

**Positive youth development and gender differences in high performance sport**

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### **Abstract**

We examined positive youth development within a high performance sport environment. Youth football players (N = 455; Males = 315; Females = 140) completed a range of questionnaires including: the Youth Experiences Survey for Sport; Self-Confidence subscale of the Competitive State Anxiety Inventory–2 Revised; Sport Competence Inventory; Prosocial and Antisocial Behaviour in Sport Scale; and the modified Coach-Athlete Relationship questionnaire. The players reported a relatively high level of self-confidence, competence and positive youth experiences. They felt a strong coach-athlete relationship and displayed higher levels of prosocial than antisocial behaviour. Males scored significantly higher than females on self-confidence, perceived self-competence, antisocial behaviour to teammates and opponents, relationship with their coach, and cognitive skills. Findings suggest a relationship between high performance sport environments and positive youth development.

Key words: football; adolescence; youth sport; gender; coach; positive youth development.

### 1 **Introduction**

2           Positive youth development (PYD) is a strengths-based perspective focused on  
3 building upon naturally occurring skills and potential to aid healthy development and  
4 adaptive functioning (Lerner et al., 2005). The approach aims to develop individuals who  
5 are healthy, engaged, and productive members of society, both in youth and later  
6 adulthood (Hamilton, Hamilton, & Pittman, 2004). Youth sport has been identified as a  
7 valuable vehicle for PYD (Fraser-Thomas, Côté, & Deakin, 2005; Holt & Neely, 2011);  
8 however, researchers have tended to focus on the school or recreational sport setting (Holt  
9 et al., 2016), with little known about PYD within high performance sports environments  
10 (Santos et al., 2018).

11           High performance youth sport is typically focused on talent development and  
12 identification, with many players specialising in football at an early age (Harwood &  
13 Johnston, 2016; Read, Oliver, De Ste Croix, Myer, & Lloyd, 2016; Santos, Corte-Real,  
14 Ragueiras, Dias, Martinek & Fonseca, 2018). In addition, it is characterised by high  
15 pressure environments where the focus is on successful results often at the expense of  
16 holistic development (Harwood & Johnston, 2016; Sagar, Busch, & Jowett, 2010).  
17 Individuals within high performance youth sport environments are often faced with  
18 intrapersonal and interpersonal challenges (e.g., the fear of failure, deselection, and  
19 pressures from coaches, parents and peers) which may not be conducive to psychosocial  
20 development (Harwood & Johnston, 2016; Reeves, Nicholls, & McKenna, 2009). For  
21 example, highly competitive sports environments have been linked with antisocial  
22 behaviours, low self-esteem, stress, burnout, injuries, and dropout among youth  
23 participants (Baker, Copley, & Fraser-Thomas, 2009; Fraser-Thomas et al., 2005;  
24 Harwood & Johnston, 2016; Merkel, 2013). Since no more than a third of individuals  
25 participating in high performance youth sport progress to professional adult competitions

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26 (Barreiros, Côté, & Fonseca, 2014), there is a need to better understand the high  
27 performance youth sport environment and its relationship with PYD.

28 Scientists have used two prominent measures to examine PYD in the youth sports  
29 context: the 4Cs framework (Côté, Bruner, Erickson, Strachan, & Fraser-Thomas, 2010;  
30 Little, 1993); and the Youth Experiences Survey for Sport (YES-S; MacDonald, Côté,  
31 Eys, & Deakin, 2012). Although both methods aim to assess the same construct, the 4Cs  
32 model focuses on outcomes related to PYD (i.e., competence, confidence, connection,  
33 and character), whereas the YES-S focuses on positive and negative developmental  
34 experiences (MacDonald & McIsaac, 2016). It may be valuable to incorporate both  
35 frameworks into a broad conceptualization of PYD to gain a better understanding of its  
36 role in high performance youth sport. Within the 4Cs framework, competence refers to  
37 perceptions of athletic ability (e.g., technical skills, tactical skills, and physical skills)  
38 (Vierimaa, Erickson, Côté, & Gilbert, 2012). Confidence is defined as an individual's  
39 overall belief in their ability to be successful in sport (Vealey, 1986; Vierimaa et al.,  
40 2012). Connection refers to the positive social interactions and relationships formed  
41 within the sports context, such as those with coaches and peers (Vierimaa et al., 2012).  
42 Finally, character relates to the moral development and sportspersonship acquired by  
43 engaging in prosocial behaviours while avoiding antisocial behaviours in sport  
44 (Bredemeier & Shields, 1996; Vierimaa et al., 2012).

45 Although there is limited research exploring the 4Cs model within youth sport,  
46 the adaptive function of each individual construct has been well supported in school and  
47 recreational sports contexts. For example, higher competence and confidence have been  
48 linked with greater intrinsic motivation, effort, and persistence (Feltz, 1988; Weiss &  
49 Ebbeck, 1996). These outcomes may be particularly important in high performance youth  
50 sport where individuals are likely to face challenges and setbacks, such as competition

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51 for a position and occasional poor performances (Harwood & Johnston, 2016). In regards  
52 to connection, positive relationships with coaches and peers support self-esteem  
53 enhancement and the development of personal and social skills (Santos et al., 2018; Vella,  
54 Oades, & Crowe, 2013; Weiss & Smith, 1996), whereas developing character through  
55 prosocial sporting behaviours relates to a broader respect for societal rules (Côté et al.,  
56 2010).

57       Published reports suggest there may be gender differences associated with the 4Cs  
58 as males have tended to report higher competence, confidence, and report more antisocial  
59 behaviours than females (Horn & Harris, 2002; Kavussanu & Boardley, 2009; Lirgg,  
60 1991). Within the sporting context, it is believed the gender differences may be due to  
61 perceiving sport as being more masculine or more feminine, with the difference becoming  
62 greater on masculine-type tasks (e.g., football as opposed to ballet) (Lirgg, 1991; Clifton  
63 & Gill, 1994). In comparison, within a school context, females have been shown to have  
64 higher levels of positive youth development compared to males (Årdal, Holsen, Diseth,  
65 & Larsen, 2018; Conway, Heary, & Hogan, 2015). While there are inconsistent findings  
66 related to the influence of gender on positive youth development, an exploration of these  
67 constructs within a unified model may enable a better understanding of PYD among male  
68 and female youth sports participants, particularly within the relatively unexplored realm  
69 of high performance youth sport.

70       The YES-S (MacDonald et al., 2012) assesses positive developmental experiences  
71 in sport across four domains (i.e., personal and social skills, cognitive skills, goal setting,  
72 and initiative), as well as negative developmental experiences in sport. Previous research  
73 in school and recreational sport settings has linked sports participation with positive  
74 developmental experiences in each of the aforementioned domains (Camiré, Trudel, &  
75 Forneris, 2009; Dworkin, Larson, & Hansen, 2003; Petitpas, Van Raalte, Cornelius, &

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76 Presbrey, 2004). These positive developmental experiences have in turn been linked with  
77 other outcomes such as improved academic performance, higher self-esteem, and  
78 improved psychological well-being (Cronin & Allen, 2015; Humphrey et al., 2011).  
79 However, there is evidence of negative developmental experiences in this context,  
80 including negative peer relationships, increased stress and anxiety, aggression, and use of  
81 drugs and alcohol (Dworkin et al., 2003; Peretti-Watel, Beck, & Legleye, 2002; Shields  
82 & Bredemeier, 2001).

83         According to Hansen, Larson, and Dworkin (2003), the competitive aspect of  
84 sport may play a critical role in producing both positive and negative developmental  
85 experiences. This notion was supported by Wilkes and Côté (2010) who found females  
86 scored higher on a range of positive developmental experiences than females in a  
87 competitive basketball programme. The experiences were based on the non-sport specific  
88 Youth Experiences Survey 2.0 (YES; Hansen & Larson, 2005), and included identity  
89 reflection, time management, emotional regulation, cognitive skills, diverse peer  
90 relationships, pro-social norms, and links to work and college. Players in the competitive  
91 program also reported higher levels of stress compared to those in the recreational  
92 programme. Furthermore, Wilkes and Côté (2010) focused their study on female sports  
93 participants based on the argument that developmental experiences in sport differ  
94 between males and females (e.g., females report lower levels of win orientation,  
95 competitiveness, competence, and feel they receive less recognition for their  
96 achievements than their male counterparts). Although researchers utilising the sport-  
97 specific version of the YES (YES-S) have reported no gender differences (Sullivan,  
98 LaForge-MacKenzie, & Marini, 2015), the sample included only recreational sports  
99 participants. With the numerous challenges players face in high-pressured youth sporting  
100 environments (e.g. focus on winning, pressures from coaches and parents) this may not

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101 be conducive to their psychosocial development (Baker et al., 2009; Fraser-Thomas et al.,  
102 2005; Harwood & Johnston, 2016; Reeves et al., 2009). As such there is a need to  
103 investigate the positive and negative developmental experiences of both males and  
104 females within the highly competitive environment of high performance youth sport.

105 In the present research, we explore PYD within a high performance youth sport  
106 environment by measuring both athlete outcomes and experiences utilising the 4Cs  
107 framework and the YES-S. It is hypothesised there will be an inter-relationship between  
108 the athlete experiences and outcomes with athletes who score high on the 4Cs also scoring  
109 high on the YES-S. In addition to providing novel information on PYD in a high  
110 performance youth sport setting, we examine whether differences exist between males  
111 and females competing at this level. It is hypothesised the 4Cs and developmental  
112 experiences will differ between the sexes, with males reporting greater competence,  
113 confidence, and positive developmental experiences than females, and females reporting  
114 less antisocial behaviours than males.

### 115 **Method**

#### 116 *Participants*

117 A power calculation (G\*Power version 3.1; Faul, Erdfelder, Lang, & Buchner,  
118 2007) with power = 0.80 and  $\alpha = 0.05$ , indicated a minimum sample size of 128 (N = 64  
119 per group) would be sufficient to detect a medium effect size (0.50). Participants included  
120 youth football players (N = 455; Males = 315; Females = 140) competing in the 2016  
121 National Premier League Division 1 competition (Males:  $14.60 \pm 1.39$  yrs; Females:  $14.96$   
122  $\pm 1.67$  yrs). The National Premier League Division 1 is the highest level of competition  
123 for youth football players in Australia. Participation in this level of competition is seen as  
124 a progression to elite senior performance. On average, teams trained three times per week

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125 and competed in one game on the weekend. In total, 29 teams were represented in the  
126 sample. Written parental consent was received for all players and ethical approval was  
127 granted by the lead institution's Human Ethics Research Committee.

### 128 *Measures*

129       The *Youth Experiences Survey for Sport* (YES-S; MacDonald et al., 2012) was used  
130 to measure positive developmental experiences. The YES-S uses a four-point Likert scale  
131 (i.e., 1= not at all; 4 = yes definitely) to reflect the players experiences during the season.  
132 The survey consists of 37 items that form five subscales: Personal and Social Skills (14  
133 statements; e.g., "I became better at taking feedback"); Cognitive Skills (5 statements;  
134 e.g., "improved creative skills"); Goal Setting (4 statements; "Learned to find ways to  
135 reach my goals"); Initiative (4 statements; e.g., "Learned to push myself"); and Negative  
136 Experiences (10 statements; e.g., "Adult leaders scared me"). Items representing negative  
137 experiences were reverse scored. Higher scores indicate better experiences. High internal  
138 consistency reliability ( $\alpha > .82$ ) has been reported for all subscales (MacDonald et al.,  
139 2012). For the current study, the internal consistency was within the acceptable range for  
140 all subscales ( $\alpha = .79 - .86$ ).

141       The *Self-Confidence subscale of the Competitive State Anxiety Inventory – 2*  
142 *Revised* (Cox, Martens & Russell, 2003) was used to assess players' self-confidence in  
143 sport. The self-confidence subscale contained five items (e.g., "I'm confident of coming  
144 through under pressure"), which players rated from one (not at all), to four (very much  
145 so) about how they generally feel. Higher scores indicated greater self-confidence. For  
146 the current study, Cronbach's alpha was .83.

147       The *Sport Competence Inventory* (Vierimaa et al., 2012) was used to measure how  
148 competent players were in technical, tactical, and physical skills. The player and their



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149 coach confidentially completed three questions rating the player's competence from 1  
150 (Not at all competent) to 5 (Extremely competent). The triangulation of all available  
151 competence ratings provides a reliable and accurate measure of an athlete's sport  
152 competence (Causgrove Dunn, Dunn & Bayduza, 2007; Vierimaa et al., 2012).

153 The *Prosocial and Antisocial Behaviour in Sport Scale* (PABSS; Kavussanu &  
154 Broadley, 2009) was used to assess character. The 20 item questionnaire consists of four  
155 subscales: Prosocial behaviour toward teammates (4 items; e.g., "I encouraged a  
156 teammate"); Prosocial behaviour towards opponents (3 items; e.g., "helped an injured  
157 opponent"); Antisocial behaviour towards teammates (5 items; e.g., "criticised a  
158 teammate"); and Antisocial behaviour towards opponents (8 items; e.g., "tried to wind up  
159 an opponent") which players rate from 1 (never) to 5 (very often) on how often they had  
160 engaged in that behaviour. Reliability analyses of the subscales in the current study, were  
161 within the acceptable range ( $\alpha = .75 - .86$ ).

162 The *modified Coach-Athlete Relationship questionnaire* (CART-Q; Jowett &  
163 Ntoumanis, 2004) was employed to measure the player's perceived quality of connection  
164 with their coach. This questionnaire is composed of three subscales, namely closeness (4  
165 items; e.g., "I trust my coach"), commitment (3 items; e.g., "I believe that my sport career  
166 is promising with my coach"), and complementarity (4 items; e.g., "When I am coached  
167 by my coach, I am ready to do my best") with each statement rated on a seven-point Likert  
168 scale (1 = strongly disagree to 7 = strongly agree). An overall measure is reported by  
169 combining the three subscale scores (Lafreniere et al., 2011). High levels of validity and  
170 reliability have been reported (Jowett & Ntoumanis, 2004). For the current study, the  
171 subscales show good internal consistency ( $\alpha = .77 - .78$ ), as does the overall coach-athlete  
172 relationship scale ( $\alpha = .91$ ).

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### 173 *Procedure*

174 Participants completed the questionnaires at a time conveniently scheduled around  
175 their team training in the last few weeks of the season. Participants were asked to respond  
176 to the questions in relation to their current team and were reminded their responses would  
177 be confidential. All completed questionnaires were returned directly to a research  
178 assistant involved with the study. The questionnaires took approximately 15-20 minutes  
179 to complete.

### 180 *Data analysis*

181 Following the completion of the questionnaires, data were entered into a Microsoft excel  
182 spreadsheet, and then transferred to Statistical Package for the Social Sciences (SPSS)  
183 version 20 for statistical analysis. Overall, competence was computed as the mean score  
184 for player and coach competence ratings. To calculate an overall character score, a mean  
185 score for antisocial behaviour was subtracted from a mean score for prosocial behaviour.  
186 CARTQ was computed as the sum of all responses from the coach-athlete relationship  
187 questionnaire. To calculate overall YES-S scores, the negative experiences subscale was  
188 reverse scored so higher scores reflected more positive developmental experiences. As  
189 the values on all PYD data were significantly non-normal, the non-parametric Mann-  
190 Whitney U tests were conducted. Robust Loess regression analysis confirmed the scores  
191 for each PYD variable was not dependent on age. A significant alpha was set at 0.05, with  
192 effect sizes ( $r$ ) denoted by a small ( $r = 0.1 - 0.29$ ), medium ( $r = 0.3 - 0.49$ ) or large effect  
193 ( $r = 0.5 - 1$ ) (Cohen, 1992). Finally, independent t-test comparisons were then conducted  
194 for each PYD subscale or total score to compare against scores reported in other non-elite  
195 youth sport contexts. Mean comparison results, standard deviations, 95% CI and effect  
196 sizes were reported.



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221 A canonical correlation analysis (Koch, 2014, Lattin, Green & Carroll, 2003) was  
222 conducted for the variables listed in Table 3, divided as shown into YES-S subscales and  
223 Predictor variables (4Cs: confidence, competence, character and connection). Age was  
224 considered as a predictor but found to add no value, so this factor was omitted from the  
225 analysis.

226 < **Insert Table 3 here** >

227 The most important canonical variate is shown in Table 3. This variate explained  
228 12% of the variance, according to the redundancy criterion *Rd* of Lattin et al (2003), with  
229 an R-squared of 0.31. Wilks'  $\Lambda$  statistic = 0.66; Bartlett's *V* chi-squared test ( $V = 126.9$ ,  
230 degrees of freedom = 25) is significant at all reasonable levels ( $p < 0.001$ ). Sequential  
231 tests using Bartlett's *V* indicated the further canonical variates were not worth  
232 considering.

233 It is clear from the loadings the YES-S components of the first variate are highly  
234 correlated with the total of the YES-S scores, while for the predictors, all of the  
235 correlations are positive except for Female, which has no effect. This finding suggests  
236 those who score highly on all the YES -S variables are quite likely to score highly on all  
237 the 4Cs, gender being irrelevant. The canonical correlation was 0.56.

### 238 **Discussion**

239 Participation in high performance youth sport is often associated with negative  
240 outcomes, with limited focus on the potential benefits. In the current paper, we examined  
241 PYD among males and females in high performance youth sport. Using the 4Cs  
242 framework and the YES-S to examine outcomes associated with PYD and positive and  
243 negative developmental experiences respectively, the findings provide evidence of PYD  
244 within the high performance youth sport context. Furthermore, the findings demonstrate

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245 a strong correlation between components of the YES-S and the 4C's variables. In line  
246 with expectations, males had higher perceptions of confidence and reported more  
247 antisocial behaviour towards teammates and opponents. Females reported more prosocial  
248 behaviour towards opponents. Males had higher self-perceptions of competence than  
249 females; however, this effect was not evident when coach ratings of competence were  
250 included. In addition, as hypothesised, males had a significantly stronger connection with  
251 their coach, compared to females. Finally, although there were no differences in overall  
252 positive and negative developmental experiences, males reported greater cognitive  
253 developmental experiences than females. Findings suggest that as reported in less  
254 competitive sport settings, high performance youth sport can facilitate the development  
255 of positive outcomes and experiences relevant to both sport and non-sport settings.

256         Players reported moderately high levels of self-confidence in sport that could  
257 transfer to other areas of life. While caution is needed in inferring causality from our  
258 findings, given that the players may have had high levels of self-confidence prior to  
259 entering the high-performance setting, the data align with previous published reports that  
260 suggest the development of confidence through sport can lead to improved general self-  
261 worth. This increased self-worth has been associated with greater persistence despite  
262 setbacks, which may be beneficial for social and academic development (Eime, Young,  
263 Harvey, Charity & Payne, 2013). In future, researchers should consider collecting such  
264 data using a longitudinal approach, or at least the collection of baseline data prior to  
265 entering high-performance environments.

266         The finding that males reported greater levels of confidence than females is  
267 consistent with previous research within physical activity contexts (Lirgg, 1991). Lirgg  
268 (1991) proposed gender-differences in confidence may be due to perceiving the sport as  
269 being more masculine or more feminine, with the difference becoming greater on

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270 masculine-type tasks (e.g., football as opposed to ballet). Although this notion has been  
271 supported in subsequent research (e.g., Clifton & Gill, 1994), a recent study of American  
272 soccer players (Munroe-Chandler, Hall, & Fishburne, 2008) found no gender-differences  
273 in confidence levels. This latter finding may reflect a change from traditional perceptions  
274 of masculine and feminine sports. However, it is plausible that despite the continuing  
275 development and rising popularity of football among females within Australia, the sport  
276 is still considered a more masculine-type activity. Alternatively, Lirgg (1991) highlighted  
277 the possibility of males tending to overestimate their performances, whereas females may  
278 underestimate their performances leading to differences in confidence ratings.

279         Similarly, players in the present study reported moderately high levels of self-  
280 competence, with males reporting higher levels than females. Although this gender-  
281 difference is consistent with previous research (Horn & Harris, 2002), there was no  
282 significant difference when coach-competence ratings were included in the analysis. This  
283 finding lends support to Lirgg's (1991) aforementioned notion of gender-differences in  
284 self-ratings, and Vierimaa and colleagues' (2012) inclusion of multiple competence  
285 ratings within the 4Cs measurement framework to improve accuracy. The total  
286 competence scores provide evidence of competence development within the high  
287 performance youth sport environment which has been linked with greater enjoyment and  
288 continued participation in previous sport research (Crane & Temple, 2014; McCarthy,  
289 Jones, & Clark-Carter, 2008). Furthermore, physical perceptions of competence have  
290 been shown to lead to positive development in other areas, such as peer relationships  
291 (Weiss & Duncan, 1992).

292         Players reported a strong connection with their coaches. When compared to data  
293 gathered in the school and recreational sport settings (Riley & Smith, 2011; Santos et al.,  
294 2018; Vella et al., 2013), players in the present study reported higher quality coach-athlete

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295 relationships. This finding may reflect the greater amount of time spent with coaches in  
296 high performance youth sport allowing for the development of a stronger connection.  
297 Additionally, there tends to be greater commitment from both the player and the coach in  
298 high performance settings, leading to a more stable coach-athlete relationship (Lyle,  
299 2002). While all players reported stronger connections than previously reported, it should  
300 be noted the male players reported a significantly stronger athlete-coach connection  
301 compared to the female players. This is a novel finding and may be due to the male  
302 participants having a longer season (i.e., 10 months) and more sessions per week with  
303 their coach (i.e., 3 training sessions; 1 game) compared to the females who have a shorter  
304 season (i.e., 6 months) and less sessions per week with their coach (i.e., two training  
305 sessions; 1 game). As a result, the male players may develop a stronger connection with  
306 their coach as they spend greater time with them over the course of the year.

307 As the results indicate, players in high performance environments have stronger  
308 connections with their coach. It is therefore important that coaches are aware of their  
309 influence on players, and taught how to promote the transfer of skills into other areas of  
310 life. Conroy and Coatsworth (2006, 2007) demonstrated the value of PYD training for  
311 coaches as enhancing knowledge and increasing the frequency of certain behaviours  
312 which led to positive developmental experiences. For example, coaches should foster  
313 opportunities for initiative development, treat players respectfully and maturely, provide  
314 choices and rationale for decisions, model respectful behaviour towards others (e.g.,  
315 parents, officials, younger coaches), emphasise the importance of discipline and progress  
316 in sport and non-sport settings (e.g., school), and assist short- and long-term goal setting  
317 (Camiré, Forneris, Trudel, & Bernard, 2011; Gould, Collins, Lauer, & Chung, 2007).  
318 Gould et al. (2007) reported that coaches who were recognised for their abilities to teach

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319 life skills were highly successful, opposing the notion that PYD and winning cannot be  
320 achieved together.

321 In regards to character, females reported greater overall scores compared to males.  
322 The finding that males reported more antisocial behaviour towards teammates and  
323 opponents is consistent with past research (Kavussanu & Boardley, 2009); however, these  
324 levels were relatively low compared to research in the school setting (Bruner, Boardley,  
325 & Côté, 2014). This finding is in contrast to the prevailing view that competitive  
326 environments promote antisocial behaviour (Kohn, 1986). Additionally, although males  
327 reported less prosocial behaviour towards opponents than females, levels among the  
328 sample remained relatively high compared to high school sport athletes (Bruner et al.,  
329 2014). The present character scores may reflect the increasing focus of high performance  
330 clubs on discipline, sportpersonship, and building a strong club culture. Coaches who  
331 develop good relationships with their players, model appropriate moral behaviours  
332 towards others, and set clear expectations and standards for player behaviours will reduce  
333 antisocial behaviour and promote the development of character among players (Gould et  
334 al., 2007; Rutten et al., 2007).

335 In this paper, we report one of the first attempts to examine the potential  
336 development of positive youth experiences within a high-performance sport context. This  
337 is demonstrated by the players in the current study reporting relatively higher levels of  
338 positive developmental experiences when compared to previous research in youth sport  
339 contexts (MacDonald, Côté, Eys, & Deakin, 2011; Vella et al., 2013). Previous findings  
340 have indicated school and recreational sports settings may provide appropriate  
341 environments to develop positive youth development due to the focus being on fun,  
342 engagement, and creativity (MacDonald et al., 2012). However, the results of the current  
343 study suggest it is possible for the growth of positive youth development within a high



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344 performance youth football environment, where the focus may be more on talent  
345 development and winning, rather than individual's social development. Coaches working  
346 in high-performance settings may be able to create environments (or team culture) which  
347 foster positive youth development. For example, autonomy-supportive coach behaviours  
348 (e.g., considering the players' perspectives, providing rationale for activities, and  
349 allowing players to make decisions) have been linked with the development of personal  
350 and social skills (Cronin & Allen, 2015). As evidenced by the relatively high levels of  
351 personal and social skills, it may be possible that despite a degree of competition between  
352 teammates, the high performance team environment creates opportunities for positive  
353 personal learning experiences relating to compromise, being patient of others, and uniting  
354 in the pursuit of success (Taylor & Bruner, 2012). Furthermore, the social situation may  
355 create opportunities for players to learn how to make new friends, regulate their emotions  
356 in front of others, and process feedback from others such as the coach and teammates  
357 (MacDonald et al., 2012). By engaging within the team environment, players may learn  
358 how to apply these skills to other challenges outside of the sport setting to ensure they are  
359 responsible adults.

360 In addition to the higher levels of personal and social development, the current  
361 results indicate players in the high performance environment reported moderately higher  
362 levels of goal setting and initiative compared to previous research in school and  
363 recreational team environments (MacDonald et al., 2011; Vella et al., 2013). As the  
364 participants in the current study were players within a high-performance talent  
365 development programme, it is possible the players have set specific goals within their  
366 sporting domain. Furthermore, the higher levels of initiative demonstrate the players may  
367 be intrinsically motivated by the sport, and thus to achieve a high-performance pathway,  
368 have invested a substantial amount of time and effort within the sport (Russell, 2014;

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369 Vink, Raudsepp, & Kais, 2015). This finding would support practice history research  
370 which has found elite youth players invest more time engaged in activities associated with  
371 the specific sport (i.e., team training; individual training) compared to less skilled players  
372 (Ford, Ward, Hodges, & Williams, 2009; Roca, Williams, & Ford, 2012; Ward, Hodges,  
373 Starkes, & Williams, 2007). Therefore, it would suggest the high performance training  
374 environment may create challenges and goals for players to achieve, which then have a  
375 positive influence on the work ethic and focus of the player.

376 In accordance with other sport-based positive youth development research, the  
377 findings from the current study demonstrated low values for both the cognitive skills and  
378 negative experiences sub-scales (Cronin & Allen, 2015; MacDonald et al., 2011; Vella et  
379 al., 2013). In relation to the cognitive skills sub-scales, researchers believe the relatively  
380 lower scores may be reflective of the lack of sport-specific questions (Cronin & Allen,  
381 2015). As the questions relate more to improving academic cognitive skills (i.e., finding  
382 information and improving computer skills), some players may not make the link between  
383 these and sport-specific cognitive skills. While some of the participants would record  
384 information in their training diary, engage in wellness recording via apps, and use  
385 computers to watch game footage, it is possible the players do not make the link between  
386 these activities and football related cognitive skills. As such, the low scores for cognitive  
387 skills in this and other research may demonstrate the need for further modification of the  
388 YES-S instrument with questions which relate to more sport-specific activities or  
389 examples of cognitive skills. However, it should be noted that the male players did report  
390 greater cognitive scores than the females. This finding supports other sport-based gender  
391 research, where female players are reported to perform lower than male counterparts on  
392 physical fitness (Mujika, Santisteban, Impellizzeri, & Castagna, 2009) and match  
393 performance measures (Bradley, Dellal, Mohr, Castellano, & Wilkie, 2014). In addition

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394 to the low cognitive skill scores, the results indicated relatively low scores for negative  
395 experiences. This finding corroborates with previous sports-based investigations which  
396 also found lower scores for negative experiences (MacDonald et al., 2011; Vella et al.,  
397 2013). The low scores associated with negative experiences may suggest that within the  
398 high performance environment players feel supported by the coach and their peers and  
399 thus have positive experiences within this environment.

400 While this study provides evidence of positive youth development in high-  
401 performance football, there were several methodological limitations. A potential  
402 limitation was due to the time constraints under which the coaches worked, we were  
403 unable to conduct a peer measure of player competence, the coach version of the CART-  
404 Q or the peer connection inventory. In future, researchers should consider including these  
405 instruments to gain a more holistic and objective measurement of PYD. It has been  
406 recognized that relying on self-report ratings of youth behavior alone may be problematic  
407 (Frick & Kamphaus, 2001). In the current study, this was evidenced by higher perceptions  
408 of competence in males compared with females, whereas coach ratings of competence  
409 did not significantly differ between the two groups. Therefore, combining multiple  
410 perspectives may provide a more accurate indication of PYD. However, the inclusion of  
411 both PYD frameworks and measurement of outcomes related to PYD along with positive  
412 and negative developmental experiences strengthened the research.

### 413 **Conclusion**

414 Youth sport has been identified as a valuable vehicle for PYD (Fraser-Thomas,  
415 Côté, & Deakin, 2005; Holt & Neely, 2011), however, high performance youth sport is  
416 typically focused on talent development and identification and characterised by high  
417 pressure environments where the focus is on successful results often at the expense of  
418 holistic development (Harwood & Johnston, 2016; Sagar, Busch, & Jowett, 2010). As

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419 such, individuals within these environments are often faced with intra and interpersonal  
420 challenges (e.g., the fear of failure, pressures from coaches, parents and peers) which may  
421 not promote psychosocial development (Harwood & Johnston, 2016; Reeves, Nicholls,  
422 & McKenna, 2009). Our findings provide evidence of PYD within the high-performance  
423 youth sport context, with this environment able to facilitate the development of positive  
424 outcomes and experiences relevant to both sport and non-sport settings. The results  
425 suggest that high performance coaches may be able to create environments (or a team  
426 culture) which foster positive youth development. However, there may still be scope to  
427 educate coaches better in regards to the potential influence they have on players, and how  
428 they can promote the transfer of psychological skills into other areas of life.

429

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643 Table 1: Mean ( $\pm$  SD) of 4Cs and PYD

		Total		Boys		Girls		z	p	r	
		M	SD	M	SD	M	SD				
Confidence	Confidence	3.39	0.53	3.49	0.50	3.15	0.52	-6.817	.000	0.32	medium
Competence	Player Competence	3.92	0.56	3.98	0.56	3.78	0.53	-3.522	.000	.17	small
	Coach Competence	3.26	0.69	3.25	0.71	3.27	0.65	-0.058	.954	.00	small
	Overall Competence	3.55	0.49	3.56	0.53	3.53	0.41	-1.348	.178	.07	small
Character	Prosocial Team	4.14	0.63	4.12	0.65	4.19	0.60	-1.047	.295	.05	small
	Prosocial Opponent	3.13	1.02	2.99	1.03	3.44	0.93	-4.187	.000	.20	small
	Antisocial Team	1.59	0.54	1.69	0.58	1.37	0.35	-5.904	.000	.28	small
	Antisocial Opponent	1.74	0.69	1.88	0.74	1.42	0.45	-7.233	.000	.34	medium
	Overall Character	1.97	0.92	1.77	0.94	2.42	0.71	-6.947	.000	.33	medium
Connection	Closeness	6.22	0.94	6.24	1.01	6.19	0.77	-2.072	.038	.10	small
	Commitment	5.63	1.09	5.67	1.14	5.52	0.98	-2.292	.022	.11	small
	Complementarity	5.98	0.89	6.03	0.90	5.87	0.87	-2.201	.028	.10	small
	CARTQ	65.81	9.49	66.32	9.75	64.66	8.80	-2.482	.013	.12	small
YES-S	Personal and Social Skills	3.23	0.49	3.23	0.49	3.24	0.49	-0.157	.875	.01	small
	Cognitive Skills	2.43	0.79	2.52	0.80	2.23	0.73	-3.469	.001	.16	small
	Goal setting	3.38	0.60	3.39	0.62	3.35	0.55	-1.264	.206	.06	small
	Initiative	3.65	0.45	3.66	0.45	3.63	0.46	-0.569	.569	.03	small
	Negative Experiences	1.40	0.60	1.42	0.63	1.36	0.54	-0.027	.978	.00	small
	Overall YES	121.90	12.88	122.28	13.09	121.04	12.40	-1.059	.290	.05	small

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645 Table 2: High performance PYD analysis comparison with non-elite and school sport settings (Bruner et al., 204; MacDonald et al., 2011; Riley  
 646 & Smith, 2013; Vella et al., 2013).

Authors	context	sample size	instrument	Previous research		High performance		Mean Difference	Adjusted p value	95%CI for difference	Cohen's d
				M	SD	M	SD				
Vella et al. (2013)	Non-elite community	455	CART-Q total	60.56	14.19	65.81	9.49	5.25	<.001	3.44 – 7.06	0.43
Riley & Smith (2013)	school	208	CART-Q total	62.81	12.43	65.81	9.49	3	.003	1.01 – 4.98	0.28
Bruner et al. (2014)	school	329	Prosocial team	4.08	0.66	4.14	0.63	0.06	0.32	-0.06 – 0.18	0.09
			Prosocial opponent	2.56	0.99	3.13	1.02	0.57	<.001	0.38 – 0.76	0.57
			Antisocial Team	2.12	0.8	1.59	0.54	-0.53	<.001	-0.65 – -0.41	-0.80
			Antisocial Opponent	2.38	0.87	1.74	0.69	-0.64	<.001	-0.78 – -0.50	-0.83
Vella et al (2013)	Non-elite community	455	YES overall	112.72	12.61	121.9	12.88	9.18	<.001	7.03 – 11.33	0.72
MacDonald et al (2011)	school and non-elite community	510	Personal & social skills	2.98	0.63	3.23	0.49	0.25	<.001	0.16 – 0.34	0.44
			Cognitive skills	2.26	0.87	2.43	0.79	0.17	.02	0.03 – 0.31	0.20
			Goal setting	3.06	0.69	3.38	0.6	0.32	<.001	0.21 – 0.43	0.49
			Initiative	3.47	0.56	3.65	0.45	0.18	<.001	0.10 – 0.26	0.35
			Negative experiences	1.71	0.79	1.4	0.6	-0.31	<.001	-0.43 – -0.19	-0.44

Adjusted p-value: the test has been modified to take into account there is a grouping effect due to team

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648 Table 3: Loadings of individual variables included in the canonical correlation analysis  
 649 of YES and the 4 Cs.

		<b>Loading</b>
YES	Personal	<b>0.77</b>
	Cognitive	<b>0.44</b>
	Goals	<b>0.69</b>
	Initiative	<b>0.56</b>
	Negative Experiences	<b>0.58</b>
Predictors	Confidence	<b>0.67</b>
	Competence	<b>0.37</b>
	Character	<b>0.75</b>
	CARTQ	<b>0.57</b>
	Female	0.01

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651