (AU)</b>	36.6 (29.6 to 43.6)
<b>Calm under pressure (AU)</b>	81.2 (77.1 to 85.3)		

AU = Arbitrary units.



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571 Figure 1 and figure 2 (combined). The between playing position variance of outfield players (FB,  
 572 CD, WM, DCM, ACM and FWD) for each discrete technical (top) physical (bottom) attribute  
 573 according to EPPP phase (Foundation, Youth and Professional development (Dev) phase.

574