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## Exploring psychosocial risk factors for dropout in adolescent female soccer

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### ABSTRACT

**Objectives:** We examined the manner in which age, participation in other sports, socioeconomic status, perceived sport competence, achievement goal orientations, and perceived motivational climate may interact to predict the risk of dropout among adolescent female soccer players.

**Methods:** Self-reported data from 519 female soccer players between 10 and 19 years of age ( $M = 13.41$ ,  $SD = 1.77$ ) were analysed using a person-centred approach to uncover the interactions among risk factors and their relative predictability of dropout.

**Results:** Perceived motivational climate was identified as the main predictor, where relatively lower levels of mastery climate were associated with a higher dropout tendency (absolute risk reduction [ARR] = 12.2%  $\pm$  6.1% [95% CL]). If combined with relatively lower levels of mastery climate, then relatively lower levels of perceived sport competence were related to higher dropout risks (ARR = 16.5%  $\pm$  9.5%), whereas, in combination with relatively higher levels of mastery climate, then relatively lower levels of ego-orientated achievement goals were associated with higher dropout rates (ARR = 10.8%  $\pm$  12.6%)

**Conclusions:** Our findings afford novel insights into the interactions between, and the relative importance of, various risk factors for dropout in adolescent female soccer. This knowledge may be useful for soccer associations, clubs, and coaches when developing guidelines and strategies that aim to foster young females' sustained participation in organised soccer.

### ARTICLE HISTORY

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### KEYWORDS

Achievement Goal Theory; participation; youth sport; withdrawal; sustainability

Participation in organised sport throughout childhood and adolescence is associated with various beneficial outcomes, such as the development of sport expertise (Haugaasen and Jordet 2012), healthy psychological, social, and emotional development (Eime et al. 2013a), and a lifelong engagement in sport and health-enhancing physical activity (Henrique et al. 2016). Particularly, participation in team sports, such as soccer, seems to be associated with greater psychological and social benefits in children and adolescents, compared to participation in individual sports (Eime et al. 2013a). In soccer, the female game has grown markedly since the millennium, making it one of the most popular sports for among girls and women (Union of European Football Associations 2017). Therefore, further research on why young females choose to continue or discontinue (i.e., drop out) in organised soccer is critical for the development of sporting excellence, wellbeing, and healthy lifestyles in the population (e.g., Bentzen et al. 2021). Despite more than three decades of research on the topic, the explanations to why young athletes choose to drop out of sport continue to be of high interest for researchers, coaches, sport organisations, and practitioners (Eliasson and Johansson 2021), especially given the remaining high prevalence of drop out from, for example, soccer (Møllerlækken et al. 2015). To design better strategies for preventing dropout more prospective studies are needed to, first, evaluate what key factors that are associated with the risk of dropout (e.g., Crane and Temple 2015). Several theories have been used to explain dropout of

organised sport. In accordance with Achievement Goal Theory (AGT; Nicholls 1984, 1989) researchers have, for example, demonstrated that youths' decisions to withdraw from organised soccer are likely to be influenced by their perceived sport competence, achievement goal orientations, and perceived motivational climate (for a review, see Schlesinger et al. 2018). Furthermore, multiple sport participation (Keathley et al. 2013) and socioeconomic household and/or neighbourhood status (Eime et al. 2013a) have been identified as determinants of adolescents' engagement in organised sport. Notably, the vast majority of participants in previous research have been males in middle adolescence (~14-17 years old), which may limit the applicability of findings on females and younger adolescents (~10-13 years old; Temple and Crane 2016). Another limitation in most previous studies is the variable-centred analyses employed, which may fail to capture vital patterns of non-linear interactions between the predictors of interest. In the current study, we employed a person-centred approach to identify the interactions among age, socioeconomic status, participation in other sports, perceived sport competence, achievement goal orientations, and perceived motivational climate that best predict the risk of dropout among adolescent female soccer players.

The annual dropout rate among 10–19 years old soccer players is about 24% and seems to be higher for female (~27%) than for male (~21%) players (Møllerlækken et al. 2015). While these figures may, in part, reflect adolescents

trying out and transferring between different sports (Bentzen et al. 2021), they may also signify players' dissatisfaction and negative experiences with partaking in organised soccer (Temple and Crane 2016). More specifically, researchers have highlighted a range of interpersonal, intrapersonal, structural, and societal conditions that may underpin players' decision to drop out of adolescent soccer (for a review, see Temple and Crane 2016). One of the most frequently analysed predictors is players' perceived competence, where lower levels of self-reported competence in the sport seem to be associated with higher dropout tendencies (e.g., Ommundsen and Vaglum 1997; Ullrich-French and Smith 2009; Rottensteiner et al. 2013). It is proposed that young athletes who do not perceive themselves as having adequate skills will not enjoy playing the sport and will, therefore, decide to quit (Crane and Temple 2015). While females are underrepresented in previous research, the impact of perceived sport competence on dropout behaviour seems to differ to some extent between genders; for example, Rottensteiner et al. (2013) reported that adolescent female soccer players rated ability-related dropout reasons higher than their male counterparts.

In line with AGT, young athletes' perceptions of their sport competence are suggested to be influenced by their achievement goals for participation in a certain sporting activity. Athletes who participate with the primary intention to improve with reference to their own performance (i.e., task-oriented athletes), are deemed to be more likely to feel competent, compared to athletes participating with the main goal of comparing themselves against, and outperforming, others (i.e., ego-oriented athletes; Sarrazin et al. 2002; Gjesdal et al. 2017, 2019). This effect may be due to a more internal locus of control generated through task-oriented achievement goals, which makes the performance standards more attainable. The performance standards among ego-oriented athletes, on the other hand, are more tied to others, which may lead to reduced sense of sport competence when the standards are not met (Gjesdal et al. 2017). While higher levels of task orientation are generally associated with a lower dropout tendency in young athletes, supposedly due to increased levels of perceived sport competence (Balish et al. 2014), there are also studies showing that players' achievement goals do not influence dropout behaviour in adolescent soccer (Figueiredo et al. 2009; Deelen et al. 2018). Furthermore, it is important to notice that high task orientation does not automatically imply low ego orientation or vice versa; for example, Burton et al. (2011) revealed that adolescent female soccer players who were highly task- and ego-oriented demonstrated higher levels of confidence and were better able to deal with negative thoughts, compared to players characterised by high levels of either task- or ego orientation. That is, task- and ego orientations may co-exist effectively, and youths' continued participation in organised soccer may benefit from both wanting to improve oneself and to compete against others (Deelen et al. 2018).

Whereas task orientation seems inherent among youngsters (Bailey et al. 2013), AGT postulates that one's achievement goal orientations are related to the perceived motivational climate surrounding the individual. Specifically, AGT differentiates between mastery climate and performance climate, where the former is believed to endorse task-oriented achievement goals,

whereas the latter is associated with ego-oriented achievement goals (Harwood et al. 2015). A mastery climate is generally considered to be positively related with perceived competence and continued sport participation among young athletes (Biddle et al. 2003), possibly due to a social environment allowing internal locus of control over achievement processes and goals (Smoll et al. 2007; Atkins et al. 2015; Gjesdal et al. 2019). As females tend to weigh lack of ability as a stronger reason for withdrawal from adolescent soccer than males (Rottensteiner et al. 2013), the impact of motivational climate on the risk of dropout may be particularly relevant when studying female populations (Norman 2015). Indeed, research suggests that adolescent female players are more in favour of a mastery climate and are more prone to dropping out due to their dissatisfaction with aspects related to the motivational climate (e.g., coaching behaviours), compared to males (Keathley et al. 2013; Temple and Crane 2016; Møllerlökken et al. 2017).

To sum up, AGT has frequently been used as a theoretical framework when examining dropout in adolescent soccer. In line with the theoretical framework, perceived sport competence, achievement goal orientations, and perceived motivational climate seem to influence players' motivation to continue participating or drop out. In addition to these factors, conflicting time commitment due to players' participation in other sports has also been identified a risk factor for dropout in youth organised soccer (Keathley et al. 2013). Furthermore, socioeconomic factors, such as parents' income level, are deemed to influence adolescents' participation in organised sports; adolescents of lower socioeconomic status seem to perceive greater barriers to sport participation, compared to adolescent of higher socioeconomic status (e.g., Dollman and Lewis 2010; Eime et al. 2013a; Strandbu et al. 2019).

However, previous research on dropout behaviour in sport has typically targeted populations of males in middle adolescence, which warrants studies including younger adolescents and female participants (Møllerlökken et al. 2015; Temple and Crane 2016; Schlesinger et al. 2018). Furthermore, the nature by which various predictors may interact and their relative impact on the risk of dropout remains to be clarified (Bailey et al. 2013; Temple and Crane 2016); thus, researchers should employ data analysis that enables evaluation of non-linear relationships between the variables under examination (Ivarsson and Stenling 2019). In the current study, we employed a classification and regression tree (CRT) analysis to examine how age, socioeconomic status, participation in other sports, perceived sport competence, achievement goal orientations, and perceived motivational climate interact to predict the risk of dropout among adolescent female soccer players.

## Methods

### Participants

In collaboration with the regional soccer associations, a convenience sample of Swedish soccer clubs was used to recruit participants. Altogether, 519 female soccer players between 10 and 19 years of age ( $M = 13.41$ ,  $SD = 1.77$ ) from 20 different clubs of various sizes from both cities and rural areas across Sweden took part in this study. On average, participants had

participated in organised soccer for 6.63 years ( $SD = 2.89$ , range: 0–14 years) and practiced soccer for 4.02 hours per week ( $SD = 1.57$ , range: 1–16 hours), at the start of data collection. About 50% of the participants ( $n = 275$ ) reported that they – in addition to soccer – participated in one or more other sports. The study was approved by the National Ethical Review Authority (No. 2019–01643) and conformed to the recommendations of the Declaration of Helsinki. All participants received oral as well as written information about the study prior to the time for data collection. The parents/guardians of participants younger than 15 years of age received written information prior to the time for data collection. Written informed consent was obtained from all participants, as well as from the parents/guardians of participants younger than 15 years old.

### Measures and procedure

In addition to the demographic data presented above, data for socioeconomic status, perceived sport competence, achievement goal orientations, and perceived motivational climate were collected at the start of the season. To capture participants' perceptions of their own sport competence, we used a modified version of Harter's (1985) Self-Perception Profile for Children (for more information about the modified version, see Wagnsson et al. 2014). Three items were answered on a five-point Likert scale, ranging from 1 ('I strongly disagree') to 5 ('strongly agree'). Confirmatory factor analysis showed good model fit to data (Comparative fit index = 1.00, Root mean square error of approximation = .00, Standardized root mean square residual = .01). To assess the participants' levels of task- and ego orientations, we used a shortened version of the Achievement Goal Scale for Youth Sports (AGSYS; Cumming et al. 2008). To measure the levels of mastery- and performance climates perceived by the participant, we used a shortened version of the Motivational Climate Scale for Youth Sport (MCSYS; Smith et al. 2008). In the current study both AGSYS and MCSYS consist of 6 items with each item responded to on a 5-point Likert scale ranging from 1 ('not at all true') to 5 ('very true'). Confirmatory factor analyses showed acceptable fit to data for both AGSYS (Comparative fit index = .96, Root mean square error of approximation = .08, Standardized root mean square residual = .04) and MCSYS (Comparative fit index = .94, Root mean square error of approximation = .095, Standardized root mean square residual = .04). Participants' socioeconomic status was determined by their self-rated socioeconomic position; a single question was used for this purpose: 'How would you describe the economic situation in your family?'. Response

alternatives were: 'not at all well off', 'not so well off', 'average', 'quite well off' and 'very well off'. This item is easily understood and has been used in previous research (Quon and McGrath 2014).

One year after these data had been gathered, dropout data were collected by asking the players' coaches to indicate which players who were still playing for the team and which had dropped out over the past year (cf. Cervelló et al. 2007).

### Data analysis

Descriptive statistics and bivariate correlations were analysed using JASP (version 0.14.1), and CRT analysis was conducted in IBM SPSS Statistics (version 28). CRT analysis is a non-parametric statistical procedure designed to identify homogenous subgroups of a diverse population that are most related to a target variable (in this study: dropout), based on certain characteristics (in this study: perceived sport competence, achievement goal orientations, perceived motivational climate, socioeconomic status, participation in other sports, and age). This analysis generates a decision tree of subgroups that are hierarchically ordered based on their predictability of the target variable. The tree continues to grow (i.e., generate subgroups) until the pre-determined stopping criteria are met. In the current study, the following criteria were used to produce the partitions and, consequently, model growth: a minimum of 50 participants (~10% of the sample) in each node to make a division and a minimum of 25 participants (~5% of the sample) to generate a node. To validate the decision tree, we employed the tenfold cross-validation application. Missing data were handled automatically via surrogate split algorithms (Zhang and Singer 2010). CRT analysis is preferable to parametric variable-centred approaches due to its ability to capture non-linear interactions among predictors and its resistance to the effects of multicollinearity, outliers, and missing data (Zhang and Singer 2010; Merkle and Shaffer 2011; Ivansson and Stenling 2019).

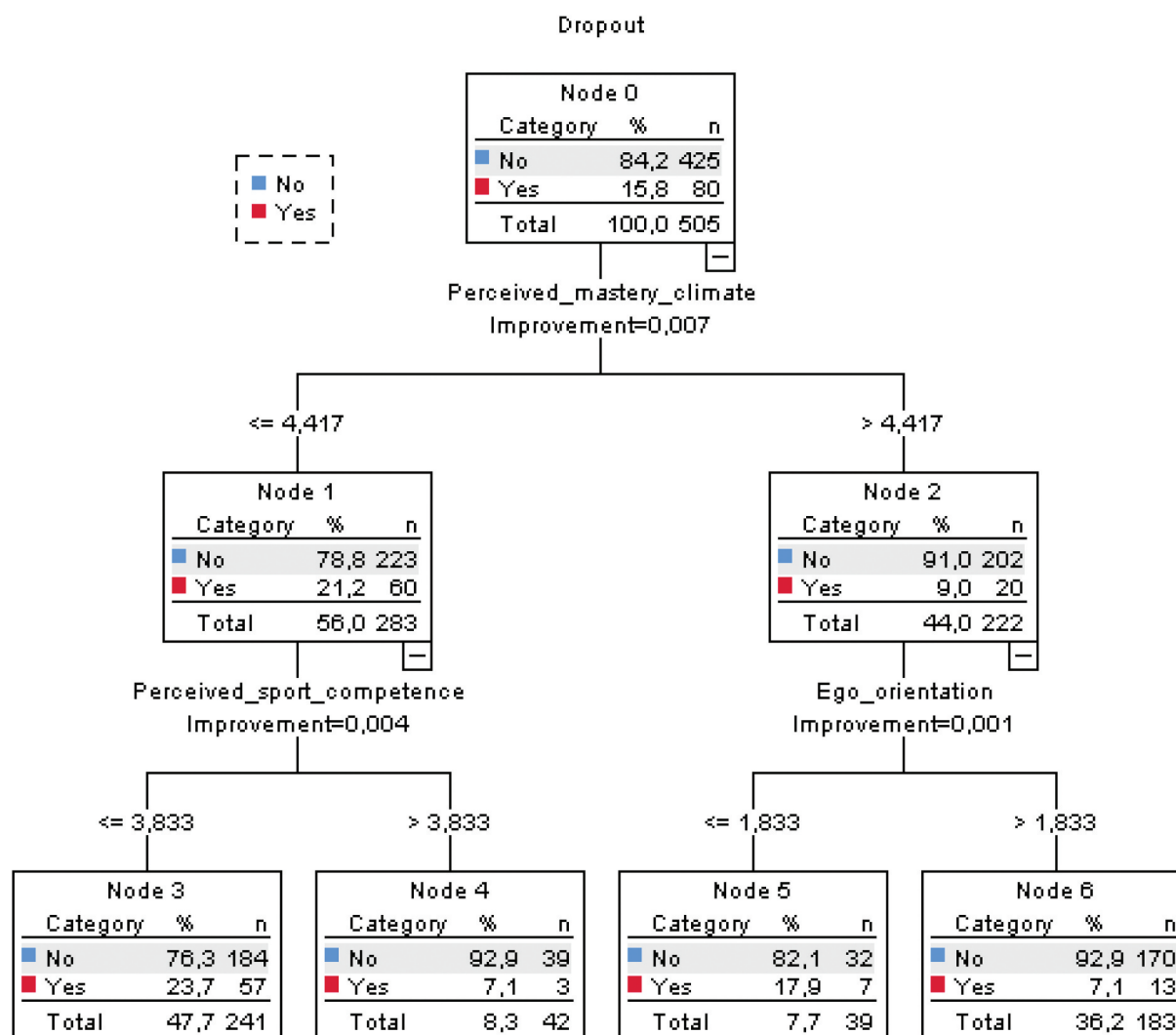
### Results

Descriptive statistics and correlations are presented in Table 1. In total, 80 out of 505 players (15.8%) dropped out over the year (14 players were excluded, due to missing dropout data). The CRT selected three predictors associated with dropout, with perceived levels of mastery climate being the main risk factor identified by the model (see Figure 1). Specifically, the dropout rate among players perceiving lower levels of mastery climate (MCSYS-score  $\leq 4.42$ ;  $M = 3.68$ ,  $SD = 0.59$ ) was 21.2%, while

**Table 1.** Descriptive statistics and correlations of study variables.

Variable	<i>n</i>	<i>M(SD)</i>	1	2	3	4	5	6	7
1. Competence	518	2.94(0.91)							
2. Ego	516	3.25(1.19)	.279***						
3. Task	517	4.40(0.60)	.147**	.127**					
4. Performance	517	1.58(0.72)	.024	.294***	-.118**				
5. Mastery	518	4.21(0.74)	.079	-.116**	.270***	-.563***			
6. Age	513	13.42(1.77)	.026	.210***	-.077	.411***	-.367***		
7. Other sports	469	0.74(0.78)	.075	-.079	-.097*	.102*	.160***	-.318***	
8. Socio economy	508	4.41(0.71)	.05	.05	.13*	-.05	.10*	-.15**	.08

Competence, perceived sport competence; Ego, ego orientation; Task, task orientation; Performance, perceived performance climate; Mastery, perceived mastery climate; Other sports, number of other sports (except soccer); Socio economy, socioeconomic status; \*,  $p < .05$ ; \*\*,  $p < .01$ ; \*\*\*,  $p < .001$ .



**Figure 1.** A decision CRT used to identify predictors of dropout. The CRT shows predictors and combination of predictors associated with the percentage (%) and number (n) of players that had continued within (No) and dropped out of (Yes) their team over the past year.

only 9.0% of the players who perceived higher levels of mastery climate (MCSYS-score > 4.42;  $M = 4.87$ ,  $SD = 0.16$ ) dropped out during this study (absolute risk reduction [ARR] = 12.2% ± 6.1% [95% CL]). Of those in the group with lower levels of perceived mastery climate who also perceived lower levels of sport competence (competence-score ≤ 3.83;  $M = 2.60$ ,  $SD = 0.66$ ), the dropout rate was 23.7%, whereas the corresponding figure for those who perceived higher levels of sport competence (competence-score > 3.83;  $M = 4.41$ ,  $SD = 0.36$ ) was 7.1% (ARR = 16.5% ± 9.5%). Among the players who perceived higher levels of mastery climate, ego orientation was identified as a decisive factor for dropout; the dropout rate was 17.9% among those with lower ego orientation (AGSYS-score ≤ 1.83;  $M = 1.32$ ,  $SD = 0.27$ ) and 7.1% among those with higher ego orientation (AGSYS-score > 1.83;  $M = 3.51$ ,  $SD = 1.03$ ; ARR = 10.8% ± 12.6%).

## Discussion

From an AGT perspective, we explored the interactions between age, participation in other sports, socioeconomic status, perceived sport competence, achievement goal orientations, and

perceived motivational climate that best predict the dropout risk in adolescent female soccer players. Perceived motivational climate seems to have been the main factor that differentiated players who continued from those who dropped out; specifically, players who were classified as perceiving high levels of mastery climate exhibited a lower dropout tendency. These findings concur with previous research highlighting a positive relationship between mastery climate and continuation in adolescent sport (for a review, see Biddle et al. 2003). It has been suggested that the positive impact of mastery climate on sport continuation may be due to a higher degree of task-oriented achievements goals and higher levels of self-assessed ability (Smoll et al. 2007; Atkins et al. 2015; Gjesdal et al. 2019). Although causality cannot be established based on the present data, these proposals align with the positive correlations that were revealed between perceived mastery climate, task orientation, and perceived sport competence in the current study.

The relevance of self-reported sport competence when assessing the risk of dropout is further illustrated in the decision tree generated by the CRT analysis. In combination with relatively lower levels of perceived mastery climate, perceived

sport competence seems to have been an influential factor for whether the players decided to drop out or not; higher competence was associated with lower dropout rates than lower competence. These findings align with previous reports emphasising perceived sport competence as a key determinant of dropout in adolescent soccer (e.g., Ommundsen and Vaglum 1997; Ullrich-French and Smith 2009; Rottensteiner et al. 2013), particularly among female players (Rottensteiner et al. 2013). Importantly, the present study adds to the current literature by demonstrating that the impact of perceived sport competence on continued participation may interact with the player's perceptions of the motivation climate. In the current study, perceived sport competence was identified as a decisive factor for dropout only among the players who were classified as perceiving low levels of mastery climate. A possible explanation to this interaction effect may be that, within environments that are characterised by development-focused social support (e.g., from the coach) and task-oriented achievement goals (i.e., a high mastery climate), lack of ability may be seen as a natural, and temporal, state of the development process (Gjesdal et al. 2019). In other words, high levels of mastery climate may serve as a cushion that mitigates the risk of reduced sense of sport competence from not (yet) having the adequate skills to succeed on a specific task (Gjesdal et al. 2017).

Rather than perceived sport competence, achievement goal orientations appear to have been influencing the dropout rate among the players who were classified as perceiving high levels of mastery climate. Within this group, players who were classified as more ego-oriented had a lower tendency to drop out, compared to players classified as being less ego-oriented. While high levels of ego orientation have been associated with adverse effects on young athletes' perceived sport competence (Gjesdal et al. 2017) and sport persistence (Cervelló et al. 2007), our findings concur with those reported by Deelen et al. (2018) regarding a positive relationship between levels of ego orientation and continuation in adolescent soccer. Given the mixed findings in the current literature, researchers have speculated that the relationship between the levels of ego orientation and the psychological responses, may be contingent on environmental factors (e.g., Burton et al. 2011). The interaction effect between perceived mastery climate and ego orientation on dropout revealed in the present study provides further support for this notion. Indeed, our findings are in line with the suggestion that ego-oriented achievement goals may influence adolescent soccer participation positively, but only within an environment that also fosters high levels of task orientation (Burton et al. 2011). It has been proposed that the players' motivation may benefit from the competitive aspect of ego-oriented achievement goals, while also pursuing highly task-orientated goals may buffer the negative effects associated with ego orientation (Burton et al. 2011; Deelen et al. 2018).

### **Strengths and limitations**

The current study adopted a prospective design, where dropout data were gathered from the players' coaches one year after data for the various predictors had been collected. The reason for collecting dropout data from the coaches, rather than the players themselves, was the expected difficulty in getting players who had already dropped out to answer questions relating to their soccer participation (cf. Deelen et al. 2018). To combine the data from the prospective study design with follow-up data directly from the players who had dropped out of their team could enable a more comprehensive evaluation of the underlying reasons to dropout and its potential effects on the individual's development and wellbeing. Another methodological consideration that should be kept in mind in future research is that including other potentially influential variables in the analysis, may provide a more complete picture of how underlying risk factors may interact to predict dropout. It is possible that accounting for other determinants of adolescents' engagement in organised sport, such as cultural and religious backgrounds (Strandbu et al. 2019), sport habits of parents (Sukys et al. 2014), and family support (Eime et al. 2013a), would affect the predictive values assigned to variables included in the current study. Furthermore, the homogeneity of the prevalent self-rated socioeconomic status among the participants in the current study may explain why our analysis did not identify socio economy as a risk factor for dropout. However, given previous reports regarding the importance of socioeconomic factors for adolescents' engagement and participation in organised sports (e.g., Dollman and Lewis 2010; Eime et al. 2013a; Strandbu et al. 2019), the generalisation of our findings to different socioeconomic contexts should be made with caution. It is also worth mentioning that socioeconomic status was captured in the participants' responses to a single question in the current study; to more accurately assess the role of socioeconomic status in identifying risk factors for dropout in adolescent sport, future research should consider employing multiple subjective and objective status indicators (see e.g., Quon and McGrath 2014).

### **Conclusion**

The findings of the current study afford novel insights into the interplay between psychosocial risk factors for dropout among adolescent female soccer players. In accordance with AGT and previous research (see e.g., Biddle et al. 2003; Harwood et al. 2015; Schlesinger et al. 2018), perceived competence, achievement goal orientations, and perceived motivational climate seem to influence the players' motivation to continue or drop out. Importantly, the relative importance of these risk factors seems to be dependent on how they are combined with each other. Specifically, lower levels of perceived mastery climate were identified as the main predictor of dropout among the players. While lower levels of ego orientation were associated with higher dropout rates among players perceiving higher levels of mastery climate, lower levels of self-reported sport competence were related to higher dropout risks for players

who perceived low levels of mastery climate. These insights may be used to inform future initiatives aiming to aid young females' development of sporting excellence, wellbeing, and healthy lifestyles through sustained engagement and participation in organised soccer. Specifically, soccer associations, clubs, and coaches should develop strategies for creating development focused training- and match environments that allow for social comparison of performances, but at the same time strengthen the players' beliefs in their own ability. For example, by designing competitive tasks where performance demands are scaled to the player's abilities and ensuring development focused feedback and support from coaches, parents, and peers.

## Disclosure statement

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