



**HAL**  
open science

## **Examining coping among adolescent athletes in an intensive training centre: A profile analysis**

Fabien Varenne, Noémie Lienhart, Julie Doron

### ► **To cite this version:**

Fabien Varenne, Noémie Lienhart, Julie Doron. Examining coping among adolescent athletes in an intensive training centre: A profile analysis. *Psychology of Sport and Exercise*, 2026, 83, pp.103064. <10.1016/j.psychsport.2026.103064>. <hal-05459470>

**HAL Id: hal-05459470**

**<https://hal.science/hal-05459470v1>**

Submitted on 19 Jan 2026

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



HAL Authorization

## **Examining coping among adolescent athletes in an intensive training centre: A profile analysis**

### **Introduction**

Being an adolescent athlete in an intensive training centre means evolving in a win-at-all-costs environment, where high training loads, sport-academic demands, and the relentless pursuit of performance structure daily life (Cece et al., 2019; Gaudreau et al., 2009). While these pathways offer unique opportunities for growth, they also expose adolescent athletes to stressors from both everyday life and sports (Holt et al., 2005). Achieving high performance and maintaining well-being requires athletes to interact with significant others in their environment and cope with these demands and challenges (Compas et al., 2001). However, despite the recognized importance of social support and coping in adolescent athletes (Arnold & Fletcher, 2021), the ways in which adolescent athletes adapt psychologically to these demands require further investigation. Using a person-centred approach, the present study explores adolescent athletes' coping profiles, the role of perceived social support from coaches and parents in determining these profiles, and how adaptive these profiles are in terms of stress perception, pleasant/unpleasant emotions, well-being and subjective performance.

Coping has been defined as “constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (Lazarus and Folkman, 1984, p. 141). Nicholls et al., (2016) classified coping strategies into three sport-specific higher-order dimensions: (1) mastery coping, involving strategies where athletes try to control a stressful situation (e.g., task-, problem- focused); (2) internal regulation coping, where athletes regulate internal stress responses (e.g., emotion-focused coping); and (3) goal withdrawal coping, involving cessation of efforts towards goals (e.g., mental disengagement). Adolescent athletes use various coping strategies to manage sport demands and maintain well-being such as concentration, planning,

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1 seeking support (Holt et al., 2005; Nicholls et al., 2009; Reeves et al., 2009). They may also  
2 tend to use a repertoire of preferred coping strategies, or coping style, regardless of the  
3 context of situations encountered (Gaudreau & Blondin, 2004; Holt et al., 2005; Reeves et al.,  
4 2009). As Carver et al. (1989) noted, “people do not approach each context anew, but rather  
5 bring to bear a preferred set of coping strategies that remains relatively fixed across time and  
6 circumstances” (p. 270). Building on this idea, recent research has emphasized that coping  
7 should not be understood solely through individuals’ preferences for specific strategies, but  
8 also through the patterns of strategy combinations that they tend to use when facing stress.  
9 The multidimensional nature of coping has led to a growing interest in coping profiles, which  
10 provide an understanding of how athletes combine coping strategies rather than employing  
11 them in isolation when facing stressful situations (Doron et al., 2015; Martinent & Nicolas,  
12 2016; Pété et al., 2022; Tamminen & Holt, 2012). However, few studies have  
13 examined coping profiles among adolescents or the preferred combination of coping strategies  
14 used when facing stressful situations (Doron et al., 2024; Gaudreau & Blondin, 2004; Herres,  
15 2015).

16 Adopting a person-centred approach in the aforementioned study of coping profiles  
17 has enabled the identification of homogeneous subgroups of competitive athletes based on  
18 their similarities in the use of coping strategies (Doron et al., 2024; Gaudreau & Blondin,  
19 2004; Martinent & Nicolas, 2016; Pété et al., 2022). Gaudreau and Blondin (2004), for  
20 example, identified four distinct coping profiles among 82 adolescent and young adult  
21 athletes, aged between 14 and 22 years. The first coping profile (i.e., low coping profile)  
22 showed a low use of all coping strategies, whether related to mastery coping, internal  
23 regulation of emotions, or goal-withdrawal. In contrast, the second coping profile (i.e., high  
24 coping profile) displayed a high and combined use of all coping strategies. The third coping  
25 profile (i.e., high task-oriented coping profile) combined a high level of mastery coping (e.g.,

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1 task-oriented, effort expenditure) with a low level of goal-withdrawal coping strategies (e.g.,  
2 resignation, disengagement). The last coping profile (i.e., high disengagement-oriented coping  
3 profile) was characterized by a combination of a low use of mastery coping and a high use of  
4 goal-withdrawal and internal regulation of emotions. In addition to identifying how athletes  
5 cope with stress, the coping profile approach also helps reveal explanatory and predictive  
6 covariates associated with these profiles (Doron et al., 2024; Herres, 2015; Martinent &  
7 Nicolas, 2016).

8         To date, this predictive method has only been applied in one study involving  
9 adolescent athletes evolving in intensive football training centres (Doron et al., 2024). In this  
10 study, Doron et al. (2024) showed that the emotional competencies and basic psychological  
11 need satisfaction of adolescent football players (aged 14-20 years) in intensive training  
12 centres predicted their coping profiles membership. Players who reported higher levels of  
13 interpersonal emotional competence and who evolved in environments that satisfied their  
14 basic psychological needs (i.e., autonomy, competence, and relatedness) were more likely to  
15 use mastery strategies and to engage in a task-oriented coping profile. This is recognised in  
16 literature as the most adaptive profile (Doron et al., 2024; Gaudreau & Blondin, 2004;  
17 Martinent & Nicolas, 2016).

18         These findings emphasise the significance of the social environment when it comes to  
19 overcoming sport-related challenges, drawing attention to the impact of interactions with  
20 influential figures such as coaches (Doron et al., 2024). This perspective aligns with recent  
21 recommendations to recognize the integral role of stakeholders (e.g., parents and coaches) in  
22 the sporting ecosystem surrounding athletes (Dorsch et al., 2022). As key stakeholders, they  
23 influence not only the technical development of athletes, but also their psychological, social,  
24 and performance-related experiences (Maurice et al., 2021; Tagliavini et al., 2023),  
25 concerning to how they experience and manage stress (Lafferty & Dorrell, 2006; Staff et al.,

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1 2020; Tamminen & Holt, 2012). However, the central role of the social environment in  
2 adopting a specific coping profile requires further investigation to better understand how  
3 adolescent athletes manage their daily lives and the dual challenges of being both adolescents  
4 and athletes. From this perspective, it appears essential to examine more thoroughly the role  
5 of psychosocial resources, such as social support, in coping processes, an area still under-  
6 explored in coping profile research on adolescent athletes.

7 Social support is defined as “the social resources that people perceive to be available  
8 or that are actually provided to them by non-professionals in the context of formal support  
9 groups and informal helping relationships” (Cohen et al., 2000, p. 4). It is often described in  
10 terms of quantity and satisfaction with structural aspects of support (i.e., number and type of  
11 relationships), perceived support (i.e., beliefs about resource availability), and received  
12 support (i.e., the frequency with which individuals receive support) (Gottlieb & Bergen,  
13 2010). Social support mitigates the effects of stress by modifying emotional, physiological,  
14 and behavioural responses, reducing the perceived salience of stressors, and facilitating  
15 coping efforts, thereby significantly influencing adolescent athletes’ strategies as highlighted  
16 in previous studies (Hayward et al., 2017; Sheridan et al., 2014; Thoits, 2011). For example,  
17 Hayward et al. (2017) showed that support from coaches or family helps adolescent athletes to  
18 cope better with organisational and competitive stress. Lafferty and Dorrell (2006) also found  
19 that adolescent athletes (aged 14–15 years) who reported moderate or high levels of parental  
20 support employed more mastery-oriented coping strategies in response to stress. In contrast,  
21 those reporting low levels of parental support used fewer mastery-oriented strategies and  
22 relied more on goal-withdrawal strategies, which are generally considered maladaptive  
23 (Doron et al., 2024; Gaudreau & Blondin, 2004; Pété et al., 2022).

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1           Although social support from coaches or parents is widely recognized as a key factor  
2 in the psychological adjustment of adolescent athletes (Arnold & Fletcher, 2021; Hayward et  
3 al., 2017), the specific role of this support in predicting coping profile membership has not yet  
4 been examined empirically. Thus, this study aims to address this gap by providing a more  
5 comprehensive understanding of how adolescent athletes cope, exploring not only profile  
6 description, but also how perceptions of the availability and satisfaction of social support may  
7 influence coping profile membership.

8           In the demanding context of intensive training centres, adolescent athletes face  
9 multiple challenges related to personal and athletic development, academic, social, and  
10 sporting pressures, and the pursuit of performance (Cece et al., 2019). Their ability to cope  
11 with these demands is often associated with emotional experiences, performance, and well-  
12 being (Cece et al., 2019; Compas et al., 2001; Nicholls et al., 2009). Therefore, investigating  
13 the coping profiles of these athletes is particularly relevant, as it enables us to understand the  
14 influence of the combined use of preferred coping strategies on these key psychological and  
15 performance outcomes. Some studies have shown that a low coping profile with a low use of  
16 all coping strategies is generally associated with perceiving stress as less intense or  
17 threatening (Doron et al., 2024; Gaudreau & Blondin, 2004). Other research suggests that  
18 adopting a task-oriented coping profile tends to lead to more positive psychological  
19 adjustment, whereas adopting a disengaged coping profile is associated with inadequate  
20 resource mobilisation and less adaptive functioning (Doron et al., 2024; Gaudreau & Blondin,  
21 2004; Herres, 2015; Pété et al., 2022). Gaudreau and Blondin (2004), found that athletes who  
22 tend to have a disengaged coping profile reported higher levels of anger and dejection, and  
23 lower levels of goal attainment, positive affect, and perceived control than athletes who  
24 displayed a task-oriented coping profile. These findings underscore the importance of  
25 understanding the adaptive nature of coping profiles, which, in addition to stress regulation,

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1 appear to influence the quality of athletes' daily engagement and performance. In the  
2 demanding environment of intensive training centres, successful adaptation is essential for  
3 supporting well-being and long-term performance. However, despite its importance, few  
4 studies have systematically examined these key indicators in this specific population.

5 Based on the aforementioned evidence, this study aimed to: (1) identify the coping  
6 profiles of adolescent athletes in intensive training centres and their typical stress responses;  
7 (2) explore how perceived availability and satisfaction with parental and coach support  
8 predict coping profile membership; and (3) examine the extent to which adolescent athletes'  
9 coping profiles differ in terms of stress perception, pleasant/unpleasant emotions, well-being  
10 and subjective performance.

## 11 Method

### 12 Participants

13 A total of 495 adolescent athletes (male = 202, 41 %; female = 293, 59 %;  $M_{age} =$   
14 17.40;  $SD_{age} = 1.7$ ) voluntarily participated in this study. They practiced individual sports (47  
15 %: swimming, badminton, tennis, table tennis, sailing, rowing, skiing, judo, gymnastics) and  
16 team sports (53 %: football, handball, volleyball, basketball) within intensive training centres.  
17 As part of each federation's performance project, these centres support adolescent athletes in  
18 their pursuit of high-level performance, while also ensuring their academic success (Decree of  
19 18 July 2002). Athletes generally enter intensive training centres between the ages of 12 and  
20 15 and most often reside in boarding facilities, although this is not mandatory depending on  
21 geographical, educational, and organizational conditions. These centres may bring together  
22 multiple disciplines within multisport structures, while sport-specific training remains strictly  
23 discipline-specific. The classification proposed by McKay et al. (2022) was adopted to  
24 specify the level and characteristics of the athletes included. This framework provides a  
25 structured and recognized approach to defining athletes' training and performance caliber.

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1 Based on this framework, we applied the inclusion criteria, retaining only those athletes who  
2 reached Level 3. These athletes were required to practice their sport at a minimum national  
3 level, follow a structured and periodized training program within an intensive training centre,  
4 pursue high performance standards, and demonstrate advanced mastery of the skills required  
5 in their discipline. These inclusion criteria ensured that athletes with a comparable degree of  
6 involvement, expertise and performance orientation were included. Thus, the final sample  
7 comprised 461 adolescent athletes, aged 14–19 years (male = 190, 41 %; female = 271, 59 %;  
8  $M_{\text{age}} = 17.00$ ;  $SD_{\text{age}} = 1.3$ ) and practiced individual sport (48%) and team sports (52%). This  
9 meant that all participants had competed at national ( $n = 379$ ) or international ( $n = 82$ ) level,  
10 had been involved in their sport for an average of 9.4 years ( $SD = 3.01$ ), in their current team  
11 for an average of 3.14 years ( $SD = 2.37$ ) and trained for an average of 12.6 hours per week  
12 ( $SD = 4.68$ ).

**13 Procedure**

14 Athletes were recruited through the director of each intensive training centre.  
15 Following agreement with the participating facilities, the parents or legal representatives of  
16 athletes who were minors were notified by e-mail of the subject of the study and their  
17 informed consent was obtained (voluntary participation, online parental authorisation for  
18 minor, anonymity, and confidentiality). Athletes subsequently received written instructions  
19 and a link to the online questionnaire (LimeSurvey) from their coaches. Data were collected  
20 between March and June 2024, a period that is particularly relevant for athletes in intensive  
21 training centres. This period is marked by the end of the school year and the final  
22 competitions of the sports season. This increased the likelihood that participants had recently  
23 experienced stressors relating to their sporting and academic contexts (e.g., school exams,  
24 final competitions, team selections or retention in the training centre). This timeframe (at least  
25 six months) also provided athletes with sufficient opportunity to adapt to and settle into their

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1 social environment within the training centres, which is important for evaluating the social  
2 support available to them. During data collection, researchers remained available to answer  
3 questions and monitor progress. The protocol was approved by a local ethics committee

4 ( [REDACTED] )

### 5 **Measures**

6 All of the questionnaires presented here included the general instruction: “*The*  
7 *following questions aim to understand how you experience and cope with stressful situations*  
8 *that you currently encounter in your sporting life.*” This approach allows responses to be  
9 directly linked to the specific context of data collection (end of the school and sports year)  
10 and to consider temporal periods related to participants’ functioning in their daily sports  
11 environment. For two of the questionnaires (i.e., WEMWBS and PANAS), specific temporal  
12 windows were applied within the overall data collection period, as these instruments are  
13 designed to assess recent emotional and well-being states, which can fluctuate over short  
14 periods (Tennant et al., 2007; Watson et al., 1988).

15 *Coping.* The dispositional version of the Brief COPE was used to measure athletes’ coping  
16 strategies due to its broad applicability and practicality in a sports context (Doron et al.,  
17 2014). The 28 items measured how individuals cope with the stress they encounter in their  
18 daily lives. Fourteen coping strategies were grouped into five higher-order dimensions:  
19 support seeking (i.e., instrumental support, emotional support, religion), problem solving (i.e.,  
20 planning, active coping), distraction (i.e., self-distraction, venting), cognitive restructuring  
21 (i.e., acceptance, humour, positive reframing), and avoidance (i.e., behavioural  
22 disengagement, self-blame, denial, substance use). These dimensions can also be associated  
23 with the classification of Nicholls et al. (2016). The problem-solving and cognitive  
24 restructuring dimensions correspond to mastery strategies; the distraction dimension  
25 corresponds to internal emotion-regulation strategies; and the avoidance dimension

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1 corresponds to goal-withdrawal strategies. Each dimension was calculated as the mean score  
2 of the items corresponding to the coping strategies it included (e.g., support seeking = average  
3 of items for instrumental support, emotional support, and religion) (Doron et al., 2014). The  
4 formulations of two items were adapted to make them clearer and more consistent with the  
5 adolescent sport context of the study: ITEM 1 (from “I turn to work or other activities to take  
6 my mind off things” to “I turn to studies, sport, or other activities to take my mind off things”)  
7 to reflect the school-related context specific to our population. ITEM 27 (from “I pray or  
8 meditate” to “I pray”) by removing “meditate” to avoid confusion between religious  
9 meditation and contemporary forms of meditation that were not documented when the  
10 questionnaire was developed. Participants reported the extent to which they usually used each  
11 of the strategies described when they encountered stress in their daily sporting life, on a four-  
12 point Likert scale ranging from 1 (*not at all*) to 4 (*always*). Cronbach's alpha coefficients were  
13 0.76 for problem solving, 0.64 for support seeking, 0.71 for cognitive restructuring, 0.37 for  
14 distraction, and 0.66 for avoidance.

15 *Availability and satisfaction with parental and coach support.* Participants completed  
16 independent single-item scales to measure availability and satisfaction with parental and then  
17 with coach support, based on an adapted version of the Social Support Scale for General  
18 Living (Bruchon-Schweitzer et al., 2003). The adaptations to this questionnaire focused  
19 mainly on measuring availability and satisfaction with social support by explicitly integrating  
20 the actors identified in our study as sources of this support (i.e., coaches and parents). Two  
21 items asked athletes to rate, on a six-point Likert scale ranging from 1 (*never*) to 6 (*always*),  
22 the extent to which they usually found support from their coach and then from their parents to  
23 be available when they were stressed. Two other items asked athletes to rate, on a six-point  
24 Likert scale ranging from 1 (*very dissatisfied*) to 6 (*very satisfied*), their satisfaction with the

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1 usual support from their coach, followed by that from their parents, when they experienced  
2 stress.

3 *Stress perception.* Three stress perceptions were investigated using three single-item measures  
4 (i.e., intensity, direction and perceived control). Firstly, using a version of the “stress  
5 thermometer” (Kowalski & Crocker, 2001), participants were asked to rate the intensity of  
6 stress they usually felt in their daily sporting life, using a Likert scale ranging from 0 (*not at*  
7 *all*) to 5 (*extremely*). Secondly, participants were asked to rate the direction of stress (i.e., the  
8 extent to which the stress they felt usually affected their daily functioning) using a Likert  
9 scale ranging from 0 (*totally unfavourable*) to 5 (*totally favourable*). Thirdly, the participants  
10 were asked to rate their individual perception of control over the stress they usually  
11 encountered in their daily sporting life, using a Likert scale ranging from 0 (*totally*  
12 *uncontrollable*) to 5 (*totally controllable*) (Britton et al., 2019).

13 *Subjective performance.* Participants were asked to indicate how satisfied they were with their  
14 current level of sport performance, on a Likert scale ranging from 0 (*totally dissatisfied*) to 5  
15 (*totally satisfied*) (Doron et al., 2024; Pensgaard & Duda, 2003).

16 *Well-being.* The French version (Trousselard et al., 2016) of the Warwick-Edinburgh Mental  
17 Well-being Scale (WEMWBS, Tennant et al., 2007) was used to assess both hedonic and  
18 eudemonic aspects of well-being, including positive affects (feelings of optimism,  
19 cheerfulness, relaxation), satisfying interpersonal relationships and positive functioning  
20 (energy, clear thinking, self-acceptance, personal development, competence, and autonomy).  
21 This questionnaire consists of 14 items relating to feelings experienced by the athletes over  
22 the past two weeks. Athletes were asked to select the answer that best described their feelings,  
23 on a Likert scale ranging from 1 (*none of the time*) to 5 (*all of the time*), with a minimum  
24 score of 14 and a maximum score of 70. Cronbach's alpha coefficient was 0.88.

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1 *Pleasant and unpleasant emotions*. The French version (Nicolas et al., 2014) of the Positive  
2 and Negative Affect Schedule Including a Direction Scale (PANAS-D, Watson et al., 1988)  
3 was used to assess athletes' emotions. This adjective checklist contains 10 pleasant and 10  
4 unpleasant emotions. Using a Likert scale ranging from 1 (*not at all or very slightly*) to 5  
5 (*extremely*), participants were asked to rate how well each of the 20 adjectives presented  
6 described usually their feelings over the past two weeks. In addition, participants were also  
7 asked to rate the extent to which the intensity of each adjective was favourable or  
8 unfavourable to their ability to function in their daily sporting lives, on a single item scale  
9 from -3 (*totally unfavourable*) to 3 (*totally favourable*), Cronbach's alphas were 0.79 for  
10 pleasant emotion intensity, 0.83 for its direction, 0.83 for unpleasant emotion intensity, and  
11 0.86 for its direction.

**12 Data analysis**

13 Firstly, a Latent Profile Analysis (LPA) was performed to identify the coping profiles  
14 of adolescent athletes in intensive training centres. A profile study aims to identify  
15 homogeneous subgroups within a sample of competitive adolescent athletes and to estimate  
16 the probability of individuals belonging to each profile, based on similarities in their  
17 combined use of coping strategies (Spurk et al., 2020). The profiles were generated based on  
18 the higher-order dimensions of the Brief COPE scale. A series of measurement models (from  
19 one to five classes) were tested with Mplus version 7.3 in order to select the model that best  
20 matched the coping profiles. Model selection was based on several statistical indices  
21 recommended in the literature (Ferguson et al., 2020; Nylund-Gibson et al., 2019; Spurk et  
22 al., 2020): Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC),  
23 Adjusted BIC (ABIC), and Entropy. Lower AIC, BIC, and ABIC, and Entropy values close to  
24 one ensure a better model fit. In addition, the Bootstrap likelihood ratio test (BLRT) and the  
25 Lo-Mendel-Rubin likelihood ratio test (LMR) were used to compare successive models

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1 (Masyn, 2017; Tein et al., 2013). These likelihood ratio tests compare a model with  $k$  classes  
2 to a model with  $k-1$  classes. A significant  $p$ -value indicates that the model with  $k$  classes is  
3 significantly better than that with  $k-1$  classes. Beyond statistical criteria, the final model  
4 selection also relied on theoretical and substantive considerations (Masyn, 2017; Nylund-  
5 Gibson et al., 2019). These included the conceptual coherence and interpretability of the  
6 profiles, their consistency with existing theoretical frameworks of coping (Lazarus &  
7 Folkman, 1984), and with previously identified coping profiles in sport (Doron et al., 2024;  
8 Gaudreau & Blondin, 2004). A minimum threshold of 5% of the total sample was set for class  
9 size to ensure reliable estimation (Lanza et al., 2013). The model also estimates, for each  
10 individual, a probability of belonging to each of the identified profiles. Each athlete was  
11 assigned to the profile for which their probability of membership was highest, as estimated by  
12 Mplus (Nylund-Gibson et al., 2019), with a recommended threshold of 0.80 in line with the  
13 existing literature (Spurk et al., 2020). Hence the retained model balanced statistical fit,  
14 conceptual consistency, and empirical interpretability.

15       Secondly, availability and satisfaction with social support from coaches and parents  
16 were added as covariates within the LPA model (Nylund-Gibson et al., 2019). The aim was to  
17 assess the extent to which these variables predict adolescent athletes' membership of coping  
18 profiles. The covariate effect estimates were expressed as a logistic regression coefficient,  
19 odds ratio, and  $p$ -value.

20       Thirdly, after extracting profile membership, a comparison and characterisation of the  
21 profiles with each other was carried out on IBM SPSS Version 29. Multivariate analyses of  
22 variance (MANOVA) were conducted to analyse whether significant differences existed  
23 between profiles across stress perception, pleasant/unpleasant emotions, well-being and  
24 subjective performance. All variables were tested for each statistical technique and  
25 corresponding assumptions. When MANOVA was significant ( $p < .05$ ), post hoc comparisons

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1 or group means were applied to limit type 1 error. A chi-squared test was used to characterise  
2 coping profiles according to gender (i.e., female/male) and sport practiced (i.e., team  
3 sport/individual sport).

## 4 **Results**

### 5 **Coping profiles of adolescent athletes in intensive training centres**

6 Given the low internal consistency of the distraction dimension (Cronbach's alpha =  
7 0.37), this dimension was excluded from profile estimation. Table 1 shows the results of the  
8 LPA analysis with one to five classes. AIC, BIC, and ABIC values decreased as more classes  
9 were added to the analysis (from one to five classes). The LMR found that two classes fit  
10 better than one class. BLRT values showed a more significant fit when an extra class was  
11 added, and this confirmed that each model with an additional class presented a significant  
12 difference compared with the model with one less class. Each subgroup of models with one to  
13 four classes contained more than 5% of the total sample size. This collection of data confirms  
14 the higher relevance of two-, three- and four-class models. As such, in line with LPA  
15 indicators and the theoretical and conceptual predictions from the coping literature, as well as  
16 the interpretability and relevance of the four-class model, the four-class model was selected.

17 Figure 1 shows the z-scores for each coping dimension of the four coping profiles of  
18 adolescent athletes in intensive training centres. In line with the dominant patterns of coping  
19 strategy combinations observed and existing labels for coping profiles, the profiles were  
20 labelled “Low Coping Profile”, “Engaged Coping Profile”, “Moderate Coping Profile” and  
21 “Disengaged Coping Profile” (Doron et al., 2024; Gaudreau & Blondin, 2004; Pété et al.,  
22 2022). The average probability of participants belonging to the class to which they were  
23 assigned was 0.82 for low coping profile, 0.80 for engaged coping profile, 0.81 for moderate  
24 coping profile, and 0.81 for disengaged coping profile, which is consistent with the  
25 recommended threshold of 0.80 (Spurk et al., 2020). Firstly, adolescent athletes with a low

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1 coping profile (5% of the sample) used very limited combinations of all coping strategies.  
2 Secondly, those with an engaged coping profile (24.95% of the sample) frequently used  
3 mastery coping strategies (e.g., problem-solving and cognitive restructuring strategies) and  
4 sometimes used support-seeking and goal-withdrawal coping strategies (e.g., behavioural  
5 disengagement, self-blame). Thirdly, adolescent athletes with a moderate coping profile  
6 (56.38% of the sample) made moderate use of all coping strategies. Finally, athletes with a  
7 disengaged coping profile (13.67% of the sample) made moderate use of mastery coping (e.g.,  
8 problem-solving and cognitive restructuring strategies) and support-seeking strategies, and  
9 primarily relied on a combination of goal-withdrawal strategies.

10 The four coping profiles also differed by gender ( $\text{Chi}^2_{(2)} = 16.57, p < 0.001$ ) and sports  
11 practiced ( $\text{Chi}^2_{(2)} = 11.31, p = .010$ ). The disengaged coping profile included mostly female  
12 adolescents (79.36%), while the low (56.52%), engaged (47.82%), and moderate (58.85%)  
13 coping profiles displayed a more balanced gender distribution. Finally, team sport athletes  
14 were predominant in the disengaged (60.32%) and low (65.22%) coping profiles, individual  
15 sport athletes were foremost in the engaged coping profile (60.87%), while the moderate  
16 coping profile was more balanced (53.84% team sports).

17 **Coping profile membership: Investigation of availability and satisfaction with social**  
18 **support from coaches and parents as covariates**

19 Table 2 presents descriptive statistics, and covariate effects on membership of coping  
20 profiles. Results show that adolescent athletes with a disengaged coping profile had lower  
21 perceptions in terms of availability of parental support than athletes with an engaged (logistic  
22 regression coefficient = 0.493,  $p = .004$ ) or moderate coping profile (logistic regression  
23 coefficient = 0.363,  $p = .003$ ). Adolescent athletes with a disengaged coping profile also had  
24 lower perceptions in terms of satisfaction with parental support than adolescent athletes with  
25 an engaged (logistic regression coefficient = 0.746,  $p = .004$ ) or moderate coping profile

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1 (logistic regression coefficient = 0.309,  $p = .041$ ). Moreover, adolescent athletes with a low  
2 coping profile had lower perception in terms of satisfaction with parental support than athletes  
3 with an engaged coping profile (logistic regression coefficient = 0.664,  $p = .035$ ).

4 Adolescent athletes who perceived lower availability of coach support were more  
5 likely to belong to the disengaged coping profile than the engaged (logistic regression  
6 coefficient = 0.660,  $p < .001$ ) or moderate (logistic regression coefficient = 0.507,  $p = .001$ )  
7 coping profiles. Adolescent athletes with a disengaged coping profile also had lower  
8 perception of satisfaction with coach support than adolescent athletes with an engaged  
9 (logistic regression coefficient = 0.570,  $p = .001$ ) or moderate coping profiles (logistic  
10 regression coefficient = 0.529,  $p < .001$ ).

### 11 **Coping profile differences on stress perceptions, subjective performance, well-being, and** 12 **emotions**

13 Table 3 presents descriptive statistics, MANOVA results (stress perception, individual  
14 subjective performance, well-being, pleasant and unpleasant emotions) and post hoc  
15 comparisons between each profile. Significant differences emerged across the four profiles on  
16 all outcomes ( $F_{(27; 1311,954)} = 7.02$ ;  $p < .001$ ; Partial  $\eta^2 = .123$ ). Specifically, adolescent athletes  
17 with a disengaged coping profile reported significantly higher levels of perceived stress  
18 intensity and lower levels of perceived control than the other three coping profiles. Moreover,  
19 adolescent athletes with a low coping profile reported significantly lower levels of perceived  
20 stress intensity than those with a moderate coping profile. Adolescent athletes with a moderate  
21 coping profile also perceived significantly lower levels of stress control than athletes with an  
22 engaged coping profile.

23 In addition, adolescent athletes with an engaged coping profile reported significantly  
24 higher levels of well-being and pleasant emotion intensity than the other three coping profiles,  
25 followed by athletes with moderate coping profiles, who, in turn, reported significantly higher

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1 levels than athletes with low and disengaged coping profiles. Adolescents with a disengaged  
2 coping profile also reported significantly greater levels of unpleasant emotion intensity than  
3 the other three profiles. Adolescent athletes with an engaged or moderate coping profile  
4 reported significantly higher levels of pleasant emotion direction than athletes with a low or  
5 engaged coping profile. Moreover, adolescents with a disengaged coping profile reported  
6 significantly higher levels of unpleasant emotion direction than those with an engaged or  
7 moderate coping profile. Finally, adolescent athletes with a disengaged coping profile had  
8 significantly lower levels of subjective performance than those with an engaged or low coping  
9 profile.

**Discussion**

11 This study aimed to identify coping profiles to better understand how adolescent  
12 athletes in intensive training centres cope with stress in relation to their context. Beyond  
13 identifying profiles in a specific and understudied population, this study innovatively  
14 examined how coaches' and parents' support influenced athletes' coping profile membership.  
15 This study also highlights the adaptiveness of each coping profile based on stress perception,  
16 emotions, well-being, and subjective performance, variables that are crucial for athlete  
17 development and the successful management of their dual career. Four distinct coping profiles  
18 emerged (low, engaged, moderate, and disengaged coping profiles), with membership varying  
19 according to perceived social support. Notably, athletes perceiving the lowest levels of  
20 support from parents and coaches were more likely to belong to the disengaged coping  
21 profile, highlighting the direct influence of stakeholders as a key determinant of coping  
22 profiles. Furthermore, this study provides a more comprehensive understanding of the  
23 adaptiveness of each coping profile by linking these profiles to more or less adaptive  
24 adjustments. Thus, engaged and moderate coping profiles appear to be associated with better  
25 psychological adjustment, including greater well-being, and higher intensity and direction of

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1 pleasant emotions, suggesting a more sustainable adaptation to demanding contexts.  
2 Conversely, the disengaged coping profile appears to be particularly vulnerable, which,  
3 alongside the highest stress and lowest perceived control, was also linked to the lowest levels  
4 of subjective performance and well-being, as well as the highest intensity and direction of  
5 unpleasant emotions. Thus, this study highlights associations between the social environment,  
6 coping strategies, and indicators of psychological performance, elements that are particularly  
7 relevant for the development of sustainable performance, yet still largely unexplored in this  
8 specific population. The discussion begins by examining each profile's coping and  
9 adaptiveness, before exploring how social support influences profile membership.

10 Firstly, the engaged coping profile was characterized by a predominant use of mastery  
11 coping (e.g., problem-focused and cognitive restructuring strategies), with limited reliance on  
12 goal-withdrawal and support-seeking strategies. These results reflect an active approach to  
13 stress and are consistent with previous findings in sport psychology (Doron et al., 2024;  
14 Gaudreau & Blondin, 2004; Martinent & Nicolas, 2016; Pété et al., 2022). Moreover, athletes  
15 displaying this profile reported the highest levels of perceived control over stress, as well as  
16 significantly higher levels of pleasant emotion intensity and well-being compared to the three  
17 other profiles and stood out with the highest scores in subjective performance. Compared with  
18 athletes belonging to the disengaged profile, they showed significantly higher scores for  
19 subjective performance and the direction of pleasant emotions, and significantly lower scores  
20 for the intensity and direction of unpleasant emotions. This engaged coping profile would  
21 represent a particularly adaptive response to the daily challenges faced by adolescent athletes  
22 in intensive training centres. It illustrates how the combination of mastery coping strategies  
23 (e.g., problem-focused and cognitive restructuring strategies) and limited reliance on goal-  
24 withdrawal and support-seeking strategies would translate into more effective psychological  
25 adjustment. These findings therefore provide new and complementary insights into the

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1 psychological and subjective benefits associated with this profile (Doron et al., 2024; Pété et  
2 al., 2022), offering a concrete perspective to guide interventions and support the sustainable  
3 performance development of adolescent athletes.

4         Secondly, the moderate coping profile, which included more than half of the athletes  
5 (56%), was characterized by a balanced and diversified use of coping strategies, with no  
6 single one clearly dominating. Far from being an underrepresented profile, as previously  
7 described among older athletes (Martinent & Nicolas, 2016), this group appears to represent  
8 particularly prevalent coping patterns among adolescent athletes in intensive training centres.  
9 Although no dominant strategy emerged, these athletes seemed to draw on a broad and varied  
10 range of coping strategies, which may help them adjust to the multiple challenges encountered  
11 in their daily sporting lives (Crocker et al., 2015). While less mastery-oriented than athletes  
12 from the previous profile, these individuals nevertheless displayed favourable psychological  
13 adjustment and higher levels of subjective performance. They also reported higher levels of  
14 pleasant emotional intensity and direction than athletes with disengaged or low coping  
15 profiles, as well as higher levels of well-being. Overall, these results contribute to moving  
16 beyond representations of coping by showing that optimal coping may not necessarily rely on  
17 the use of a limited set of so-called “effective” strategies but rather may emerge from a  
18 strategic flexibility adapted to the variability of sporting contexts and to the specific demands  
19 of intensive training environments. Further research should explore the dynamic, flexible, and  
20 evolving nature of this coping profile to better understand the effectiveness of these  
21 adjustments (e.g., depending on the strategies mobilized simultaneously) and their role in  
22 supporting the global and sustainable development of adolescent athletes.

23         Thirdly, adolescent athletes with the low coping profile reported limited use of all  
24 coping strategies, a pattern previously observed in the literature (Doron et al., 2024; Gaudreau

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1 & Blondin, 2004; Martinent & Nicolas, 2016). They displayed the lowest perceived stress  
2 intensity and the highest perceptions of stress control as shown in previous studies (Doron et  
3 al., 2024; Gaudreau & Blondin, 2004; Martinent & Nicolas, 2016). Feeling strongly in  
4 control, they may not perceive coping as necessary (Gaudreau & Blondin, 2004), reflecting  
5 more limited emotional engagement with stress (Martinent & Nicolas, 2016). Notably, this  
6 profile included a high proportion of team sport athletes (65.22%) and the results relating to  
7 stress may illustrate the buffering effect of group belonging, which can reduce stress  
8 perception (Haslam et al., 2005). Identifying with a team may also promote collective  
9 emotion regulation and mutual support, reducing the need for individual coping efforts  
10 (Haslam et al., 2005). In addition to reporting lower subjective performance, these athletes  
11 also exhibit significantly lower levels of well-being and pleasant emotional intensity and  
12 direction, compared to those with moderate or engaged coping profiles, which raises  
13 questions about the psychological adjustment related to this profile. In other words, although  
14 they report low stress and a strong perception of control, their psychological and subjective  
15 indicators suggest they may not be adjusting in a fully effective or adaptive manner regarding  
16 subjective performance, emotions and well-being. In high-demand contexts, this low coping  
17 profile may prove insufficient for meeting challenges, potentially exposing these athletes to  
18 reduced adaptive capacity and increased vulnerability. These findings deepen our  
19 understanding into the adaptability of this profile, responding to calls in the literature (Doron  
20 et al., 2024; Martinent & Nicolas, 2016), and underscore the need to examine the conditions  
21 and contexts in which this coping profile may facilitate or hinder the long-term psychological  
22 adjustment of athletes.

23 Fourthly, adolescent athletes displaying a disengaged coping profile are characterized  
24 by a predominant reliance on goal-withdrawal strategies, with only moderate engagement in  
25 support-seeking or more mastery coping. Our results thus support the recurrent and typical

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1 pattern observed in the literature (Doron et al., 2024; Gaudreau & Blondin, 2004; Pété et al.,  
2 2022), while extending it to a novel and diverse context, thereby reinforcing the robustness  
3 and generalizability of this profile across demanding and varied sports environments. From an  
4 adaptive perspective, our findings show that athletes with this profile reported significantly  
5 higher perceived stress intensity than the other three profiles, along with the lowest perceived  
6 control over stress. The predominant use of goal-withdrawal strategies therefore appears less a  
7 strategic choice than a reflection of helplessness in response to perceived stress intensity,  
8 suggesting difficulties in mobilizing appropriate coping resources. This profile is further  
9 distinguished from the engaged and moderate coping profiles by the lowest levels of  
10 subjective performance and well-being, as well as the highest intensity and direction of  
11 unpleasant emotions. These results extend previous sport research to a new population,  
12 confirming that the disengaged coping profile is associated with maladaptive outcomes and  
13 insufficient stress regulation (Doron et al., 2024; Gaudreau & Blondin, 2004; Pété et al.,  
14 2022). Disengaged athletes appear to lack effective resources to mitigate the psychological  
15 effects of stress beyond mere withdrawal (Gaudreau & Blondin, 2004; Herres, 2015; Pété et  
16 al., 2022), and their emotional state also seems compromised, with repercussions now  
17 observable on both their well-being and subjective performance. In the demanding context of  
18 intensive training centres, where adolescents must navigate sporting, academic, and social  
19 pressures, our findings highlight that the disengaged coping profile persists despite  
20 membership in structures designed to support athlete development. This raises broader  
21 questions about the sports system and the guidance provided to adolescent athletes as such a  
22 recurrent profile, coupled with limited coping resources, may impede their achievement of a  
23 dual career. These observations underscore the importance of promptly identifying these  
24 athletes and implementing targeted interventions to strengthen their coping strategies, thereby

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1 supporting their dual career pathway and safeguarding both their psychological well-being  
2 and performance potential.

3 Furthermore, this study aimed to deepen the understanding of coping profiles in  
4 adolescent athletes by examining how perceived support from parents and coaches influences  
5 coping profile membership. Athletes with a disengaged coping profile, in addition to  
6 exhibiting maladaptive responses, also reported significantly lower levels of perceived  
7 availability and satisfaction with the social support provided by parents and coaches  
8 compared to those with engaged or moderate coping profiles. Paradoxically, although this  
9 profile is primarily goal-withdrawal oriented, it shows a tendency to seek support when facing  
10 stress. The discrepancy between the willingness to seek support and the perception of its  
11 unavailability or dissatisfaction may reinforce feelings of inefficacy and direct coping  
12 strategies toward goal-withdrawal. These results are particularly relevant, as they are  
13 consistent with previous studies showing that adolescents tend to turn to others when they  
14 perceive their personal resources as insufficient (Hayward et al., 2017; Staff et al., 2020). By  
15 emphasizing the central role of parents and coaches, our results extend previous research  
16 showing that environments satisfying adolescents' basic psychological needs promote more  
17 effective coping strategies (Doron et al., 2024). Thus, although athletes with an engaged  
18 coping profile do not actively seek support under stress, they evaluate positively both the  
19 availability and quality of support received, reflecting development within a secure and  
20 supportive environment. This positive perception may enhance autonomy, reducing reliance  
21 on external support. Overall, our findings highlight the importance of daily interactions  
22 between athletes and stakeholders in fostering genuinely supportive environments (Tamminen  
23 & Holt, 2012). They enrich the understanding of the mechanisms through which the social  
24 context influences coping strategies in high-performance sport, while also emphasizing the  
25 need to identify at-risk profiles to provide targeted and appropriate support.

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1           The results also show that athletes perceive higher levels of parental support than  
2 coach support, both in terms of availability and satisfaction. This finding would appear to  
3 confirm the central role of perceived parental support in the resources available to adolescent  
4 athletes when dealing with stress (Lafferty & Dorrell, 2006). This central role appears all the  
5 more noteworthy given that, in the context of intensive training centres, parental support is at  
6 least partly provided at a distance, highlighting the importance of perceived availability and  
7 the quality of interactions beyond physical proximity. Parents could broaden the scope of  
8 support by making it available in more consistent, varied, and extended contexts, beyond the  
9 strictly sporting environment in which the coach primarily operates (Gould et al., 1999;  
10 Katagami & Tsuchiya, 2017; Staff et al., 2020; Zimmer- Gembeck & Locke, 2007). These  
11 findings support previous research on the structuring role of parents in the development of  
12 adolescent athletes' coping strategies (Lafferty & Dorrell, 2006; Tamminen & Holt, 2012;  
13 Zimmer- Gembeck & Locke, 2007) and extend the idea that the family environment is  
14 considered by some authors to be "the most powerful context within which the socialization  
15 of coping occurs" (Zimmer- Gembeck & Locke, 2007, p.3).

16           Researchers can build on the contributions of this study while taking its limitations  
17 into account. Firstly, the "distraction" dimension of the Brief COPE questionnaire had to be  
18 excluded due to a low internal consistency. While this decision is psychometrically justified, it  
19 calls for reassessment of the relevance of the "distraction" dimension in this tool, especially  
20 since distraction is generally a prominent strategy among adolescent athlete populations. This  
21 highlights the need for future research to refine this component (Doron et al., 2014) and to  
22 guide researchers towards assessment tools better suited to this population. Secondly, the  
23 cross-sectional design of this study does not allow for direct causal inferences between  
24 variables, which limits examination and understanding of the mechanisms underlying coping  
25 profiles. These considerations underscore the importance of supplementing this work with

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1 diverse methodologies (e.g., longitudinal designs, qualitative approaches) to better grasp the  
2 dynamics specific to each profile and to incorporate interpersonal dimensions (e.g., coach-  
3 athlete relationship), thereby advancing current knowledge on the social nature of coping.

4 **Conclusion and implications:**

5 Overall, this study provides a deeper understanding of how adolescent athletes in  
6 intensive training centres combine strategies when coping with stress. The findings support a  
7 coping profile-based approach rather than one centred on individual strategies (Doron et al.,  
8 2024; Gaudreau & Blondin, 2004; Martinent & Nicolas, 2016), suggesting that the  
9 combinations of coping strategies usually used may help explain certain differences in  
10 adolescents' psychological adjustment. They also highlight the joint importance of individual  
11 and social resources in coping with stress, while underscoring the role of social support from  
12 stakeholders within the specific context of intensive training centres. From a practical  
13 standpoint, the results underline the importance of early identification of at-risk profiles and  
14 of recognising the adaptive nature of profiles characterised by mastery-focused coping.  
15 Psychoeducational interventions could be considered in order to foster greater coping  
16 flexibility, enhance psychosocial skills, and support the gradual development of an adaptive  
17 coping repertoire. The findings also encourage stakeholders (i.e., parents and coaches) to  
18 reflect on the environment they contribute to shaping (Hayward et al., 2017; Tamminen &  
19 Holt, 2012), in order to promote the development of coping skills, athletic fulfilment, and  
20 personal growth. This involves ensuring regular and diverse availability, as well as consistent  
21 support that extends beyond performance, thereby reinforcing the perception of a caring and  
22 protective environment.

23 **References**

24 Arnold, R., & Fletcher, D. (Éds.). (2021). *Stress, well-being, and performance in sport*.  
25 Routledge, Taylor & Francis Group.

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

- 1 Britton, D. M., Kavanagh, E. J., & Polman, R. C. J. (2019). A Path Analysis of Adolescent  
2 Athletes' Perceived Stress Reactivity, Competition Appraisals, Emotions, Coping, and  
3 Performance Satisfaction. *Frontiers in Psychology*, *10*, 1151.  
4 <https://doi.org/10.3389/fpsyg.2019.01151>
- 5 Bruchon-Schweitzer, M., Rascle, N., Gélie, F., Fortier, C., Sifakis, Y., & Constant, A. (2003).  
6 Le questionnaire de soutien social de Sarason (SSQ6): Une adaptation française [The  
7 Sarason's Social Support Questionnaire (SSQ6): A French adaptation]. *Psychologie*  
8 *Française*, *48*(3), 41–53
- 9 Cece, V., Guillet-Descas, E., Nicaise, V., Lienhart, N., & Martinent, G. (2019). Longitudinal  
10 trajectories of emotions among young athletes involving in intense training centres : Do  
11 emotional intelligence and emotional regulation matter? *Psychology of Sport and Exercise*,  
12 *43*, 128- 136. <https://doi.org/10.1016/j.psychsport.2019.01.011>
- 13 Compas, B. E., Connor-Smith, J. K., Saltzman, H., Thomsen, A. H., & Wadsworth, M. E.  
14 (2001). Coping with stress during childhood and adolescence : Problems, progress, and  
15 potential in theory and research. *Psychological Bulletin*, *127*(1), 87- 127.  
16 <https://doi.org/10.1037/0033-2909.127.1.87>
- 17 Crocker, P. R. E., Gaudreau, P., & Tamminen, K. A. (2015). *Peter R. E. Crocker School of*  
18 *Kinesiology; University of British Columbia.*
- 19 Doron, J., Hayotte, M., d'Arripe- Longueville, F., & Leprince, C. (2024). Coping profiles of  
20 adolescent football players and association with interpersonal coping : Do emotional  
21 competence and psychological need satisfaction matter? *Scandinavian Journal of Medicine &*  
22 *Science in Sports*, *34*(1), e14550. <https://doi.org/10.1111/sms.14550>
- 23 Doron, J., Trouillet, R., Gana, K., Boiché, J., Neveu, D., & Ninot, G. (2014). Examination of  
24 the Hierarchical Structure of the Brief COPE in a French Sample : Empirical and Theoretical

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

- 1 Convergences. *Journal of Personality Assessment*, 96(5), 567- 575.  
2 <https://doi.org/10.1080/00223891.2014.886255>
- 3 Doron, J., Trouillet, R., Maneveau, A., Neveu, D., & Ninot, G. (2015). Coping profiles,  
4 perceived stress and health-related behaviors : A cluster analysis approach. *Health Promotion*  
5 *International*, 30(1), 88- 100. <https://doi.org/10.1093/heapro/dau090>
- 6 Dorsch, T. E., Smith, A. L., Blazo, J. A., Coakley, J., Côté, J., Wagstaff, C. R. D., Warner, S.,  
7 & King, M. Q. (2022). Toward an Integrated Understanding of the Youth Sport System.  
8 *Research Quarterly for Exercise and Sport*, 93(1), 105- 119.  
9 <https://doi.org/10.1080/02701367.2020.1810847>
- 10 Ferguson, S. L., G. Moore, E. W., & Hull, D. M. (2020). Finding latent groups in observed  
11 data : A primer on latent profile analysis in Mplus for applied researchers. *International*  
12 *Journal of Behavioral Development*, 44(5), 458- 468.  
13 <https://doi.org/10.1177/0165025419881721>
- 14 Gaudreau, P., Amiot, C. E., & Vallerand, R. J. (2009). Trajectories of affective states in  
15 adolescent hockey players : Turning point and motivational antecedents. *Developmental*  
16 *Psychology*, 45(2), 307- 319. <https://doi.org/10.1037/a0014134>
- 17 Gaudreau, P., & Blondin, J.-P. (2004). Different athletes cope differently during a sport  
18 competition : A cluster analysis of coping. *Personality and Individual Differences*, 36(8),  
19 1865- 1877. <https://doi.org/10.1016/j.paid.2003.08.017>
- 20 Gottlieb, B. H., & Bergen, A. E. (2010). Social support concepts and measures. *Journal of*  
21 *Psychosomatic Research*, 69(5), 511- 520. <https://doi.org/10.1016/j.jpsychores.2009.10.001>
- 22 Gould, D., Guinan, D., Greenleaf, C., Medbery, R., & Peterson, K. (1999). Factors Affecting  
23 Olympic Performance : Perceptions of Athletes and Coaches from More and Less Successful  
24 Teams. *The Sport Psychologist*, 13(4), 371- 394. <https://doi.org/10.1123/tsp.13.4.371>

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

- 1 Haslam, S. A., O'Brien, A., Jetten, J., Vormedal, K., & Penna, S. (2005). Taking the strain :  
2 Social identity, social support, and the experience of stress. *British Journal of Social*  
3 *Psychology*, 44(3), 355- 370. <https://doi.org/10.1348/014466605X37468>
- 4 Hayward, F. P. I., Knight, C. J., & Mellalieu, S. D. (2017). A longitudinal examination of  
5 stressors, appraisals, and coping in youth swimming. *Psychology of Sport and Exercise*, 29,  
6 56- 68. <https://doi.org/10.1016/j.psychsport.2016.12.002>
- 7 Herres, J. (2015). Adolescent coping profiles differentiate reports of depression and anxiety  
8 symptoms. *Journal of Affective Disorders*, 186, 312- 319.  
9 <https://doi.org/10.1016/j.jad.2015.07.031>
- 10 Holt, N. L., Hoar, S., & Fraser, S. N. (2005). How does coping change with development? A  
11 review of childhood and adolescence sport coping research. *European Journal of Sport*  
12 *Science*, 5(1), 25- 39. <https://doi.org/10.1080/17461390500076915>
- 13 Katagami, E., & Tsuchiya, H. (2017). *EŖects of Received Social Support on Athletes'*  
14 *psychological well-being*.
- 15 Kowalski, K. C., & Crocker, P. R. E. (2001). Development and Validation of the Coping  
16 Function Questionnaire for Adolescents in Sport. *Journal of Sport and Exercise Psychology*,  
17 23(2), 136- 155. <https://doi.org/10.1123/jsep.23.2.136>
- 18 Lafferty, M. E., & Dorrell, K. (2006). Coping strategies and the influence of perceived  
19 parental support in junior national age swimmers. *Journal of Sports Sciences*, 24(3),  
20 253- 259. <https://doi.org/10.1080/17461390500188702>
- 21 Lanza, S. T., Bray, B. C., & Collins, L. M. (2013). An introduction to latent class and latent  
22 transition analysis. In *Handbook of Psychology* (Vol. 2, p. 691- 716). Wiley.
- 23 Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer Publishing

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

- 1 Martinent, G., & Nicolas, M. (2016). A latent profile transition analysis of coping within  
2 competitive situations. *Sport, Exercise, and Performance Psychology*, 5(3), 218- 231.  
3 <https://doi.org/10.1037/spy0000062>
- 4 Masyn, K. E. (2017). Measurement Invariance and Differential Item Functioning in Latent  
5 Class Analysis With Stepwise Multiple Indicator Multiple Cause Modeling. *Structural*  
6 *Equation Modeling: A Multidisciplinary Journal*, 24(2), 180- 197.  
7 <https://doi.org/10.1080/10705511.2016.1254049>
- 8 Maurice, J., Devonport, T. J., & Knight, C. J. (2021). Toward Improved Triadic Functioning :  
9 Exploring the Interactions and Adaptations of Coaches, Parents and Athletes in Professional  
10 Academy Soccer Through the Adversity of COVID-19. *Frontiers in Psychology*, 12, 609631.  
11 <https://doi.org/10.3389/fpsyg.2021.609631>
- 12 McKay, A. K. A., Stellingwerff, T., Smith, E. S., Martin, D. T., Mujika, I., Goosey-Tolfrey, V.  
13 L., Sheppard, J., & Burke, L. M. (2022). Defining Training and Performance Caliber : A  
14 Participant Classification Framework. *International Journal of Sports Physiology and*  
15 *Performance*, 17(2), 317- 331. <https://doi.org/10.1123/ijsp.2021-0451>
- 16 Nicholls, A. R., Hemmings, B., & Clough, P. J. (2009). Stress appraisals, emotions, and  
17 coping among international adolescent golfers : Appraisal, emotion, coping. *Scandinavian*  
18 *Journal of Medicine & Science in Sports*, 20(2), 346- 355. [https://doi.org/10.1111/j.1600-](https://doi.org/10.1111/j.1600-0838.2009.00894.x)  
19 [0838.2009.00894.x](https://doi.org/10.1111/j.1600-0838.2009.00894.x)
- 20 Nicholls, A. R., Taylor, N. J., Carroll, S., & Perry, J. L. (2016). The Development of a New  
21 Sport-Specific Classification of Coping and a Meta-Analysis of the Relationship between  
22 Different Coping Strategies and Moderators on Sporting Outcomes. *Frontiers in Psychology*,  
23 7. <https://doi.org/10.3389/fpsyg.2016.01674>
- 24 Nicolas, M., Martinent, G., & Campo, M. (2014). Evaluation of the psychometric properties  
25 of a modified Positive and Negative Affect Schedule including a direction scale (PANAS-D)

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

- 1 among French athletes. *Psychology of Sport and Exercise*, 15(3), 227- 237.  
2 <https://doi.org/10.1016/j.psychsport.2014.01.005>
- 3 Nylund-Gibson, K., Grimm, R. P., & Masyn, K. E. (2019). Prediction from Latent Classes : A  
4 Demonstration of Different Approaches to Include Distal Outcomes in Mixture Models.  
5 *Structural Equation Modeling: A Multidisciplinary Journal*, 26(6), 967- 985.  
6 <https://doi.org/10.1080/10705511.2019.1590146>
- 7 Pensgaard, A. M., & Duda, J. L. (2003). Sydney 2000 : The Interplay between Emotions,  
8 Coping, and the Performance of Olympic-Level Athletes. *The Sport Psychologist*, 17(3),  
9 253- 267. <https://doi.org/10.1123/tsp.17.3.253>
- 10 Pété, E., Leprince, C., Lienhart, N., & Doron, J. (2022). Dealing with the impact of the  
11 COVID-19 outbreak : Are some athletes' coping profiles more adaptive than others?  
12 *European Journal of Sport Science*, 22(2), 237- 247.  
13 <https://doi.org/10.1080/17461391.2021.1873422>
- 14 Reeves, C. W., Nicholls, A. R., & McKenna, J. (2009). Stressors and Coping Strategies  
15 among Early and Middle Adolescent Premier League Academy Soccer Players : Differences  
16 According to Age. *Journal of Applied Sport Psychology*, 21(1), 31- 48.  
17 <https://doi.org/10.1080/10413200802443768>
- 18 Sheridan, D., Coffee, P., & Lavalley, D. (2014). A systematic review of social support in  
19 youth sport. *International Review of Sport and Exercise Psychology*, 7(1), 198- 228.  
20 <https://doi.org/10.1080/1750984X.2014.931999>
- 21 Spurk, D., Hirschi, A., Wang, M., Valero, D., & Kauffeld, S. (2020). Latent profile analysis : A  
22 review and “how to” guide of its application within vocational behavior research. *Journal of*  
23 *Vocational Behavior*, 120, 103445. <https://doi.org/10.1016/j.jvb.2020.103445>

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

- 1 Staff, H. R., Didymus, F. F., & Backhouse, S. H. (2020). Dyadic coping in coach-athlete  
2 relationships : A grounded theory. *Psychology of Sport and Exercise*, 50, 101741.  
3 <https://doi.org/10.1016/j.psychsport.2020.101741>
- 4 Tagliavini, E. F., Harwood, C. G., Jowett, S., & Thrower, S. N. (2023). A Collective Case  
5 Study of Parent–Athlete–Coach Triads in British Youth Tennis. *The Sport Psychologist*, 1- 14.  
6 <https://doi.org/10.1123/tsp.2023-0014>
- 7 Tamminen, K. A., & Holt, N. L. (2012). Adolescent athletes' learning about coping and the  
8 roles of parents and coaches. *Psychology of Sport and Exercise*, 13(1), 69- 79.  
9 <https://doi.org/10.1016/j.psychsport.2011.07.006>
- 10 Tein, J.-Y., Coxe, S., & Cham, H. (2013). Statistical Power to Detect the Correct Number of  
11 Classes in Latent Profile Analysis. *Structural Equation Modeling: A Multidisciplinary*  
12 *Journal*, 20(4), 640- 657. <https://doi.org/10.1080/10705511.2013.824781>
- 13 Tennant, R., Hiller, L., Fishwick, R., Platt, S., Joseph, S., Weich, S., Parkinson, J., Secker, J.,  
14 & Stewart-Brown, S. (2007). The Warwick-Edinburgh Mental Well-being Scale  
15 (WEMWBS) : Development and UK validation. *Health and Quality of Life Outcomes*, 5(1),  
16 63. <https://doi.org/10.1186/1477-7525-5-63>
- 17 Thoits, P. A. (2011). Mechanisms Linking Social Ties and Support to Physical and Mental  
18 Health. *Journal of Health and Social Behavior*, 52(2), 145- 161.  
19 <https://doi.org/10.1177/0022146510395592>
- 20 Trousselard, M., Steiler, D., Dutheil, F., Claverie, D., Canini, F., Fenouillet, F., Naughton, G.,  
21 Stewart-Brown, S., & Franck, N. (2016). Validation of the Warwick-Edinburgh Mental Well-  
22 Being Scale (WEMWBS) in French psychiatric and general populations. *Psychiatry Research*,  
23 245, 282- 290. <https://doi.org/10.1016/j.psychres.2016.08.050>
- 24 Watson, D., Anna, L., & Tellegen, A. (1988). *Development and Validation of Brief Measures*  
25 *of Positive and Negative Affect : The PANAS Scales.*

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1 Zimmer- Gembeck, M. J., & Locke, E. M. (2007). The socialization of adolescent coping  
 2 behaviours : Relationships with families and teachers. *Journal of Adolescence*, 30(1), 1- 16.  
 3 <https://doi.org/10.1016/j.adolescence.2005.03.001>

4

5

6

7

8

9

10

11

12

13

14 **Table 1**15 *Fit indices for latent profile analysis models with 1-5 classes*

No. of classes	1	2	3	4	5
No. of free parameters	8	13	18	23	28
Log likelihood	- 2614.520	-2770.59	-2542.49	<b>-2526.43</b>	-2510.61
AIC	5245.041	5167.19	5120.973	<b>5098.87</b>	5077.21
BIC	5278.108	5220.92	5195.375	<b>5193.93</b>	5192.95
ABIC	5252.718	5179.66	5138.248	<b>5120.94</b>	5104.08
Entropy	NA	0.561	0.643	<b>0.665</b>	0.656
LMR	NA	87.856*	56.212*	<b>32.108</b>	31.656
BLRT	NA	87.856***	56.212***	<b>32.108***</b>	31.656***
Sample size of subgroups	C1 = 461	C1 = 169	C1 = 96	<b>C1 = 23</b>	C1 = 15

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

C2 = 292	C2 = 80	<b>C2 = 115</b>	C2 = 62
	C3 = 285	<b>C3 = 260</b>	C3 = 197
		<b>C4 = 63</b>	C4 = 77
			C5 = 110

---

1 Notes. AIC = Akaike information criterion; BIC = Bayesian information criterion; ABIC: adjusted BIC; LMR =  
 2 Lo–Mendell–Rubin likelihood ratio test; BLRT = bootstrap likelihood ratio test; C = class; NA = not applicable.

3 \*\*\* $p < .001$ ; \* $p < .05$

4

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

1 **Table 2**

	<b>Low coping profile (P1) <i>N</i> = 23</b>	<b>Engaged coping profile (P2) <i>N</i> = 115</b>	<b>Moderate coping profile (P3) <i>N</i> = 260</b>	<b>Disengaged coping profile (P4) <i>N</i> = 63</b>		
<b><u>Covariates</u></b>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>		
Avail. of parent support	3.19 (1.58)	4.23 (1.25)	4.08 (1.22)	3.49 (1.40)		
Avail. of coach support	2.56 (1.31)	3.06 (1.47)	2.84 (1.31)	2.09 (1.36)		
Satisf. of parent support	4 (1.35)	4.51 (0.86)	4.27 (1.06)	3.90 (1.19)		
Satisf. of coach support	3.22 (1.38)	3.57 (1.27)	3.50 (1.13)	2.81 (1.38)		
	<b>P1 v P2 LRE (OR)</b>	<b>P1 v P3 LRE (OR)</b>	<b>P1 v P4 LRE (OR)</b>	<b>P2 v P3 LRE (OR)</b>	<b>P2 v P4 LRE (OR)</b>	<b>P3 v P4 LRE (OR)</b>
Avail. of parent support	0.195 (1.215)	0.065 (1.067)	-0.298 (0.742)	-0.130 (0.878)	-0.493* (0.611)	-0.363* (0.696)
Avail. of coach support	0.310 (1.363)	0.156 (1.169)	-0.351 (0.704)	-0.153 (0.858)	-0.660* (0.517)	-0.507* (0.602)
Satisf. of parent support	0.664*	0.226	-0.082	-0.437	-0.746*	-0.309*

2 *Effect of covariates on membership of athletes' coping profiles*

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

	(1.942)	(1.254)	(0.921)	(0.646)	(0.474)	(0.734)
Satisf. of coach support	0.255	0.214	-0.315	-0.041	-0.570*	-0.529*
	(1.290)	(1.239)	(0.730)	(0.960)	(0.566)	(0.589)

1 Notes. Avail = Availability; LRE = Logistic regression estimates; OR = odds ratio; Satisf = Satisfaction.

2 \* $p < .05$

3

4

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

**Table 3***Comparison of the four coping profiles against study variables*

	<b>Low coping profile (P1)</b> <i>N</i> = 23 <i>M</i> ( <i>SD</i> )	<b>Engaged coping profile (P2)</b> <i>N</i> = 115 <i>M</i> ( <i>SD</i> )	<b>Moderate coping profile (P3)</b> <i>N</i> = 260 <i>M</i> ( <i>SD</i> )	<b>Disengaged coping profile (P4)</b> <i>N</i> = 63 <i>M</i> ( <i>SD</i> )	<i>F</i> -value	<i>p</i> -value	Partial $\eta^2$	<b>Bonferroni post-hoc</b>
					<b>7.02</b>	<b>&lt;0.001</b>	<b>0.12</b>	<b>NA</b>
Stress intensity	2.04 (1.22)	2.55 (1.23)	2.73 (1.06)	3.54 (0.95)	15.25	<0.001	0.09	4 > 1,2,3 1 < 3
Stress direction	2.00 (1.48)	2.56 (1.26)	2.58 (1.10)	2.44 (1.07)	1.90	0.129	0.01	NA
Perception of control	3.22 (1.62)	3.61 (1.06)	3.20 (1.01)	2.32 (1.07)	19.95	<0.001	0.12	4 < 1,2,3 2 > 3
Pleasant emotion ( <i>intensity</i> )	2.65 (0.77)	3.35 (0.66)	3.13 (0.62)	2.73 (0.68)	16.32	<0.001	0.10	2 > 1,3,4 3 > 1,4
Unpleasant emotion ( <i>intensity</i> )	1.74 (0.69)	1.88 (0.69)	1.98 (0.71)	2.62 (0.83)	17.16	<0.001	0.10	4 > 1,2,3
Pleasant emotion ( <i>direction</i> )	0.30 (1.10)	1.03 (0.87)	0.98 (0.84)	0.24 (0.84)	17.37	<0.001	0.10	2, 3 > 1,4
Unpleasant emotion ( <i>direction</i> )	-0.30 (0.76)	0.01 (0.80)	-0.10(0.91)	-0.51(0.84)	5.39	0.001	0.03	4 < 2, 3
Individual subjective performance	2.43 (1.47)	2.85 (1.24)	2.78 (1.08)	1.73 (1.19)	15.77	<0.001	0.94	2,3 > 4
Well-being	43.87 (12.34)	53.10 (6.45)	50.27 (6.49)	42.25 (9.65)	36.58	<0.001	0.19	2 > 1,3,4 3 > 1,4

Note.

NA=

not

applicable.

## COPING PROFILES OF ADOLESCENT ATHLETES IN INTENSIVE TRAINING CENTRES

**Figure 1***Standardised scores of athletes coping profiles for LPA*