

1           **ACHIEVEMENT GOALS AND SELF-DETERMINATION IN ADULT**  
2           **FOOTBALL PLAYERS – A CLUSTER ANALYSIS**

3   **Abstract**

4   To better understand the relationship between aspects of motivation and performance  
5   level of adult football players, this study aimed to identify differences in motivation in  
6   different motivational profiles created through hierarchical cluster analysis. The  
7   participants consisted of 304 adult football players (90 professionals, 144 semi-  
8   professionals, 70 amateurs, age:  $25.4 \pm 4.6$  y). Participants completed the Task and Ego  
9   Orientation in Sports Questionnaire and the Self-Regulation Questionnaire. Based on  
10  the constructs of the questionnaires cluster analyses were performed. Chi-square was  
11  used to determine any relationships between players and clusters. Four different clusters  
12  were identified. There was no typical motivational profile for football players from  
13  different competitive levels. However, the differences in all four clusters represented  
14  specific characteristics in football players from the different levels of competition most  
15  represented in each cluster. Cluster 1, which was the most adaptive, was not related to  
16  competition level. On the other hand, professional athletes were significantly less  
17  represented in the least adaptive motivational profile (Cluster 4). The results highlight  
18  the complex relationship between competition and sporting motivation. Identifying the  
19  motivational profile characteristics of football players who can reach higher competitive  
20  levels presents itself as a future research opportunity.

21  
22  Key words: motivation, soccer, adults, sport

## 24 **Introduction**

25 Motivation plays a fundamental role in sports as it influences why and how  
26 athletes engage in the activities they choose, affecting the quality of their engagement  
27 and ultimately their performance (Chin, Khoo, & Low, 2012; Olmedilla, Ortega,  
28 Andreu, & Ortín, 2010; Shah & Gardner, 2008). Self-determination theory (Deci &  
29 Ryan, 1985) and the achievement goal theory (Nicholls, 1989) are two of the most  
30 common theoretical approaches for studying achievement motivation in sport and  
31 physical activity (Fenton, Duda, & Barrett, 2016; Zuber, Zibung, & Conzelmann, 2015).

32 According to achievement goal theory, there are two different goal orientations:  
33 (1) Ego Orientation – focusing on displaying one’s superiority to other people with the  
34 aim of demonstrating competence in relation to their peers, and (2) Task Orientation –  
35 the person is more likely to define success or competence in terms of mastery or task  
36 improvement (Nicholls, 1989). Since these are orthogonal concepts, it is possible for  
37 individuals to be oriented to both of them (Cumming, Hall, Harwood, & Gammage,  
38 2002; Lochbaum, Çetinkalp, Graham, Wright & Zazo, 2016; Wang, Liu, Sun, Lim, &  
39 Chatzisarantis, 2010). An extensive quantitative review in competitive sport (including  
40 football) of the Task and Ego Orientations in Sport Questionnaire (TEOSQ) and  
41 Perceptions of Success Questionnaire (POSQ) has been published by Lochbaum et al.  
42 (2016). Analyses using different moderator variables (e.g., sex, sport level, sport type  
43 and collective/individualistic countries) provided important results and different  
44 research/practical directions that allow researchers to advance the study of this specific  
45 area. However, the synthesis of the 260 studies that met the inclusion criteria  
46 highlighted that the two questionnaires did not agree across a number of tested  
47 hypotheses. Thus, a second quantitative review (Louchbaum, Zazo, Çetinkalp, Wright,

48 Graham & Konttinen, 2016) has been published in order to examine whether correlates  
49 of the two achievement goal orientations were moderated by the two measures.

50 In self-determination theory (Deci & Ryan, 1985), the reasons for motivated  
51 actions are distinguished according to where a person's perceived locus of causality is,  
52 or to what extent they are self-determined. Deci and Ryan (1985) proposed a  
53 multidimensional concept of a motivational *continuum* with three main dimensions: (1)  
54 intrinsic motivation; (2) extrinsic motivation, and; (3) amotivation. Additionally,  
55 extrinsic motivation has four different levels: external regulation, introjected regulation,  
56 identified regulation and integrated regulation. Conceptual links between the self-  
57 determination theory and the achievement goal theory have been observed in several  
58 studies (Chin et al., 2012; Ntoumanis, 2001; Zuber et al., 2015) demonstrating that task  
59 oriented individuals are more self-determined and more intrinsically motivated, whereas  
60 ego oriented individuals are less self-determined and more extrinsically motivated  
61 (Ntoumanis, 2001). Through an extensive quantitative review, Louchbaum, Zazo, et al.  
62 (2016) found a significant and small to moderate relationship in meaningfulness  
63 between the task goal orientation and amotivation ( $r_w=-0.13$ ), extrinsic motivation  
64 ( $r_w=0.20$ ), external regulations ( $r_w=0.12$ ), internal regulations ( $r_w=0.34$ ) and intrinsic  
65 motivation ( $r_w=0.47$ ). On the other hand, the ego goal orientation was significantly  
66 small in meaningfulness related to amotivation ( $r_w=0.16$ ), extrinsic motivation  
67 ( $r_w=0.28$ ), external regulation ( $r_w=0.21$ ), and intrinsic motivation ( $r_w=0.14$ ).

68 Nevertheless, based in the orthogonality of the two achievement goals,  
69 examining task and ego goals separately may not yield the true picture, therefore it is  
70 important to analyze goal profiles where possible (Fox, Goudas, Biddle, Duda, &  
71 Armstrong, 1994). In order to approach motivation from a multidimensional  
72 perspective, investigations have used profile analysis to examine the dynamics of the

73 motivational constructs, such as goal orientation and self-determination (Chian &  
74 Wang, 2008; Etnier, Sidman, & Hancock, 2004; Gillet, Vallerand, & Paty, 2013; Hodge  
75 & Petlichkoff, 2000; Wang et al., 2010). Results may differ when analyzing goals  
76 separately compared to profiles of goals combinations. Previous studies in this area (i.e.,  
77 Fox, et al., 1994; Hodge & Petlichkoff, 2000) have used mean or median split to create  
78 four groups: high-task/high-ego (hi/hi), high-task/low-ego (hi-T/lo-E), high-ego/low-  
79 task (hi-E/lo-T), and low-task/low-ego (lo/lo). Although these two procedures are  
80 efficient, they enforce a structure on the data that might not reflect reality. One problem  
81 related with this technique is that scores close to the median or mean are classified  
82 arbitrarily as either high or low when they might actually represent average scores on  
83 task and/or ego orientations. In recent years cluster analysis has increased in popularity  
84 as an analytical procedure to examine varying goal profiles in sport psychology as it  
85 goes beyond the crude procedures of median and mean split through the generation of  
86 subgroups that fit the data satisfactorily by maximizing between-cluster differences and  
87 minimizing within-cluster differences (Hodge & Petlichkoff, 2000)

88       Through cluster analysis, several authors have analysed constructs from different  
89 theories (e.g., self-determination theory and achievement goal theory) in order to  
90 identify subgroups with different motivational profiles in physical activity and sports  
91 (Almagro, Sáenz-López, & Moreno-Murcia, 2012; Etnier et al., 2004; Hodge &  
92 Petlichkoff, 2000; Wang et al., 2010). These studies have shown that cluster analysis is  
93 a valid method that can identify homogeneous motivational profiles.

94       Although little is known on which types of motivation positively contribute to  
95 performance, it is generally believed that motivation is conducive to performance. In  
96 this sense, it is important to adopt a person-oriented approach (e.g., using cluster  
97 analysis) rather than a variable-oriented approach (e.g., using self-determination index)

98 to examine how the different forms of motivation combine to generate different  
99 motivational profiles (Gillet, Vallerand, & Paty, 2013).

100 Despite several studies using this type of analysis, most of them have focused on  
101 school-aged children (Castillo, Balaguer, & Duda, 2000; Chian & Wang, 2008; Wang et  
102 al., 2010). Studies focusing on adult athletes (Balaguer, Castillo, & Duda, 2008; Etnier  
103 et al., 2004; Fonseca & Paula-Brito, 2000) and particularly elite adult athletes are scarce  
104 (Gillet et al., 2013; Mallet & Hanrahan, 2004), as stated in two recently published  
105 extensive reviews (Lochbaum, Çetinkalp, et al., 2016; Louchbaum, Zazo, et al. 2016).

106 Different authors have identified a diverse number of profiles in their samples  
107 due to the different purposes of their investigations and techniques used for establishing  
108 the profiles. In a sporting context, Hodge and Petlichkoff (2000) were not able to locate  
109 any extreme goal profiles (using a mean-split procedure) in adolescent and adult rugby  
110 players. However, the authors identified four profiles through cluster analysis.  
111 Perceived rugby ability/competence discriminated the high-ego/moderate-task and low-  
112 ego/moderate-task groups, with the former reporting greater perceived  
113 ability/competence. In a sample of youth football players, Smith, Balaguer and Duda  
114 (2006) observed four profiles that closely matched those observed by Hodge and  
115 Petlichkoff (2000). Achievement goal profile differences were found for almost all  
116 variables (task and ego involvement climate, peer acceptance, friendship ability and  
117 satisfaction), with a general trend for those reporting relatively lower task goal  
118 orientation to exhibit less adaptive responses. Almagro et al. (2012) found two profiles  
119 in Spanish adolescent athletes: i) highly motivated profile, with high scores in both  
120 forms of motivation, self-determined (intrinsic motivation and identified regulation) and  
121 non-self-determined motivation (introjected and external regulation), and; ii) a  
122 moderately motivated profile, with moderate scores (around 3 and 4) in forms of self-

123 determined and non-determined motivation. Although the authors highlighted the  
124 importance of cluster-analysis to determine whether similar goal-orientation profiles can  
125 be identified in specific groups (e.g., elite vs. recreational; elite vs. novice) of athletes in  
126 different sports (e.g., football), there exist very few studies that have investigated top  
127 level athletes, namely, top level football players.

128         In a study of adult tennis athletes, Gillet et al. (2013) investigated the situational  
129 motivational profiles corresponding to high and low levels of performance in a real-life  
130 setting and found the presence of three clusters (moderate-autonomous/high-controlled;  
131 high-autonomous/high-controlled; high-autonomous/low-controlled). The authors  
132 concluded that the least self-determined profile predicted the lowest levels of  
133 performance.

134         Despite football being the most popular sport worldwide (Sarmiento et al., 2014),  
135 it is surprising that motivational aspects commonly related to sports performance have  
136 not been studied in-depth; particularly in elite players (for a review, see Lochbaum,  
137 Çetinkalp, et al., 2016; Louchbaum, Zazo, et al. 2016). Modern football provides an  
138 environment where athletes may be more extrinsically motivated (due to finances) than  
139 intrinsically motivated, for enjoyment or personal achievement (Horn, 2001). Naturally,  
140 all athletes have high intrinsic motivation (enjoyment; passion for the game). However,  
141 the professional football environment may decrease this type of motivation.

142 Cognitive evaluation theory suggests that the elite sports environment predominantly  
143 focuses on winning and with large financial considerations, which leads to lower levels  
144 of self-determination and, consequently, lower levels of intrinsic motivation (Mallet &  
145 Hanrahan, 2004). Laboratory and field research has demonstrated that elite competitions  
146 have a negative influence on intrinsic motivation. Furthermore, perceived performance  
147 climate attenuates the positive relationship between a mastery climate and increased

148 intrinsic motivation (Buch, Nerstad, & Safvenbom, 2017). Nevertheless, in an  
149 investigation by Mallet and Hanrahan (2004), the authors identified that elite athletes  
150 view financial compensation as more related to their self-competence than as behaviour  
151 modifiers.

152 Elite sports, which are largely focused on winning and financial rewards  
153 associated with victories may potentially decrease self-determined types of motivation  
154 and may move the causality locus from internal to external. Nevertheless, there are  
155 some aspects of elite sports that promote self-determination, and perception of  
156 competence and bonding, which, in return, may promote an internal causality locus and  
157 self-determined types of motivation (Deci & Ryan, 1985). Mallet and Hanrahan (2004)  
158 suggest that the causality locus may move from external to internal as athletes mature;  
159 and, as a result, financial compensation and rewards lose motivational strength. The  
160 perception of competence and being accepted by others represents a more powerful  
161 motivational strength. Additionally, Gillet et al. (2013) suggested that cluster analysis  
162 with different samples of top performers (tennis players) reveals somewhat different  
163 profiles because the nature of the social context could have an impact on the  
164 development of motivational profiles characterized by high levels of controlled  
165 motivation.

166 To better understand the relationship between aspects of motivation and the  
167 performance level of adult footballers, the aim of this study was to identify differences  
168 in motivation using different motivational profiles established through hierarchical  
169 cluster analysis. Additionally, the relationship between achievement goals and different  
170 types of motivation proposed by the self-determination theory were analyzed.

171

## 172 **Methods**

173 *Participants and Procedures*

174 Data was collected from a total of 21 football teams competing in the first and  
175 second division of the Portuguese professional football league (n=6), second division B  
176 and third division of the national championships (n=9), and regional championships  
177 (n=6). The sample consisted of 304 football players ranging in age from 17 to 39 years  
178 old ( $M_{age} = 25.4 \pm 4.6$  y). Consent from the coaches and players was obtained before  
179 data collection. Protocol and procedures for this study were approved by the Research  
180 Ethics Committee of the University of the authors.

181 *Measures*

182 *Achievement Goal Orientations*

183 The Portuguese version (Fonseca & Biddle, 1995; Fonseca & Paula-Brito, 2000)  
184 of Task and Ego Orientation in Sport Questionnaire (TEOSQ; Duda and Nicholls  
185 (1992) was used to assess athletes' dispositional goal orientations. The stem for the 13  
186 items was "I feel most successful in the sport when..." and assessed ego (e.g. "... I am  
187 the only one capable of doing this",  $N_{items} = 6$ ), and task orientation (e.g. "... I do my  
188 best",  $N_{items} = 7$ ). The replies were rated on a Likert scale, in which each item had a  
189 response range from 1 (completely disagree) to 5 (completely agree). An adequate  
190 internal consistency was obtained for each subscale, with Cronbach alpha coefficients  
191 of .80 identified for both task and ego orientation subscales.

192

193 *Perceived autonomy - Self-Regulation Questionnaire (SRQ)*

194 To measure players perceived autonomy, the Portuguese version (Fonseca &  
195 Biddle, 1997) of the Self-regulation Questionnaire (Ryan & Connell, 1989) was used.  
196 The SRQ is composed of 17 items, grouped into five dimensions: (1) amotivation (e.g.  
197 "I do not have any reason to do sports",  $N_{items} = 3$ ); (2) external regulation (e.g. "I do



198 sports because other people tell me I should do it”,  $N_{\text{items}} = 4$ ); (3) introjected regulation  
199 (e.g., “I feel guilty when I do not practice sports”,  $N_{\text{items}} = 4$ ); (4) identified regulation  
200 (e.g. “I valorise the benefits of practicing sports”,  $N_{\text{items}} = 3$ ); and (5) intrinsic regulation  
201 (e.g. “I practice sports because it is fun”,  $N_{\text{items}} = 3$ ). Answers were given on a five-point  
202 Likert scale, and adequate internal consistency were obtained for each subscale, with  
203 Cronbach's alpha coefficients for the different dimensions ranging between 0.70 and  
204 0.80.

205 The questionnaires were given to each athlete in a quiet place, without  
206 distractions. Each participant took 15-20 minutes to complete the questionnaires and  
207 responses were kept anonymous. Participants were informed about the general purpose  
208 of the study and told that their identities would be kept strictly confidential and that all  
209 the items in the questionnaires should be answered as honestly as possible. The  
210 participants encountered no problems when completing either of the questionnaires.

211

## 212 *Data analysis*

213 Frequencies, means, and standard deviations were calculated to characterize the  
214 participants. Normality for the dimensions of the Portuguese versions of the TEOSQ  
215 and SRQ was tested by Kolmogorov-Smirnov's test of normality. All missing data and  
216 outliers were eliminated. Pearson's  $r$  coefficient was used to calculate the correlations  
217 between the mean values of the variables.

218 Variables were standardized using  $z$ -score ( $M = 0$ ,  $SD = 1$ ). Athletes were  
219 grouped/classified through hierarchical and non-hierarchical cluster analysis. Firstly, the  
220 nearest neighbour hierarchical cluster analysis was conducted, using the squared  
221 Euclidian distance as a measure of dissimilarity. The R-square was used as criteria for  
222 the retention of the number of clusters. From this analysis, four clusters were retained.

223 For validation and classification of the athletes in the four clusters retained, a k-Means  
224 non-hierarchical cluster analysis was conducted. Differences between clusters, for the  
225 dimensions of the Portuguese versions of the TEOSQ and SRQ, were tested by the one-  
226 way ANOVA test, followed by the Tukey's HSD post hoc test. Chi-square test was used  
227 to determine if the competitive level of the athletes was independent of the clusters. All  
228 analyses were performed using IBM SPSS v.23.

229

## 230 **Results**

### 231 *Descriptive statistics and inter correlations*

232 Table 1 presents the participant's characteristics as mean age ( $25.5 \pm 4.5$  y),  
233 mean years of experience as a footballer ( $7.7 \pm 4.8$  y), competitive level, playing  
234 position, and nationality.

235

236 \*\*\*\*\*Table 1 near here\*\*\*\*\*

237

238 Internal consistency and mean values for all dimensions of goal orientation and  
239 perceived autonomy are presented in Table 2. In general, the athletes reported high  
240 scores in task orientation, and in the self-determined components of motivation  
241 (intrinsic motivation and identified regulation). Task and ego orientations were weakly  
242 related, supporting the orthogonal nature of the two goals. Task orientation was  
243 significantly correlated with intrinsic motivation ( $r=0.4$ ,  $p<0.001$ ) and identified  
244 regulation ( $r=0.5$ ,  $p<0.001$ ), while ego orientation was significantly correlated (although  
245 weakly) with introjected regulation ( $r=0.15$ ,  $p<0.01$ ).

246

247 \*\*\*\*\*Table 2 near here\*\*\*\*\*

248

249 *Cluster analysis*

250           Table 3 shows the mean values, standard deviations and z-score used to create  
251 the clusters. Clusters profiles are presented in Figure 1. To determine if the profiles  
252 were classified as high or low when comparing clusters, z-scores values near  $\pm 0.5$  were  
253 used. Z-scores near  $\pm 0.3$  were considered moderate. Athletes from Cluster 1 (n=113)  
254 had high scores for task orientation, intrinsic motivation, identified regulation and  
255 introjected regulation, and high negative scores for amotivation. Cluster 2 (n=80) was  
256 characterized as presenting moderate scores in most of the analysed variables, shifting  
257 between positive scores (ego orientation, introjected regulation) and negative scores  
258 (task orientation, intrinsic motivation, identified regulation). External regulation and  
259 amotivation were the only high scores for this cluster. Cluster 3 (n=96) presented  
260 negative scores in all variables. This group of athletes had moderate negative scores for  
261 task orientation, intrinsic motivation, and amotivation, and high negative scores for ego  
262 orientation, identified regulation, introjected regulation, and external regulation.  
263 Athletes from Cluster 4 (n=25) obtained high scores for external regulation and  
264 amotivation while having high negative scores for task orientation, intrinsic motivation,  
265 and identified regulation, suggesting this group was the most amotivated.

266           To examine the characteristics of each profile an ANOVA analysis was  
267 performed (Table 3). Significant differences were found between clusters for all the  
268 analysed variables.

269

270

\*\*\*\*\*Table 3 near here\*\*\*\*\*

271

272

273

\*\*\*\*\*Figure 1 near here\*\*\*\*\*

274

275

276           Significant differences between clusters regarding competitive level were  
277 verified ( $\chi^2(6)=19.130, p=0.004$ ) (Table 4). Amateurs were less represented in Cluster 2  
278 and more represented in Cluster 3 than professional and semi-professionals.  
279 Professional athletes were more represented in Cluster 4 than amateur and semi-  
280 professional athletes.

281

282

\*\*\*\*\*Table 4 near here\*\*\*\*\*

283

284

## 285 **Discussion**

286           The aim of this study was to identify the motivational profiles of Portuguese  
287 football players from different competitive levels, based on self-determination theory  
288 (Deci & Ryan, 1985) and achievement goal theory (Nicholls, 1989). To the best of our  
289 knowledge, this is the first study to analyze these variables in professional football  
290 players.

291

292           Similar to other studies (Chian & Wang, 2008; Etnier et al., 2004; Hodge &  
293 Petlichkoff, 2000; Wang et al., 2010), our results showed that athletes seem to be more  
294 oriented to demonstrating competence about themselves than to demonstrate  
295 competence about their peers. This can be construed as a positive result, as higher task  
296 orientation levels are associated with persistence and commitment in sports (Roberts,  
297 2001). Lochbaum, Çetinkalp, et al. (2016), found estimated mean values of  $4.15 \pm 0.30$   
and  $3.04 \pm 0.51$  for task and ego orientations, respectively. The results from this group

298 of Portuguese footballers are very similar for task orientation, but they displayed lower  
299 mean levels for ego orientation, when looking at the overall results of the reviewed  
300 studies, including POSQ and TEOQ. Nevertheless, the analyses of Lochbaum,  
301 Çetinkalp, et al. (2016), using the TEOQ reveal very similar results with those found in  
302 our study ( $4.09 \pm 0.28$ ;  $2.92 \pm 0.48$ , for task and ego orientations, respectively).  
303 Additionally, other similar scores can be found in this review of literature, when  
304 assessing the specific analysis performed according the sex, sport level, sport type and  
305 collective/individualistic countries (West Europe Countries in our specific case).

306 Task goal was significantly related with intrinsic motivation, identified  
307 regulation and amotivation. The ego goal orientation was significantly related to  
308 introjected regulation. The relationships between both task and ego goal orientations  
309 with the different components of motivation are consistent with previous results (e.g.,  
310 Biddle, S., Wang, C., Kavussanu, M., & Spray, C., 2003; Lochbaum, Zazo, et al., 2016,  
311 Wang & Biddle, 2001) and suggest that task orientation is more motivationally  
312 adaptive, regardless of the level of ego orientation.

313 Athletes attributed higher scores to higher levels of perceived autonomy. In fact,  
314 our results demonstrated a gradual increase of the scores from the most extrinsic to the  
315 most intrinsic components of motivation (external regulation, introjected regulation,  
316 identified regulation, intrinsic motivation), except for identified regulation, which had  
317 higher scores than the intrinsic motivation. The higher levels of identified regulation  
318 observed may be related to the fact that most of the participants were professional or  
319 semi-professional athletes and were exposed to an elite sports environment. Therefore,  
320 more than being involved in football for intrinsic nature reasons (e.g. enjoyment), it is  
321 possible that these athletes were involved mostly for the importance, prestige, and value  
322 attributed to football. Similar findings were obtained in a study investigating regular

323 sports participation among university students (Wilson, Rodgers, Fraser, & Murray,  
324 2004). The authors suggested that, in the context of sport, intrinsic motives and  
325 participating in the activities by itself are not sufficiently interesting or gratifying to  
326 regulate peoples' participation. The authors concluded that identified regulation,  
327 intrinsic motivation, and persistence are key predictors of motivational adaptive  
328 consequences for practicing sports.

329         Congruent with previous studies (Gillet et al., 2013; Hodge and Petlichkoff,  
330 2000; Smith, Balaguer and Duda, 2006), the present study demonstrates that cluster  
331 analysis is able to identify subgroups of athletes with differentiated motivational  
332 patterns. As stated by Chian and Wang (2008), the present findings and previous  
333 research provides ample evidence that motivation is multi-dimensional and cannot  
334 simply classified as "high" versus "low" based on a single variable (e.g. Hodge &  
335 Petlichkoff, 2000). In line with previous research (e.g., Chian & Wang, 2008; Hodge &  
336 Petlichkoff, 2000), we found no extreme group profiles (high-ego/high-task or low-  
337 ego/low-task) when cluster analysis was used.

338         Nevertheless, the analysis of the different motivational profiles presented some  
339 interesting results. There was no difference in the competitive level of the athletes in  
340 Cluster 1; which was characterized as containing higher task orientation levels.  
341 Considering that Cluster 1 is composed of predominately professional and semi-  
342 professional athletes this result was expected. Indeed, according to previous findings,  
343 professional and semi-professional athletes are significantly more represented in this  
344 type of cluster and also have higher ego orientation levels. Furthermore, higher task  
345 orientation levels associated with higher levels of ego orientation are the most adaptive  
346 motivational pattern for these athletes (Biddle, 1999; Cumming et al., 2002; Georgiadis,  
347 Biddle, & Auweele, 2000; Mallet & Hanrahan, 2004; Roberts, 2001). However, the

348 previous studies of Etner et al. (2004) have not observed this profile. The profile from  
349 Cluster 1 can be considered as the most “motivationally adaptive profile” as it presents  
350 high scores for task orientation, is associated with moderate ego orientation scores, and  
351 demonstrates higher scores in the most self-determined types of motivation (intrinsic,  
352 identified, and introjected), as well as low scores in external motivation and  
353 amotivation, when compared to other clusters’ profiles. This suggestion is supported,  
354 amongst others, by the results of Gillet et al. (2013), who found that tennis players who  
355 had profiles with higher levels of self-determination were more likely to have higher  
356 levels of performance.

357 The profile of Cluster 2 is the most common among high competitive level  
358 athletes, presenting higher scores for the ego orientation, and combining high scores in  
359 the more self-determined components of motivation with relatively high scores in the  
360 less self-determined components. Furthermore, amotivation scores were slightly higher  
361 in this cluster.

362 Cluster 1 and Cluster 2 presented the highest scores in introjected regulation. In  
363 a study using female athletes, Wilson et al. (2004) concluded that introjected regulation  
364 is an important motivational strength, as it seems to be a strong predictor of behaviours  
365 like persistence and effort in physical activity. However, although we suggested that  
366 introjected regulation or even external regulation could be related to higher levels of  
367 performance in football players, we should take into consideration that less self-  
368 determined levels of motivation potentially affect athletes’ emotional component related  
369 to performance. Athletes with lower self-determined levels of motivation are less likely  
370 to have positive feelings towards competition and will generally be more anxious before  
371 and after competition (Perreault & Vallerand, 1998). Therefore, less self-determined  
372 levels of motivation are a “double-edged sword”, as it relates to better performance but

373 has high emotional setbacks. Furthermore, emotional self-regulation resource  
374 impairment influences sport performance (Wagstaff, 2014).

375 Cluster 4 presents the less adaptive characteristics for motivation in physical  
376 activity and sports. Professional athletes were less represented in this cluster than semi-  
377 professional and amateur athletes. This suggests that athletes from lower competitive  
378 levels have lower levels of intrinsic motivation and identified regulation, and are more  
379 amotivated and susceptible to external types of motivation. However, when interpreting  
380 this finding, it must be taken into consideration that only 25 athletes were part of this  
381 cluster and thus characterised by this profile. Nevertheless, it is important to highlight  
382 that this group of athletes is one that is at higher risk of dropout from sporting activities  
383 (Etnier et al., 2004). Most of the athletes in Cluster 4 were semi-professional, and it is  
384 possible that the high amotivation scores are related to this. Being at a middle stage  
385 between professional and amateur sports on the one hand can give access to  
386 professionalization, but on the other hand, it is where many athletes finish their careers.  
387 Thus, athletes who expect to reach professionalization and fail, and athletes who once  
388 were professional athletes and now are at the end of their careers are possibly more  
389 externally motivated and amotivated.

390 The analyses of Cluster 4 cannot be dissociated from the analyses of Cluster 3,  
391 where amateurs were the most represented group and the profile was characterized by  
392 low levels of amotivation and external motivation. It is plausible that amateur athletes,  
393 who practice in harsh conditions after working hours and without financial  
394 compensations, are involved in football mostly because of intrinsic motives, such as  
395 enjoyment or pleasure for the game.

396 A few limitations should be noted in the current study. The variables measured  
397 were self-reported which may lead to a common method variance bias. However, as



398 stated by Li, Wang, Pyun, and Kee (2013) self-reported data may be the most valid  
399 measurement method in this type of study. Participants were deemed to be in the best  
400 position to report on their levels of motivation. Additionally, the data were collected in  
401 different phases of the sporting season, before or after the training sessions, and the  
402 different situational variables may have influenced the findings. Future research should  
403 also analyze relationships between achievement goals theory and Self-determination  
404 theory and other variables, such as emotions, behaviours, achievements strategies,  
405 personality traits, etc., in order to more objectively identify which clusters lead to more  
406 adaptive/maladaptive outcomes.

407

## 408 **Conclusion**

409 The findings from this study suggest that there is no typical motivational profile  
410 for football players from different competitive levels. However, athletes from higher  
411 competitive levels were more represented in clusters characterized by high task  
412 orientation scores associated with moderate ego orientation scores and relatively high  
413 scores in the most self-determined types of motivation. Athletes from Cluster 4 were the  
414 least motivationally adaptive and presented the greatest risk of dropout from football.  
415 Therefore, this group of athletes should be the target of specific interventions that aim to  
416 prevent dropouts.

417

## 418 **References**

419 Almagro, B., Sáenz-López, P., & Moreno-Murcia, J. (2012). Perfiles motivacionales de  
420 deportistas adolescentes españoles. *Revista de Psicología del Deporte, 21*(2),  
421 223-231.

- 422 Balaguer, I., Castillo, I., & Duda, J. (2008). Apoyo a la autonomía, satisfacción de las  
423 necesidades, motivación y bienestar en deportistas de competición: un análisis  
424 de la teoría de autodeterminación. *Revista de Psicología del Deporte*, 17(1),  
425 123-139.
- 426 Biddle, S. (1999). Targeting goal: but which goal? Motivating the child in football.  
427 "Insight" – *The F. A. Coaches Association Journal*, 4(2), 40.
- 428 Biddle, S., Wang, C. K. J., Kavussanu, M., & Spray, C. (2003). Correlates of  
429 achievement goal orientations in physical activity: A systematic review of  
430 research. *European Journal of Sport Science*, 3(5), 1-20.
- 431 Buch, R., Nerstad, C. G., & Safvenbom, R. (2017). The interactive roles of mastery  
432 climate and performance climate in predicting intrinsic motivation.  
433 *Scandinavian Journal of Medicine and Science in Sports*, 27(2), 245-253.
- 434 Castillo, I., Balaguer, I., & Duda, J. (2000). Las orientaciones de meta y los motivos de  
435 práctica deportiva en los jóvenes deportistas valencianos escolarizados. *Revista*  
436 *de Psicología del Deporte*, 9(1-2), 37-50.
- 437 Chian, L., & Wang, C. (2008). Motivational Profiles of Junior College Athletes: A  
438 Cluster Analysis. *Journal of Applied Social Psychology*, 20, 37-50.
- 439 Chin, N.-S., Khoo, S., & Low, W.-Y. (2012). Self-Determination and Goal Orientation  
440 in Track and Field. *Journal of Human Kinetics*, 33, 151-161.
- 441 Cumming, J., Hall, C., Harwood, C., & Gammage, K. (2002). Motivational orientations  
442 and imagery use: a goal profiling analysis. *Journal of Sports Sciences*, 20(2),  
443 127-136.
- 444 Deci, E., & Ryan, R. (1985). *Intrinsic motivation and self-determination in human*  
445 *behavior*. New York: Plenum.

- 446 Duda, J., & Nicholls, J. (1992). Dimensions of achievement motivation in schoolwork  
447 and sport *Journal of Educational Psychology*, 84(3), 290-299.
- 448 Etnier, J., Sidman, C., & Hancock, L. (2004). An examination of goal orientation  
449 profiles and motivation in adult team sport. *International Journal of Sport*  
450 *Psychology*, 35, 173-188.
- 451 Fenton, S. A. M., Duda, J. L., & Barrett, T. (2016). Optimising physical activity  
452 engagement during youth sport: a self-determination theory approach. *Journal of*  
453 *Sports Sciences*, 34(19), 1874-1884. doi:10.1080/02640414.2016.1142104
- 454 Fonseca, A., & Biddle, S. (1995). *Versão portuguesa do Task and Ego Orientation in*  
455 *Sport Questionnaire (TEOSQ): Questionário sobre a orientação para a Tarefa e*  
456 *para o Ego no desporto (TEOSQp)*. Porto: FCDEF-UP.
- 457 Fonseca, A., & Biddle, S. (1997). *Questionário de Orientação para a Tarefa e para o*  
458 *Ego no Desporto*. Porto: FCDEF-UP.
- 459 Fonseca, A., & Paula-Brito, A. (2000). Las concepciones sobre la competencia  
460 deportiva y los objetivos de logro. *Revista de Psicología del Deporte*, 9(1-2),  
461 159-176.
- 462 Fox, K., Goudas, M., Biddle, S., Duda, J., & Armstrong, N. (1994). Children's task and  
463 ego goal profiles in sport. *British Journal of Educational Psychology*, 64(2),  
464 253-261.
- 465 Georgiadis, M., Biddle, S., & Auweele, Y. (2000). Cognitive, emotional and  
466 behavioural connotations of task and ego goal orientation profiles: an  
467 ideographic approach using hierarchical class analysis. *International Journal of*  
468 *Sport Psychology*, 32, 1-20.

- 469 Gillet, N., Vallerand, R., & Paty, B. (2013). Situational motivational profiles and  
470 performance with elite performers. *Journal of Applied Social Psychology, 43*,  
471 1200-1210.
- 472 Hodge, K., & Petlichkoff, L. (2000). Goal profiles in sport motivation: A cluster  
473 analysis. *Journal of Sport and Exercise Psychology, 22*, 256-272.
- 474 Horn, R. (2001). World-wide review of science and football research. "Insight" – *The*  
475 *F. A. Coaches Association Journal, 4*(4), 20-22.
- 476 Li, C. X., Wang, C. K. J., Pyun, D. Y., & Kee, Y. H. (2013). Burnout and its relations  
477 with basic psychological needs and motivation among athletes: A systematic  
478 review and meta-analysis. *Psychology of Sport and Exercise, 14*(5), 692-700.
- 479 Lochbaum, M., Cetinkalp, Z. K., Graham, K. A., Wright, T., & Zazo, R. (2016). Task  
480 and ego goal orientations in competitive sport: a quantitative review of the  
481 literature from 1989 to 2016. *Kinesiology, 48*(1), 3-29.
- 482 Lochbaum, M., Zazo, R., Cetinkalp, Z. K., Wright, T., Graham, K. A., & Kontinen, N.  
483 (2016). A meta-analytic review of achievement goal orientation correlates in  
484 competitive sport: a follow-up to lochbaum et al. (2016). *Kinesiology, 48*(2),  
485 159-173.
- 486 Mallet, C., & Hanrahan, S. (2004). Elite athletes: why does the "fire" burn so brightly?  
487 *Psychol Sport Exerc, 5*, 183-200.
- 488 Nicholls, J. (1989). *The competitive ethos and democratic education*. Cambridge, MA:  
489 Harvard University Press.
- 490 Ntoumanis, N. (2001). Empirical links between achievement goal theory and self-  
491 determination theory in sport. *Journal of Sports Sciences, 19*(6), 397-409.

- 492 Olmedilla, A., Ortega, E., Andreu, M., & Ortín, F. (2010). Programa de intervención  
493 psicológica en futbolistas: evaluación de habilidades psicológicas mediante el  
494 CPRD. *Revista de Psicología del Deporte*, 19(2), 249-262.
- 495 Perreault, S., & Vallerand, R. (1998). Créer un climat motivationnel: la motivation  
496 intrinsèque et extrinsèque dans le sport. In E. Thill & P. Fleurance (Eds.), *Guide*  
497 *pratique de la préparation psychologique du sportif* (pp. 93-108). Paris: Vigot.
- 498 Roberts, G. (2001). Understanding the dynamics of motivation in physical activity: The  
499 influence of achievement goals on motivational processes. In G. Roberts (Ed.),  
500 *Advances in motivation in sport and exercise* (pp. 79-100). Champaign: Human  
501 Kinetics.
- 502 Ryan, R., & Connell, J. (1989). Perceived locus of causality and internalization:  
503 Examining reasons for acting in two domains. *Journal of Personality and Social*  
504 *Psychology*, 57(5), 749-761.
- 505 Sarmiento, H., Marcelino, R., Anguera, M., Campaniço, J., Matos, N., & Leitão, J.  
506 (2014). Match analysis in football: a systematic review. *Journal of Sports*  
507 *Sciences*(32), 1831-1843.
- 508 Shah, J., & Gardner, W. (2008). *Handbook of motivation science*. New York: Guilford  
509 Press.
- 510 Smith, A. L., Balaguer, I., & Duda, J. L. (2006). Goal orientation profile differences on  
511 perceived motivational climate, perceived peer relationships, and motivation-  
512 related responses of youth athletes. *Journal of Sports Sciences*, 24(12), 1315-  
513 1327.
- 514 Wagstaff, C. R. (2014). Emotion regulation and sport performance. *J Sport Exerc*  
515 *Psychol*, 36(4), 401-412.

516 ang, C., & Biddle, S. (2001). Young people's motivational profiles in physical activity:  
517 a cluster analysis. *Journal of Sport & Exercise Psychology*, 23, 1-22.

518 Wang, C., Liu, W., Sun, Y., Lim, B., & Chatzisarantis, N. (2010). Chinese Students'  
519 Motivation in Physical activity: Goal profile using Nicholl's achievement goal  
520 theory. *International Journal of Sport and Exercise Psychology*, 8, 248-301.

521 Wilson, F., Rodgers, W., Fraser, S., & Murray, T. (2004). Relationships between  
522 exercise regulations and motivational consequences in university students.  
523 *Research Quarterly for Exercise and Sport*, 75(1), 81-91.

524 Zuber, C., Zibung, M., & Conzelmann, A. (2015). Motivational patterns as an  
525 instrument for predicting success in promising young football players. *Journal*  
526 *of Sports Sciences*, 33(2), 160-168.

527

528

**Tables**

529

530 Table 1. Participant characteristics (n=315).

	n or M±SD	%
Age	25.4±4.5	
Football experience (years)	7.8±4.8	
Competitive level		
Amateur	70	23.0
Semi-professional	144	47.4
Professional	90	29.6
Position		
Goalkeeper	31	10.2
Defender	113	37.2
Midfielder	104	34.2
Forwards	56	18.4
Nationality		
Portuguese	267	87.8
Other from Europe	3	1.0
Brazilian	25	8.2
African	9	3.0

531

532 Table 2. Internal consistency and mean values for all dimensions of goal orientation and  
 533 perceived autonomy.

	$\alpha$	M $\pm$ SD	1	2	3	4	5	6	7
1. Task	0.87	4.16 $\pm$ 0.53	1.00	-0.03	0.42***	0.51***	0.26***	-0.07	-0.26***
2. Ego	0.89	2.60 $\pm$ 0.86		1.00	0.04	0.04	0.15**	0.08	-0.03
3. Intrinsic	0.73	4.19 $\pm$ 0.63			1.00	0.57***	0.25***	-0.07	-0.29***
4. Identified	0.75	4.33 $\pm$ 0.60				1.00	0.52***	0.06	-0.27***
5. Introjected	0.70	3.42 $\pm$ 0.97					1.00	0.37***	0.02
6. External	0.75	1.81 $\pm$ 0.66						1.00	0.45***
7. Amotivation	0.78	1.41 $\pm$ 0.62							1.00

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

534



535 Table 3. Mean values, standard deviation and z-scores of the four clusters.

	Cluster 1		Cluster 2		Cluster 3		Cluster 4		<i>p</i>
	M±SD	<i>z</i>	M±SD	<i>z</i>	M±SD	<i>z</i>	M±SD	<i>z</i>	
Task	4.56±0.40	0.76	4.07±0.41	-0.17	3.90±0.44	-0.49	3.53±0.44	-1.18	<0.001 <sup>b</sup>
Ego	2.57±0.96	-0.04	2.82±0.82	0.26	2.46±0.75	-0.16	2.49±0.67	-0.12	0.045 <sup>c</sup>
Intrinsic	4.65±0.46	0.74	4.00±0.45	-0.30	3.96±0.56	-0.36	3.40±0.50	-1.26	<0.001 <sup>d</sup>
Identified	4.84±0.26	0.86	4.28±0.37	-0.08	3.90±0.55	-0.72	3.57±0.45	-1.28	<0.001 <sup>b</sup>
Introjected	3.99±0.84	0.58	3.75±0.53	0.33	2.50±0.79	-0.94	3.03±0.57	-0.40	<0.001 <sup>e</sup>
External	1.71±0.64	-0.14	2.30±0.48	0.74	1.29±0.38	-0.77	2.43±0.50	0.94	<0.001 <sup>f</sup>
Amotivation	1.09±0.24	-0.53	1.81±0.62	0.64	1.14±0.28	-0.44	2.55±0.58	1.84	<0.001 <sup>g</sup>

<sup>a</sup> Tested by ANOVA, followed by *post hoc* Tukey's HSD.

<sup>b</sup> All clusters are statistically different.

<sup>c</sup> Clusters 2 and 3 are statistically different from each other.

<sup>d</sup> Clusters 1 and 4 are statistically different from each other and statistically different from all the other clusters.

<sup>e</sup> Clusters 3 and 4 are statistically different from each other and statistically different from all the other clusters.

<sup>f</sup> Clusters 1 and 3 are statistically different from each other and statistically different from all the other clusters.

<sup>g</sup> Clusters 2 and 4 are statistically different from each other and statistically different from all the other clusters.

537 Table 4. Athletes cluster distribution accordingly to competitive levels.

	Cluster 1		Cluster 2		Cluster 3		Cluster 4		<i>p</i> <sup>a</sup>
	n	%	n	%	n	%	n	%	
Competitive level									0.004
Amateur	22	31.4	10	14.3 <sup>b</sup>	29	41.4 <sup>c</sup>	9	12.9	
Semi-professional	58	40.3	39	27.1	33	22.9	14	9.7	
Professional	33	36.7	31	34.4	24	26.7	2	2.2 <sup>d</sup>	
Total	113	37.2	80	26.3	86	28.3	25	8.2	

<sup>a</sup> Tested by chi-square.

<sup>b</sup> Standardized residuals = -2.0

<sup>c</sup> Standardized residuals = 2.1

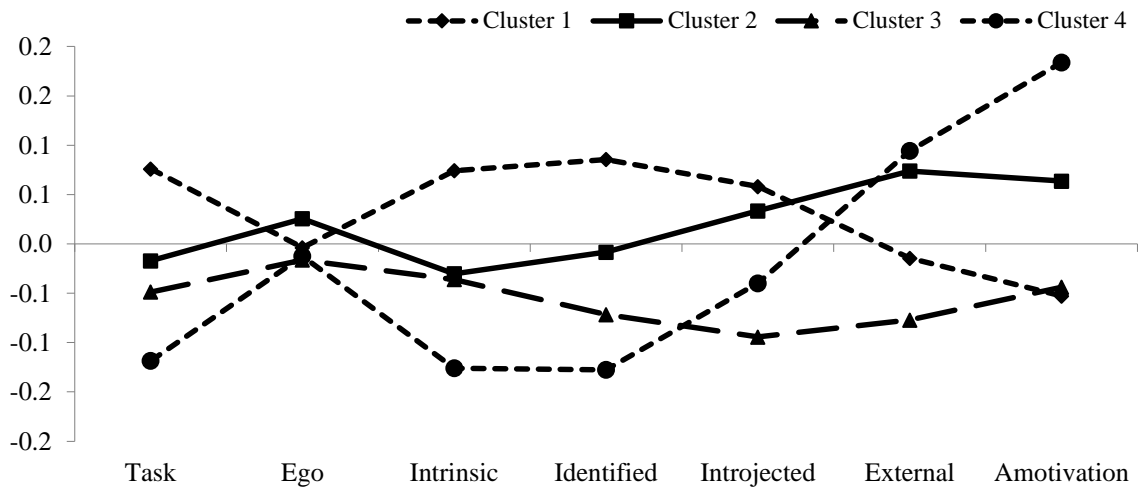
<sup>d</sup> Standardized residuals = -2.0

538

539

### Figures

540



541

542 Figure 1. Clusters profiles for the four clusters solution.

543

544