

## RUNNING HEAD: COACH-ATHLETE RELATIONSHIP OUTCOMES

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The mediating roles of pre-competitive coping and affective states in the relationships between coach-athlete relationship, satisfaction and attainment of achievement goals

Abstract

The study is aimed to explore the relationship between coach-athlete relationship, precompetitive coping and affective states, satisfaction and attainment of achievement goals. A sample of 567 French athletes ( $Mage = 22.10$ ;  $SD = 5.66$ ; 377 men and 190 women) involved in 75 training groups participated in the study and completed a series of self-report measures in a temporal design with three measure points. Results of multilevel analyses revealed that the coach-athlete dyad (level 2; between-person level of analysis or training groups) and task-oriented coping (level 1; within person level of analysis or individuals) significantly predicted goal attainment (level 1). Moreover, the results of the Sobel test revealed that task-oriented coping (level 1) marginally mediated the relationship between coach-athlete dyad (level 2) and sport satisfaction (level 1). Besides, the coach-athlete dyad (level 1) and Intensity of positive affect (PA) mediated the relationship between coach-athlete dyad and goal attainment. Finally, the coach-athlete dyad (level 1) and Intensity of PA mediated the relationship between coach-athlete dyad and satisfaction (level 1). In conclusion, the display of Coach-Athlete relationship strategies may enhance higher levels of precompetitive task-oriented coping, intensity of PA, goal attainment and satisfaction. Subsequently, coaches and practitioners should focus their training on enhancing coach-athlete relationship as a crucial part of training in order to perform in competitions.

*Keywords:* competitive settings, coaching, goals, wellbeing.

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The mediating roles of pre-competitive coping and affective states in the relationships between coach-athlete relationship, satisfaction and attainment of achievement goals

Coach-athlete relationship (CAR) has been linked to a wide range of variables connected to performance and athletes' wellbeing, such as: affects, coping and sports satisfaction (Davis & Jowett, 2014; González-García et al., 2022; Haugan et al., 2021; Simons & Bird, 2022). Hence, this theoretical construct has attracted the attention of the coaching research within the last two decades (Haugan et al., 2021; Jowett & Cockerill, 2003; Jowett & Ntoumanis, 2004; Simons & Bird, 2022). The 3C is a prominent model examining CAR and is mainly focused on the dynamic interrelations between the coach and athletes and their mutual influence (Jowett & Cockerill, 2003). However, the model was updated to the 3 + 1Cs, which also evaluated the perception between athletes and coaches (Jowett, 2007). Nevertheless, as this study is just focused on coaching practices it was taken the 3C to be more specific. In line with the 3C model, emotions, thoughts and coach's behaviours are mutually and causally interdependent leading to identify three core constructs of CAR: commitment (i.e., the degree in which the coach-athlete support each-another), complementarity (i.e., the degree of coincidence in the behaviours of the coach-athlete) and closeness (i.e., how are the coach-athletes ties, care, support and how they value eachanother) (Jowett & Cockerill, 2003). Concerning the factors of the CAR (commitment, closeness and complementarity), in this study to summarise the distinct factors of CAR in the level 1 and level 2 analysis, it was evaluated a general CAR factor. The examination in this study of level 1 (within a person level of analysis or individually) and level 2 (between a person level of analysis or the training group) may unravel the key component to apply those CAR strategies at distinct levels. In addition, the present work will focus on the impact of the CAR on satisfaction and attainment of achievement goals as well as on the mediating roles of precompetitive coping and affective states in the aforementioned relationships. Although previous research has addressed the relationship between the CAR and

goal attainment after competition (Nicholls et al., 2017; Troncado & Gomes, 2013) it seems that no quantitative work has unravelled this relationship. Nevertheless, some qualitative works have measured the relationship between CAR and dyadic coping (Staff et al., 2017, 2020) emphasising the importance of the interpersonal relationship between coaches and athletes in creating dyadic coping strategies. Thus, in this work highlighting the paramount mediating effect of precompetitive affect and coping would suggest possible applications related to CAR likely to enhance performance in competitive settings.

Coping is defined as the set of cognitive strategies and behavioural efforts carried out by athletes to handle the internal/external sports requirements that threaten to surpass their perceived resources (Lazarus & Folkman, 1984). Some authors conceptualised coping construct in sporting contexts using three core coping dimensions: task-oriented, disengagement-oriented and distraction-oriented coping (Gaudreau & Blondin, 2002; Nicolas et al., 2011). This model was utilised due to their practical applications in sports as well as its parsimonious way of understanding coping appraisals which allows focusing interventions. In particular, task-oriented coping involves strategies that directly face the stressful stimuli, the thoughts and affects that appear in the situation (e.g., relaxation, logical analysis, seeking support, imagery and thought control). Disengagement-oriented coping refers to the strategies for escaping stressful stimuli (e.g., resignation and venting of unpleasant emotions) (Martinent & Nicolas, 2016). Finally, distraction-oriented coping comprises strategies that focus the behaviour on other stimuli instead of the stressful one to disconnect from the stressful situation (e.g., distancing and mental distraction) (Gaudreau & Blondin, 2002).

Although some studies examined the relationship between CAR and coping in sports settings (Nicholls et al., 2016; Nicholls & Perry, 2016), there is yet a scarcity of quantitative studies about the link between the CAR and precompetitive coping. This lack of studies is surprising as it may provide new insights into the understanding of coaches' impact on athletes'

behaviour in competitive contexts. Nicholls and Perry (2016) showed that dyadic coping (i.e., the help from a partner to another in his/her coping efforts, help in the workload, the share of strategies such as relaxing or problem-solving) was related to commitment, closeness and complementarity (i.e., the three main dimensions of CAR). In addition, the CAR global score (i.e., the combination of commitment, closeness and complementarity) was negatively related to negative dyadic coping (i.e., negative dyadic coping implies hostile, ambivalent, or superficial responses to the other person and represents support that is insincere or unwillingly provided). This literature suggested that CAR may foster athletes' adaptive coping strategies in competition. Moreover, the present study will further explain the nature of CAR disentangling distinct levels in examining the aforementioned variable (level 1: within a person level of analysis and level 2: between-person level of analysis). Within a person level of analysis (level 1) is focused on how much an individual in the sample tends to change in relation to the rest of the sample. Between-person level of analysis refers to the examination of differences across the group. The measure of level 1 or 2 it may be useful in creating future interventions targeted to the most salient level. Therefore, this information may add value to the rationale displayed in this article to disentangle the different levels of CAR.

Regarding the literature that examined the relationship between coping and satisfaction. It was found that task-oriented coping was positively related to sport satisfaction whereas distraction-oriented coping and disengagement-oriented coping were negatively related to sport satisfaction (Britton et al., 2019; Gaudreau et al., 2015). Active coping strategies (problem-solving and seeking social support strategies) were related to life satisfaction (Kim et al., 2020). Pleasant emotions and task-oriented coping significantly predicted performance satisfaction whereas unpleasant emotions, disengagement-oriented coping and distraction-oriented coping significantly negatively predicted performance satisfaction (Nicholls et al., 2012).

Concerning the literature that addressed the relationship between coping and goal attainment. It was found that task-oriented coping during competition was positively related to goal attainment whereas disengagement-oriented coping was negatively related to goal attainment (Amiot et al., 2004; Nicolas et al., 2011). Thus, this study may contribute to the examination of how precompetitive coping in competition may mediate the relationship between distinct levels of CAR (Level 1 and Level 2), satisfaction and goal attainment. This means that the present work will emphasise the importance of CAR strategies in coaches at distinct levels (Level 1 and Level 2) which may result in an increasing amount of adaptive coping strategies as well as goal attainment.

To date, only a few studies examined the impact of the CAR on athletes' affects (Davis & Jowett, 2014; Moen et al., 2017; Nicholls et al., 2016). This is particularly rare due to the possible connection between these variables and the impact of affective states on sports performance (Martinent & Ferrand, 2015) and the increase in the literature on emotional contagion and interpersonal emotional regulation (Friesen et al., 2013; Moll et al., 2010). Nevertheless, previous studies from other theoretical backgrounds close to CAR (e.g., coach behaviours, coach leadership) that have examined this relationship. Particularly, previous works (Cruz & Kim, 2017; González-García et al., 2019, 2022; González-García & Martinent, 2020) revealed that warming and supportive coaches were significantly related to athletes' positive affects (PA). Otherwise, unsupportive coaches were significantly related to athletes' negative affects (NA) (Cruz & Kim, 2017; González-García et al., 2019, 2020; González-García & Martinent, 2020). Affect construct can be conceptualised as the subjective valence (pleasant or unpleasant) experience related to sports competition (Ekkekakis & Petruzello, 2000; Lazarus, 1999, 2000; Martinent & Nicolas, 2017). In particular, PA include the optimal state of energy and pleasure engagement meanwhile NA are attached to displeasure and a sense of unpleasant engagement (Ekkekakis & Petruzello, 2000; Lazarus, 1999; Watson et al., 1999). Although the

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intensity component of affective states has been the main focus of attention in the literature (Gaudreau et al., 2006; 2009), affective states in sporting settings include four core dimensions: intensity and direction of PA and NA (Martinent & Nicolas, 2017; Nicolas et al., 2014). The component of directionality refers to the perceived effects of affective states on performance (debilitating or facilitating) and the intensity component is the degree of experience of each affect (Nicolas et al., 2014). In addition, the connection between the CAR and affects is crucial as it may reveal new insights for optimising athletes' performance and well-being. Therefore, disentangling the possible mediating effect of affects in the relationship between CAR levels, satisfaction and goal attainment; may unravel if the different CAR levels are a crucial pieces to enhance affects in their distinct variables.

Previous literature revealed significant relationships between affects, goal attainment and satisfaction (Amiot et al., 2004; González-García et al., 2022; Tóth et al., 2018). Goal attainment and satisfaction are mutually interrelated as reaching goals is a factor that provides satisfaction (Diener, 2000; Lundqvist, 2011; McCarthy et al., 2010). The exertion towards a goal is crucial to increase the feeling of wellbeing. Moreover, sports satisfaction may be understood as the positive affective state that comes from the evaluation of the experiences within the sporting contexts (Chelladurai & Riemer, 1997; Dodge et al., 2012). In sport settings, González-García et al. (2022) revealed that intensity and direction of PA were significantly positively related to satisfaction and goal attainment. Likewise, Amiot et al. (2004) revealed that PA intensity was significantly associated with goal attainment whereas NA intensity was significantly negatively related to goal attainment. In contrast, Gaudreau and Braaten (2016) revealed goal motivation was negatively associated with PA intensity and sport satisfaction as well as positively associated with NA intensity.

In sum, previous literature has examined the relationships between the CAR, coping, affects, sport satisfaction and goal attainment, it was isolated. This means that the literature

mainly has researched those variables without any mediation which may turn out to be a lack of information for the coaching processes. In line with the approach proposed in the present study, it could be a useful way to create coaching strategies that may display a better comprehension of the mediator variables and dependent variables. Moreover, and of particular importance in the context of the present study, it is noteworthy that we examined both within-person (level 1: individual) and between-person (level 2: training group) effects of CAR on pre-competitive affects and coping in order to clearly disentangle the role of level 1 and level 2 CAR on level 1 (individual) athletes' affects and coping. This may help to create intervention strategies at different levels that may enhance positive outcomes in athletes. Hence, the study aimed to explore the relationship between the CAR, precompetitive coping and affective states, satisfaction and attainment of achievement goals using a multilevel mediational approach. Based on the previous literature (Amiot et al., 2004; Britton et al., 2019; González-García et al., 2022; Nicholls et al., 2016; Nicholls & Perry, 2016), we hypothesised that: (a) level 1 and 2 CAR would significantly positively predict precompetitive task-oriented coping and PA intensity and direction; (b) Precompetitive task-oriented coping and PA intensity and direction would significantly positively predict satisfaction and goal attainment; (c) Precompetitive task-oriented coping and PA intensity and direction would mediate the relationships between level 2 CAR and satisfaction and/or goal attainment.

### Method

#### *Participants*

A total of 567 French athletes ( $M_{age} = 22.10$ ;  $SD = 5.66$ ; 377 men and 190 women) voluntarily participated in the study. The sports practiced by the athletes were soccer (26.9%), handball (14.2%), rugby (13.7%), basketball (11.8%), gymnastics (5.1%) and others (29.76%). Regarding the gender of athletes' coaches, most of them were men (84.3%). The athletes competed at regional (47.8%), national (39.9%) and international (5.8%) levels in competition.



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The average hours in weekly training were 3.21 ( $SD = 3.04$ ) and athletes competed in their sport for an average of 11.07 years ( $SD = 6.08$ ). A heterogeneous sample was selected from various individual and team sports, male and female athletes as well as elite and nonelite athletes, to maximise the external validity and generalizability of the study results (Martinent & Ferrand, 2007).

### *Measures*

The Coach-Athlete Relationship Questionnaire (CART-Q; Jowett & Ntoumanis, 2004) french version (Jowett et al., 2017) was utilised to measure CAR. This is a self-report questionnaire that assesses self-perceptions of the coach-athlete relationship quality in terms of closeness, commitment and complementarity. The scale contains 11-items that ranged from strongly disagree (1) to strongly agree (7). The items measure athletes' self/direct perceptions of closeness (4 items,  $\alpha = .86$ ), commitment (3 items,  $\alpha = .85$ ) and complementarity (4 items,  $\alpha = .83$ ). Consistent with previous research (Jowett & Ntoumanis, 2004; Lafreniere et al., 2011; Vella et al., 2013), only the total score of CAR has been used in the present study (11 items,  $\alpha = .92$ ).

The Coping Inventory for Competitive Sport (CICS; Gaudreau & Blondin, 2002) French version was used to evaluate the coping strategies within the two hours before the competition. This scale was utilised as it is one of the most applied measures to evaluate coping in competition as well as its parsimonious way of grouping coping variables in three subscales (Nicholls & Polman, 2007). The scale is made up of 39 items rated on a 5-point Likert scale ranging from 1 (does not correspond at all) to 5 (corresponds very strongly). Consistent with previous research (e.g., Martinent et al., 2013), the 10 subscales were organised in the three second-order dimensions of task-oriented coping (relaxation, mental imagery, thought control, effort expenditure, seeking support and logical analysis;  $\alpha = .87$ ), distraction-oriented coping

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(mental distraction and distancing;  $\alpha = .70$ ) and disengagement oriented-coping (venting of unpleasant emotions and disengagement;  $\alpha = .79$ ).

The French version of the Positive and Negative Affects Schedule including a direction scale (PANAS-D; Nicolas et al., 2014) was used to measure pre-competitive affects. The scale consists in a 20-items rated: (a) on a 5-point Likert scale ranging from 1 (not at all or very slightly) to 5 (extremely) for the intensity; and (b) on a 7-point Likert scale ranging from - 3 (very debilitating) to 3 (very facilitative) for the direction (the degree to which the intensity of each symptom experienced was either facilitative or debilitating to subsequent performance). Thus, the scale is made up of four subscales that assess the intensity of PA (10 items;  $\alpha = .88$ ) and NA (10 items;  $\alpha = .74$ ) and direction of PA (10 items;  $\alpha = .77$ ) and NA (10 items;  $\alpha = .86$ ).

The Attainment of Sports Achievement Goals Scale (A-SAGS; Amiot et al., 2004) is a French questionnaire consisting in 12-item that assesses three theoretically driven criteria that athletes use to evaluate their level of goal attainment or subjective sports achievements: mastery goal achievement, self-referenced goal achievement and normative goal achievement. The athletes were asked to indicate the extent to which each item represented how they had performed during the competition on a 6-point Likert scale (ranging from 1 = strongly disagree to 6 = strongly agree). According to Amiot et al. (2004) a global score of goal attainment was used in the present study in computing the three subscales ( $\alpha = .93$ ).

The adaptation to sports context (Nicolas et al., 2014) of the Satisfaction with Life Scale (SWLS; Diener et al., 1985) was utilised for the evaluation of sport satisfaction. The scale was rated on a 7-point Likert scale ranging from strongly disagree (1) to strongly agree (7). This instrument is a one factor scale in which the Cronbach Alpha obtained in the present study was .80.

### ***Procedure***

The study complies with international ethical standards and anonymity was preserved. Informed consent was signed by participants to ensure that they knew the conditions of the study and to ensure anonymity. In particular, anonymity was ensured without asking for personal data and because the researcher gathered the data without the coach's presence. Thus, there was no risk of coercion in the responses from athletes. A temporal design was followed in the study in which participants were recruited in a non-probability sampling selection with three measure points. Accordingly, coaches were contacted to explain the conditions of participating in the study and ask permission to approach their athletes. To ensure the reliability of the results, athletes were contacted to respond honestly to the questionnaires and refer to their real experiences. Secondly, participants responded to the CARTQ two days before the competition inside the training session. Thirdly, the athletes completed the PANAS-D and the CICS within two hours before the competition to not interfere with the athletes' preparation routines (Martinent et al., 2013). Finally, participants completed the SWLS and A-SAGS two hours after the competition. The data was gathered in physical questionnaires as the data was taken in face-to-face sample collection.

### ***Data Analysis***

A hierarchical linear modelling approach (HLM) was used to explore the relationships between the selected variables. Multilevel models extend multiple regressions to nested data (i.e., data that are hierarchically structured) (Cece et al., 2020). Specifically, individuals (Level 1 units of analysis) were nested within training groups (Level 2 units of analysis) because several observations (individuals) were gathered for each training group. Multiple regression models assume that all observations are independent, which may not be the case with nested data (Vacher et al., 2017). Thus, by considering the hierarchical structure of the data, multilevel models provide unbiased estimates of the parameters (Singer & Willett, 2003). First, the database was checked to detect outliers or missing values which were deleted to ensure the

reliability and validity of the sample. Second, the data was screened for multicollinearity of scales because collinearity of predictors can unduly influence the results of multilevel analyses in potentially unfavourable ways (Vacher et al., 2017). No collinearity was detected. Then, for the next steps, all the analyses were computed using the lme4 package of R (Bates et al., 2014). Third, we examined the intra-class correlations in computing the nulls models for coping, affects, goal attainment and athletes' satisfaction. Thirdly, we ran a series of multilevel models in which: (a) pre-competitive affects and coping (level 1) were regressed onto level 1 and level 2 CAR; and (b) goal attainment and athletes' satisfaction (level 1 variables) were regressed onto level 1 and level 2 CAR and pre-competitive affects or coping. It is noteworthy that group mean centering was used for all Level 1 predictors (i.e., CAR, affects and coping) whereas grand mean centering was used for Level 2 predictor (i.e., CAR) based on the rationale no centering may produce biased point estimates (Doron & Martinent, 2016). Moreover, it is also noteworthy that all the predictors were added as fixed and random parameters. Fourthly, a series of sobel tests were performed to investigate whether precompetitive coping and affects mediated the relationships between CAR, goal attainment and athletes' satisfaction (Sobel, 1982).

### Results

Before proceeding to test the hypotheses, we analysed the systematic within- and between-individual variance in the study variables. The results of the null models (see Table 1) indicated that there was substantial level 1 (individual) and level 2 (training group) variance:  $\sigma^2$  (i.e., variance in level-1 residual) ranged from .24 to 1.27 whereas  $\tau_{00}$  (i.e., variance in level-2) ranged from .01 to .57. Thus, the intra-class correlations ( $ICC = \tau_{00} / (\tau_{00} + \sigma^2)$ ) revealed that level 2 variance represented 4%–30.98% to the total variance whereas level 1 variation accounted for 69.02-96% to the total variance of the study variables (Table 1).

When the levels 1 and 2 of CAR were simultaneously entered as predictor of coping and affective states, the results revealed that: (a) Level 1 CAR significantly negatively predicted

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distraction-oriented coping ( $\beta = -.05, p < .05$ ) and significantly positively predicted intensity ( $\beta = .16, p < .001$ ) and direction of PA ( $\beta = .08, p < .01$ ); and (b) Level 2 CAR significantly positively predicted task-oriented coping ( $\beta = 0.16, p < .05$ ) (see Table 2). When levels (1 and 2 CAR and level 1 coping or affective states) were simultaneously entered as predictor of sport satisfaction and goal attainment, the results revealed that: (a) level 1 CAR significantly predicted attainment of achievement goals ( $\beta = .20$  or  $.15$ ) when coping or affect were included as predictors respectively, ( $p < .01$ ) and sport satisfaction ( $\beta = .39, p < .001$ ); (b) level 2 CAR significantly predicted attainment of achievement goals ( $\beta = .53$  and  $.47, p < .01$ ) and sport satisfaction ( $\beta = .64$  and  $.67, p < .001$ ); (c) task-oriented coping significantly predicted attainment of achievement goals ( $\beta = .52, p < .001$ ) and sport satisfaction ( $\beta = .34, p < .001$ ); (d) disengagement-oriented coping significantly negatively predicted attainment of achievement goals ( $\beta = -.28, p < .05$ ) and sport satisfaction ( $\beta = -.30, p < .001$ ); and intensity of PA significantly predicted attainment of achievement goals ( $\beta = .29, p < .01$ ) and sport satisfaction ( $\beta = .31, p < .01$ ) (see Table 3).

Finally, the results of Sobel test revealed that: (a) task-oriented coping significantly mediated the relationship between CAR (Level 2) and goal attainment (Sobel test = 1.98;  $p < 0.05$ ); (b) task-oriented coping marginally significantly mediated the relationship between CAR (Level 2) and satisfaction (Sobel test = 1.89;  $p < 0.05$ ); (c) Intensity of PA significantly mediated the relationship between CAR (Level 1) and goal attainment (Sobel test = 2.72;  $p < 0.01$ ); (d) Intensity of PA significantly mediated the relationship between CAR (Level 1) and satisfaction (Sobel test = 3.16;  $p < 0.01$ ) (Figure 1).

### Discussion

The study aimed to explore the relationships between the CAR, precompetitive coping and affective states, satisfaction and attainment of achievement goals. Hence, we hypothesised that: (a) level 1 and 2 CAR would significantly positively predict precompetitive task-oriented

coping and PA intensity and direction; (b) Precompetitive task-oriented coping and PA intensity and direction would significantly positively predict satisfaction and goal attainment; (c) Precompetitive task-oriented coping and PA intensity and direction would mediate the relationships between level 2 CAR and satisfaction and/or goal attainment. HLM results revealed that Level 1 CAR significantly negatively predicted distraction-oriented coping and significantly positively predicted the intensity and direction of PA in athletes. These results are in line with previous works (Nicholls et al., 2016; Nicholls & Perry, 2016) that examined the effects of CAR in dyadic coping, but it seems that to date there are no previous studies that examined the relationship between CAR and precompetitive coping. Hence, from an individual perspective we agree with the idea that CAR (level 1) negatively predicted distraction-oriented coping and positively predicted intensity and direction of PA. Our results indicate that CAR may not be influenced by the group or the context in the relationship among distraction-oriented coping, intensity and direction of PA. Thus, it means that future interventions to modify the impact of those variables will be more useful to handle them from an individual athletes' perspective.

Moreover, Level 2 CAR significantly positively predicted task-oriented coping. The significant relationship between CAR and pre-competitive task-oriented coping is consistent with previous research resulting from related theoretical frameworks, such as coach leadership (LSS) and coach behaviours (CBS) (Nicholls et al., 2016; Nicholls & Perry, 2016). However, from a group perspective, we may agree that CAR influences precompetitive task-oriented coping strategies in athletes. This information is useful from an applied perspective which may shed light on the creation of group CAR strategies (such as those that emphasise commitment, closeness and complementarity between the athlete and the coach) that may serve to enhance precompetitive task-oriented coping strategies (Cleary et al., 2012). Likewise, this information is important as there is previous research that has shown the influence of precompetitive coping

on competitive coping strategies (González-García et al., 2022; Martinent et al., 2013). This means that coaches through their CAR dyadic influence on precompetitive coping strategies that may modify the experience of those coping abilities in competition, as those precompetitive coping levels have a higher impact on the levels experienced during competition (González-García et al., 2022; Martinent et al., 2013).

In addition, task-oriented coping significantly predicted the attainment of achievement goals and sport satisfaction. Disengagement-oriented coping significantly negatively predicted attainment of achievement goals and sport satisfaction. In addition, intensity of PA significantly predicted the attainment of achievement goals and sport satisfaction. These results make sense from the point that disengagement-oriented coping strategies do not strive towards goals which may turn out to provoke less satisfied athletes with less intensity of PA and less satisfaction (Amiot et al., 2004; González-García et al., 2022; Nicolas et al., 2011, 2014). Moreover, the significant relationship between precompetitive task-oriented coping, affects, goal attainment and satisfaction were already largely highlighted within the literature (Amiot et al., 2004; González-García et al., 2022; Nicolas et al., 2011, 2014). As the task-oriented coping strategies were revealed as the most adaptive in sporting contexts, it is normal that these strategies may lead to the most positive outcomes in sporting contexts. Therefore, the creation of sporting contexts that promote those task-oriented coping strategies are crucial to reach the best performance.

Similarly, results of the Sobel test revealed that task-oriented coping marginally significantly mediated the relationship between CAR (Level 2) and satisfaction. From an applied perspective these results may indicate the salient role of coaches in a group perspective (through their relationship with their athletes) to facilitate goal attainment task-oriented coping strategies in pre-competition and sport satisfaction in athletes (Kent et al., 2018). Moreover, the presence of CAR (Level 2) indicates that from a group perspective athletes feel that they are

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more prone to experience task-oriented coping and satisfaction. This makes sense due to the crucial impact of social relationships in the development of coping strategies (Staff et al., 2017). As such, these outcomes may provide the insight that those group strategies to enhance CAR (strategies that foster closeness, commitment and complementarity) may be of interest to emphasise the connection of task-oriented coping and satisfaction. These outcomes highlight the importance of the tenets of CAR (closeness, commitment and complementarity) as a theoretical construct and their implications for performance from a group perspective. Nevertheless, it would be interesting to replicate these results by dividing CAR into their distinct variables (closeness, commitment and complementarity) to examine their individual impact on coping, affects, satisfaction and goal attainment.

Otherwise, results revealed that the intensity of PA mediated the relationships between, CAR at level 1 and goal attainment and sports satisfaction. Hence, these results highlight the necessity of coaches to promote CAR from an individual perspective (such as individual conversations with each athlete) to foster the experience of PA and in fine sport satisfaction and goal attainment. These results are concordant with research grounded in theoretical backgrounds related to coaching which showed the impact of warming and supportive coaches on PA, such as coach leadership (LSS) and coach behaviours (CBS) (Cruz & Kim, 2017; González-García et al., 2019, 2020; González-García & Martinent, 2020). However, the presence of level 1 CAR may modify the strategies adopted by coaches to those more focused on individual CAR strategies (closeness, commitment and complementarity) in future professional practice or interventions.

Some of the limitations of the present study should be discussed. It could have been useful to gather objective indicators of performance in addition to the attainment of achievement goals which could be conceptualised as a subjective indicator of performance. Moreover, it would be interesting in future research to measure the match outcome as a variable that may covariate the



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results. The type of competition (e.g., individual, teams, doubles, etc.) and sports type might also modify the different parameters (CAR experience, affects, satisfaction and goal attainment) experienced in performance. This approach considering several disciplines in the same sample was taken to create general recommendations for different sports disciplines. The only use of self-report measures may lead to some biases such as acquiescence, social desirability, or memory biases. Besides, internal consistency markers were used in each measure to guarantee the reliability of the information given. Moreover, the temporal design taken is a strong way to ensure the reliability of the results presented in the study as well as the importance of taking distinct point measures in a competitive setting. Nevertheless, it is important to keep in mind that the present study's design did not interfere with the preparation and competition routines of athletes.

In future research lines, it would be interesting to create target interventions to increase CAR quality at distinct levels. This could impact sport satisfaction and goal attainment in competition through pre-competitive task-oriented coping and intensity of PA, as suggested by the results of mediational analyses highlighted in the present study. For instance, there are distinct strategies to enhance CAR in coaches, such as those posted in COMPASS model (Rhind & Jowett, 2010). Moreover, it would be particularly interesting to gather the quality of CAR from both athletes' and coaches' points of view. In addition, as CAR is modified depending on the sports type it would be interesting to examine particular sports modalities to generalise the results obtained to a succinct type of sports (Rhind et al., 2012). Finally, theoretical frameworks close to the CAR could be included, such as coach leadership or coach behaviours. This will further explain the key elements mediating pre-competitive coping and affective states in the relationships between coaches, satisfaction and attainment of achievement goals.

In conclusion, pre-competitive task-oriented coping and intensity of PA mediated the relationships between CAR (Level 2 and level 1; respectively) and goal attainment and/or sport

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satisfaction. As such, increasing the quality of CAR (level 1 and level2) could optimise precompetitive task-oriented coping and intensity of PA and thus, facilitate sport satisfaction and goal attainment. Therefore, coaches and practitioners should create programmes aiming to foster CAR variables (closeness, commitment and complementarity) at distinct levels (level 1 or level 2) to reach the most adaptive outcomes in athletes. Hence, the multilevel programmes aimed to foster these levels (level 1 and level 2) would be crucial to create the most adaptive outcomes in athletes (Cleary et al., 2012).

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Table I. Parameter Estimates and Variance Components of the Null models.

Model equations	Fixed effect	Random effects		2*loglikelihood	% of level 2	% of level 1
		$\sigma^2$ (SD)	$\tau_{00}$ (SD)		variance	variance
<b><i>model 1</i></b>	$\gamma_{00}$ (SE)				variance	variance
TOC	2.58***(0.04)	0.25(0.50)	0.09(0.30)	926.0	26.47%	73.53%
DsOC	2.05***(0.04)	0.36(0.60)	0.05(0.23)	1096.9	12.20%	87.80%
DgOC	1.62***(0.03)	0.26(0.51)	0.04(0.22)	911.6	13.33%	86.67%
IAP	3.34***(0.04)	0.33(0.58)	0.07(0.26)	1056.7	17.50%	82.50%
DAP	1.35***(0.04)	0.32(0.56)	0.07(0.27)	1035.7	17.95%	82.05%
IAN	1.79***(0.02)	0.24(0.49)	0.01(0.11)	843.2	4.00%	96.00%
DAN	-0.00 (0.04)	0.68(0.82)	0.06(0.25)	1427.0	8.11%	91.89%
ATTBUT	3.84***(0.11)	1.27(1.12)	0.57(0.75)	1841.4	30.98%	69.02%
SAT	4.38***(0.08)	1.09(1.04)	0.30(0.54)	1733.0	21.58%	78.42%

Note. SE = Standard errors; SD = Standard deviations;  $\beta_{0j}$  is the average level of psychological states for individual;  $\gamma_{00}$  is the group mean of psychological states scores;  $\sigma^2 = \text{var}(r_{ij})$  variance in level-1 residual (i.e. variance in  $r_{ij}$ );  $\tau_{00} = \text{var}(U_{0j})$  variance in level-2 residual (i.e. variance in  $U_{0j}$ ). \*  $p < .001$ .



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Table II. Unstandardized Parameters Estimates of the Growth Curve Models 1

<b><i>Model 2</i></b>	<b>T1TOC</b>	<b>T1DsOC</b>	<b>T1DgOC</b>	<b>T1IAP</b>	<b>T1DAP</b>	<b>T1IAN</b>	<b>T1DAN</b>
<i>Fixed effects - Estimates (Standard errors)</i>							
Intercept	2.59***(0.04)	1.62***(0.03)	2.05***(0.04)	3.34***(0.04)	1.35***(0.04)	1.79***(0.02)	-0.01(0.04)
Coach-Athlete Relationship_L1	0.03(0.02)	-0.05*(0.02)	0.03(0.07)	0.16***(0.02)	0.08**(0.03)	0.01(0.02)	-0.03(0.03)
Coach-Athlete Relationship_L2	0.16*(0.7)	0.05(0.06)	0.02(0.02)	0.00(0.07)	0.04(0.07)	-0.00(0.04)	0.10(0.08)
<i>Random effects - Variance (Standard deviation)</i>							
Intercept	0.08(0.29)	0.05(0.23)	0.04(0.21)	0.07(0.27)	0.01(0.11)	1.39(0.11)	0.06(0.24)
Coach-Athlete Relationship_L1	0.09(0.09)	0.01(0.10)	0.00(0.08)	0.03(0.19)	0.01(0.11)	1.77(0.04)	0.00(0.06)
Coach-Athlete Relationship_L2	0.00(0.06)	0.00(0.09)	0.01(0.11)	0.03(0.19)	0.01(0.11)	7.93(0.00)	0.02(0.16)
Residual	0.25(0.50)	0.36(0.60)	0.25(0.50)	0.27(0.52)	0.30(0.55)	2.64(0.49)	0.67(0.82)
-2*loglikelihood	915.9	1092.7	898.7	991.8	1016.7	841.5	1422.8

*Note.* \*\*\*  $p < .001$  \*\*  $p < .01$  \*  $p < .05$  †  $p = .06$ ; T1TOC = Precompetitive Task-Oriented Coping; T1DsOC = Precompetitive Distraction Oriented Coping; Precompetitive Distancing Oriented Coping; T1IAP = Precompetitive Intensity of Positive Affects; T1DAP = Precompetitive Direction of Positive Affects; T1IAN = Precompetitive Intensity of Positive Affects; Precompetitive Direction of Negative Affects.

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Table III. Unstandardized Parameters Estimates of the Growth Curve Models 2

<b><i>Model 3</i></b>	<b>T2Attbut</b>	<b>T2sat</b>		<b>T2Attbut</b>	<b>T2sat</b>
<i>Fixed effects - Estimates (Standard errors)</i>					
<i>Intercept</i>	2.66***(0.34)	3.69***(0.28)	<i>Intercept</i>	2.35***(0.32)	3.26***(0.28)
Coach-Athlete Relationship_L1	0.20***(0.05)	0.39***(0.04)	T2tot_CartQ_cL1	0.15**(0,05)	0.39***(0.05)
Coach-Athlete Relationship_L2	0.53**(0.17)	0.64***(0.12)	T2tot_CartQ_cL2	0.47**(0.16)	0.67***(0.11)
T1TOC_cL1	0.52***(0.13)	0.34***(0.10)	T1IAP_cL1	0.29**(0.10)	0.31**(0.09)
T1DsOC_cL1	0.11(0.09)	0.12(0.08)	T1DAP_cL1	0.18(0,10)	0.03(0.10)
T1DgOC_cL1	-0.28*(0.11)	-0.30***(0.09)	T1IAN_cL1	0.14(0.09)	0.01(0.09)
			T1DAN_cL1	0.04(0.05)	0.00(0.05)
<i>Random effects - Variance (Standard deviation)</i>			<i>Random effects - Variance (Standard deviation)</i>		
Intercept	3.20(1.79)	1.80(1.34)	Intercept	0.89(0.94)	0.71(0.84)
Coach-Athlete Relationship_L1	0.04(0.21)	0.01(0.12)	T2tot_CartQ_cL1	0.03(0.17)	0.03(0.17)
Coach-Athlete Relationship_L2	0.46(0.68)	0.16(0.40)	T2tot_CartQ_cL2	0.09(0.31)	0.18(0.42)
T1TOC_cL1	0.46(0.67)	0.13(0.37)	T1IAP_cL1	0.05(0.23)	0.10(0.33)
T1DsOC_cL1	0.11(0.33)	0.05(0.23)	T1DAP_cL1	0.05(0.23)	0.22(0.47)

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T1DgOC_cL1	0.23(0.48)	0.10(0.32)	T1IAN_cL1	0.28(0.52)	0.11(0.34)
			T1DAN_cL1	0.09(0.31)	0.03(0.19)
Residual	0.92(0.96)	0.77(0.88)	Residual	1.00(1.00)	0.71(0.84)
-2*loglikelihood	1732.9	1570.2	-2*loglikelihood	1748.7	1569.1

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T1TOC = Precompetitive Task-Oriented Coping; T1DsOC = Precompetitive Distraction Oriented Coping; Precompetitive Distancing Oriented Coping; T1IAP = Precompetitive Intensity of Positive Affects; T1DAP = Precompetitive Direction of Positive Affects; T1IAN = Precompetitive Intensity of Positive Affects; Precompetitive Direction of Negative Affects.

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Figure 1. Representation of the role of the mediators in the examined model.

