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AROUND THE WORLD

Mindfulness and Psychological Inflexibility in Portuguese Adolescent Athletes: A Novel Framework for Understanding the Link Between Shame and Sports Anxiety

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This study aimed to test a comprehensive model in adolescent athletes that explores the effect of shame on sports anxiety and whether psychological inflexibility and mindfulness influence this association. The sample study included 210 young Portuguese athletes from different competitive sports. The path analysis results confirmed the adequacy of the proposed model, which explained 49% of the variance in sports anxiety. Results demonstrated that athletes who experienced higher levels of shame tended to exhibit elevated levels of sports anxiety through lower levels of mindfulness and higher psychological inflexibility. The study offers new empirical data that may be relevant for clinical and sport psychology practitioners. These findings seem to underline the importance of addressing shame and, consequently, sports anxiety in adolescent athletes by developing greater psychological flexibility and, inherently, more mindfulness skills among adolescent athletes who are in a phase of their lives where sport can play a crucial role.

Keywords: young athletes, competitive anxiety, sports shame

Research on mental health in the context of sport has grown quickly in the past few years (Rice et al., 2016). Some of the risk factors identified for athletes' mental health are sports anxiety, fear of failure, shame, fear of negative evaluations from others, and exposure to pressure and expectations associated with sports success

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(e.g., Gabrys & Wontorczyk, 2023; Küttel & Larsen, 2020; Oliveira et al., 2019). In fact, athletes are commonly assessed under performance and success criteria by external figures (Sagar et al., 2007). The sports context is essentially a public arena for competition, where successes and failures are perceived in the eyes of many spectators, such as parents, teammates, coaches, and media (Ryall, 2019). Therefore, athletes are typically conscious of how their performances could be compared with others (Ryall, 2019). The way they see themselves compared with others may assume a key role in contributing to their well-being and mental health (Walton et al., 2020). Coming in last place, being the coach's second choice, failing, or being struck out are usual experiences in sports that may elicit difficult emotions for athletes, such as shame (Ryall, 2019). In fact, shame is a central emotion experienced in the sport domain (Ryall, 2019).

Universally experienced, shame emerges from the inherent human need for social connection and attachment to others (Gilbert, 2000). Shame arises in the social context when individuals believe others see or evaluate them as unattractive, defective, inferior, or inadequate (e.g., Gilbert, 2003). Therefore, shame directs the attentional focus for social threats (Gilbert, 2000) and typically arouses a set of defensive responses that aim to correct undesirable perceived personal features or attitudes to buffer negative social consequences, such as rejection, social criticism, and ostracism (Cacioppo & Patrick, 2008; Gilbert, 2000). Thus, shame motivates striving or working hard to correct one's behaviors and/or characteristics in order to seem desirable and be accepted by others (Gilbert & Procter, 2006). Whereas some people may be able to tolerate shame feelings to some degree, others cannot tolerate these affects and tend to cope with shame using defensive behaviors (e.g., flight/escape, submission, hiding, concealment, fighting, and compensation), which can be highly maladaptive and contribute to perpetuating shame (Gilbert, 1998; Tangney & Dearing, 2002).

Thus, in the context of athletes, feelings of devaluation or inferiority, associated with shame, may arise when they perceive their failures or mistakes as indications of their own inadequacy and personal worthlessness in the eyes of significant others like parents, peers, and coaches (Brown et al., 2017; Gilbert, 2000; Vilela & Gomes, 2015). This negative perception of external evaluation may be internalized and trigger heightened feelings of insecurity, anxiety, stress, and avoidance behaviors are likely to emerge more intensely (Moreno-Murcia & Conte, 2011). However, few studies have explored the impact of shame on athletes (Fontana & Fry, 2017), particularly the association between sports shame and anxiety in competitive athletes (Kaplánová, 2021; Partridge & Wiggins, 2008).

A negative association between mindfulness and shame has been identified, supporting mindfulness as an effective tool for regulating challenging emotions like shame (Sedighimornani et al., 2019). These data support the assumption that mindfulness helps rendering difficult and painful emotions less threatening and upsetting since there is an inclination to observe the experience objectively and without any assumptions or assigning meaning (Bishop et al., 2004). Mindfulness can be defined as the awareness that arises through paying attention on purpose, in the present moment, nonjudgmentally, that is, without attempting to control, change, or avoid any of these internal experiences (e.g., Brown et al., 2007; Kabat-Zinn, 1994). Research has shown that mindfulness-based interventions can improve interpersonal, cognitive, affective, physical, and mental health outcomes

(Creswell, 2017). Successful sports performance requires a balance among the given athlete's physiological, psychological, and interpersonal capacities and readiness, with mindfulness potentially affecting an athlete's skill to achieve peak performances (Creswell, 2017). In fact, mindfulness has become relevant in the context of sport because the practices teach present moment regulation that is crucial to athletic performance (Henriksen et al., 2019). Specifically, mindfulness has been found to be positively associated with flow in athletes, regardless of gender or sport type (Cathcart et al., 2014; Zhang et al., 2017), and mindfulness-based interventions have been shown to improve sport-associated physiological activations (e.g., salivary cortisol levels and immune responses), psychological status indicators (e.g., flow and anxiety reduction), and sport performances (e.g., shooting and dart throwing performances; Buhlmayer et al., 2017).

Psychological inflexibility is conceptualized as the inability to engage in patterns of effective actions related to important values or life directions, as well as the unwillingness to accept unwanted internal experiences (e.g., Hayes et al., 2006, 2012). Two crucial processes involved in the comprehension and definition of psychological inflexibility are cognitive fusion and experiential avoidance (Hayes et al., 2006; Muris et al., 2017). Cognitive fusion is the phenomenon in which the individual becomes entangled with their own thoughts, understanding them as literal instead of subjective transitional internal contents (Gillanders et al., 2014; Hayes et al., 2006; Luoma & Hayes, 2003). Experiential avoidance arises as a maladaptive strategy or set of behaviors to avoid, escape, or control unwanted internal events (Hayes et al., 2006). Indeed, psychological inflexibility refers to a rigid pattern of internal events that have not proven useful in taking truly valued actions (Bond et al., 2011). Athletes with greater psychological inflexibility may get stuck in vicious negative avoidance patterns, show less effective behaviors, and miss out on opportunities for optimal performance (Moore, 2009). Therefore, when psychological inflexibility prevails, people may engage in excessively and rigidly regulatory strategies to avoid or control undesirable thoughts, emotions, and behaviors, which can lead to several difficulties and psychological suffering, such as anxiety (e.g., Hayes et al., 2006; Kashdan & Rottenberg, 2010). Mindfulness and psychological inflexibility can be considered emotional regulation processes that are inversely related, considering that a lower ability to be conscious in the present moment may be associated with a pattern of psychological inflexibility, often characterized by cognitive fusion and experiential avoidance (Cherry et al., 2021). However, it seems to be important to clarify the role that each of them (mindfulness and psychological inflexibility) may have in the relationship between shame and sports anxiety.

Anxiety is frequently experienced by athletes, both amateur and elite sports athletes, and either young or adult athletes (Hasanah & Refanthira, 2020). In sports competitions, anxiety is strongly influenced by factors related to fear of failure, fear of the social consequences of one's performance, and fear of not being able to fulfill the functions necessary for competition (Hasanah & Refanthira, 2020). Sports anxiety can lead to a variety of behavioral difficulties, which can, in turn, be associated with poor performance or even avoidance of competition and training (Henriksen et al., 2019). For example, an athlete under pressure in a game-deciding moment may play defensively to avoid anxiety (Henriksen et al., 2019). A more anxious athlete will usually try to avoid any situation that may make them think, feel, or experience something unpleasant (Henriksen et al., 2019). In this sense, intervention programs

have been developed; however, the role of the processes (e.g., mindfulness, cognitive fusion, and experiential avoidance) that are targeted in these interventions in adolescent athletes remains little explored (Oliveira et al., 2021).

In the realm of sports, the adolescent population is insufficiently researched (e.g., Naughton et al., 2000). Adolescence corresponds to a transitional phase between childhood and adulthood that is marked by several developmental changes in the physical, psychological, social, and neurobiological areas (e.g., Del Ciampo & Del Ciampo, 2020). These changes can elicit age-related concerns, such as concerns regarding pubertal changes (Brown et al., 2018). Adolescents spend much time comparing themselves to peers and worrying over perceived physical differences (Farrell, 1992; Hofmann, 1997). Therefore, it is a period that could increase vulnerability to emotional difficulties, particularly shame (e.g., Cunha et al., 2012; Refanthira & Hasanah, 2020). Adolescent athletes also confront additional challenges related to sport. Due to pressure from their parents and coaches, adolescent athletes are gradually experiencing higher stress levels (Brown et al., 2018). Also, sports activity throughout adolescence can be used to impress others or rise in social status (Patel & Luckstead, 2000; Patel et al., 1998). Thus, in addition to all the challenges inherent to age, adolescent athletes still face extra sport-specific issues, such as those related to sport specialization and social evaluation (what teammates, parents, or coaches think).

In the past two decades, mindfulness- and acceptance-based interventions have gained popularity in the sport psychology literature (Gardner & Moore, 2004; Gardner et al., 2017; Hegarty & Hulesmann, 2020), and several programs have been developed and implemented with promising outcomes among athletes (e.g., Kaufman et al., 2009). However, little is known about the role of the processes (e.g., mindfulness, cognitive fusion, and experiential avoidance) targeted in these interventions in adolescent athletes (Oliveira et al., 2021). Furthermore, in accordance with a recent study, there is limited research into the experiences of shame in athletes, especially in the phase of adolescence (Rice et al., 2021). Thus, given the scarce literature on this subject in adolescent athletes, the present study aimed to test a comprehensive model that explores the effect of shame on their sports anxiety and whether mindfulness and psychological inflexibility significantly act in this association while controlling the effect of the age of adolescent athletes. It was hypothesized that shame might be associated with higher levels of sports anxiety through lower levels of mindfulness, which in turn are associated with higher levels of psychological inflexibility. In this sense, we hypothesize that athletes who experience higher levels of sport shame may tend to be less aware of the present moment in an intentional and nonjudgmental way (mindfulness) and therefore will have a greater tendency to engage in controlling thoughts and behaviors or avoidance of unwanted experiences (psychological inflexibility), processes that can be associated with the experience of higher levels of sports anxiety.

Materials and Methods

Participants

This study included 210 Portuguese young athletes (112 boys and 98 girls) from different sports: athletics ($n = 61$), handball ($n = 23$), basketball ($n = 21$), soccer

($n = 20$), volleyball ($n = 20$), canoeing ($n = 15$), gymnastics ($n = 11$), swimming ($n = 8$), rugby ($n = 7$), roller hockey ($n = 7$), judo ($n = 6$), badminton ($n = 5$), futsal ($n = 4$), rowing ($n = 1$), and cycling ($n = 1$). The mean age was 17.71 ($SD = 1.82$), ranging from the ages of 12 to 19. Regarding competitive level, 33 athletes competed at district level, 23 at regional level, 89 at national level, and 65 at international level, and presented a mean of 8.09 ($SD = 4.30$) years of practice of sport.

Procedures

This study respected all ethical and deontological requirements inherent to scientific research. The study was approved by the Ethical Board of the Faculty where it was conducted.

The study's sample was collected by contacting a varied range of sports clubs in Portugal. The first step was to contact, by email or telephone, the clubs' managers to inform them regarding the objectives and procedures of the study and find out the possibility of data collection with their young athletes. Each club provided interested athletes and their legal tutor's detailed information about this study (aims, procedures, confidential, and voluntary nature). Once written informed consent was obtained from all athletes' legal tutors, athletes enrolled in the present study. The legal tutors of the athletes provided an email for the researcher to be able to send a link which would allow access to an online platform with the self-report protocol that would be answered by the young athletes. According to the objectives of the present study, the inclusion criteria were: (a) to practice a competitive sport, (b) to be aged between 12 and 19, and (c) to have a good command of Portuguese language. There were no missing data, as the platform only allows the submission of the questionnaires when all questions have been completed.

Measures

Participants gave demographic information (gender, age, and years of education) and sports data (the type of sport, level of competition, and years of practice of the respective sport), and completed the Portuguese validated versions of the following instruments.

External and Internal Shame Scale for Adolescents

External and Internal Shame Scale for Adolescents (EISS-A; Cunha et al., 2021). EISS-A aims to assess adolescents' feelings of internal and external shame, as well as a global sense of shame. This measure is composed of eight items, and participants answered according to a 5-point scale (0 = *never* to 4 = *always*). Higher scores indicate higher levels of shame. In the present study, we used an adapted version of the EISS-A to assess participants' shame levels in the sport context. Only the initial instructions were changed, focusing on the context of sport. The global score was used in this study, which presented good psychometric properties for both the original ($\alpha = .85$) and the present study ($\alpha = .82$).

Child and Adolescent Mindfulness Measure

Child and Adolescent Mindfulness Measure (Cunha et al., 2013; Greco et al., 2011). Child and Adolescent Mindfulness Measure comprises ten items that allow the assessment of mindfulness skills in children and adolescents. The items are answered in accordance with a 5-point scale (0 = *never* to 4 = *always*). After the items are inverted, a higher score represents more mindfulness skills. In the original and Portuguese versions, the total scores demonstrated a good internal consistency ($\alpha = .80$, in both versions). In the present study, this measure presented a Cronbach's alpha of .86.

Avoidance and Fusion Questionnaire for Youth

Avoidance and Fusion Questionnaire for Youth (AFQY-8; Cunha et al., 2023; Greco et al., 2008). AFQY-8 is a self-response instrument consisting of eight items that assess psychological inflexibility produced by cognitive fusion and experiential avoidance. Participants are requested to assess the veracity of each statement, on a 5-point scale (0 = *not at all true* to 4 = *very true*). Higher scores indicate greater psychological inflexibility. This scale showed good psychometric properties in the original version ($\alpha = .83$) and in the Portuguese version ($\alpha = .70$). In this study, AFQY-8 presented a Cronbach's alpha of .85.

Sport Anxiety Scale

Sport Anxiety Scale (SAS-2; Cruz & Gomes, 2007; Smith et al., 2006). SAS-2 is a multidimensional instrument that assesses the competitive anxiety trait. This scale comprises 15 items that are divided into three subscales: somatic anxiety, worry, and concentration disturbance. Items are evaluated using a Likert-type scale ranging from 1 (*never*) to 4 (*almost always*). Higher scores in this measure indicate higher levels of competitive anxiety. Cronbach's alpha values were satisfactory across all dimensions in the original and Portuguese versions (alpha values above .70). In this study, SAS-2 revealed a Cronbach's alpha of .90.

Data Analyses

In order to conduct descriptive and correlation analyses, the software IBM SPSS Statistics (version 22.0) was used. The values of skewness and kurtosis were examined to test the normality of the distribution of the variables in this study (Kline, 2005). Also, the multivariate normality of the items was evaluated by the Mahalanobis distance (D^2) and statistically by Mardia's normalized estimate of multivariate kurtosis in the form of the critical ratio of kurtosis in AMOS (IBM SPSS AMOS). A critical ratio of kurtosis lower than five indicates multivariate normality (Byrne, 2010). Pearson correlation coefficient analyses were performed to examine the associations between age, shame, mindfulness, psychological inflexibility, and sports anxiety. These coefficients were interpreted in accordance with the guidelines of Cohen et al. (2003), which categorize correlations ranging between .1 and .3 as weak, those between .3 and .5 as moderate, and those above .5 as strong, while considering a significance level of .05.

AMOS software was used to test the proposed theoretical model (Figure 1). This model tested the hypothesis that shame (exogenous, independent variable)

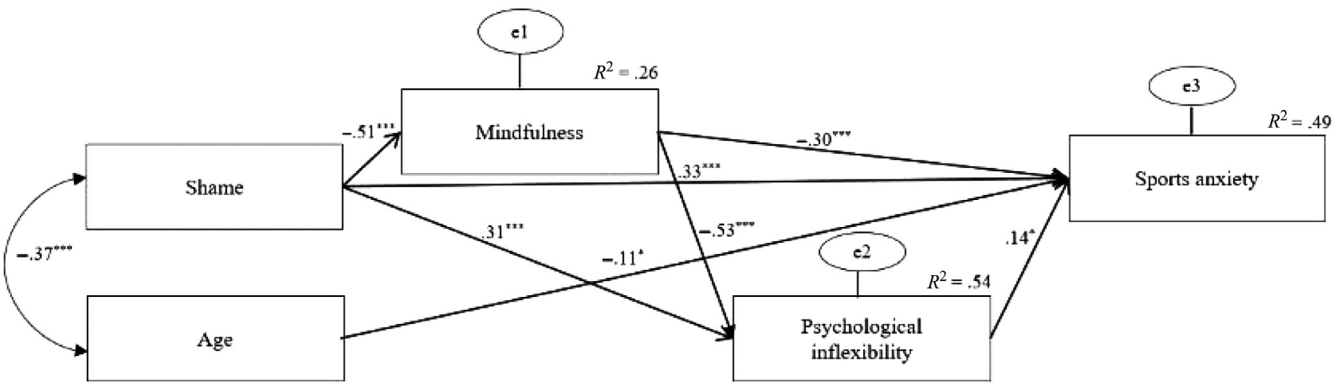

Figure 1 — Final path model. *Note*. $^{*}p < .05$; $^{**}p < .005$; $^{***}p < .001$.

would present a significant effect on sports anxiety (endogenous, dependent variable), through the mediational effects of mindfulness and psychological inflexibility (endogenous, mediator variables). The effect of age was controlled. To estimate the regression coefficients and fit statistics in the path model, the maximum-likelihood method was used. The adequacy of this model was tested taking into account the following goodness of fit indices: chi-square (χ^2), when nonsignificant indicates a very good model fit; the normed chi-square (χ^2/df), which indicates an acceptable fit when <5; the comparative-fit index and Tucker–Lewis index, which indicate a very good fit with values above .95; and the root mean square error of approximation index, which indicates an adequate fit when values are <.08 (Kline, 2005). The bootstrap procedure with 5,000 samples was used to create 95% bias-corrected confidence intervals around the standardized estimates of the significance of total, direct, and indirect effects. The effect is statistically significant ($p < .05$) if zero is not included between the lower bound and the upper bound of the 95% bias-corrected confidence interval (Kline, 2005).

Results

Preliminary Data Analyses

In order to test the normality of the distribution of the study variables, skewness and kurtosis were analyzed (Kline 2005). The skewness values ranged from –0.01 to 1.20 (in the variable of mindfulness and in the variable of shame, respectively). Kurtosis presented values ranging from –0.68 to 1.15 (in the variable of psychological inflexibility and in shame, respectively), which indicates that the data presented a normal distribution (Kline, 2005). Furthermore, multivariate outliers were not detected, and the Mardia's coefficient of multivariate kurtosis in the sample was 2.09, showing multivariate normality.

Descriptive Analyses

The descriptive analyses and correlations between the study variables are presented in Table 1.

Table 1 Means, *SD*, and Correlations Between the Study Variables (*N* = 210)

	M	*SD*	1	2	3	4
1. Shame	7.08	6.05	—	—	—	—
2. Mindfulness	23.62	7.15	–.51***	—	—	—
3. Psychological inflexibility	11.71	6.78	.57***	–.68***	—	—
4. Sports anxiety	31.67	8.05	.61***	–.58***	.56***	—
5. Age	17.11	1.82	–.37***	.12	–.18**	–.30***

Note. Shame = External and Internal Shame Scale—Adolescents; Mindfulness = Child and Adolescent Mindfulness Measure; Psychological inflexibility = Avoidance and Fusion Questionnaire for Youth-8; Sports anxiety = Sports Anxiety Scale-2.
**$p < .005$; ***$p < .001$.

Correlations Analyses

Results from correlation analyses showed that shame was negatively associated with mindfulness (with strong magnitude) and positively associated with psychological inflexibility and sports anxiety (both with strong magnitudes). Mindfulness was strongly negatively correlated with psychological inflexibility and sports anxiety. In turn, between psychological inflexibility and sports anxiety, a positive and strong correlation was found. Although age was not significantly correlated with mindfulness, it was significantly negatively correlated with shame, psychological inflexibility, and sports anxiety (Table 1).

Path Analyses

Path analyses were performed to explore the effect of shame on sports anxiety, through mindfulness and psychological inflexibility, while controlling the effect of age.

First, the path model was tested through a saturated model (i.e., 0 *df*), comprising 20 parameters. In accordance with the recommendations of Bentler and Chou (1987), the minimum sample size was 100 participants.

Results indicated that two paths were not significant: the direct effect of age on psychological inflexibility ($b_{age} = -0.02$; $SE_b = .19$; $Z = -0.11$; $p = .914$), and the direct effect of age on mindfulness ($b_{age} = -0.33$; $SE_b = .25$; $Z = -1.31$; $p = .190$). These paths were progressively eliminated, and the model was readjusted.

The final model presented an excellent fit to the empirical data, as indicated by the analysis of well-known and recommended goodness-of-fit indices ($\chi^2[2] = 1.72$, $p = .423$, $\chi^2/df = 0.860$; Tucker–Lewis index = 1.00; comparative-fit index = 1.00; root mean square error of approximation index = .00, $p = .587$; 95% confidence interval—CI [.00, .13]) (Kline, 2005).

Sport shame had a significant direct effect of −.51 on mindfulness ($b_{shame} = -0.60$; $SE_b = .07$; $Z = -8.47$; $p < .001$), of .31 on psychological inflexibility ($b_{shame} = 0.34$; $SE_b = .06$; $Z = 5.62$; $p < .001$), and of .33 on sports anxiety ($b_{shame} = 0.44$; $SE_b = .09$; $Z = 5.00$; $p < .001$). Mindfulness had a significant direct effect of −.53 on psychological inflexibility ($b_{mindfulness} = -0.50$; $SE_b = .05$; $Z = -9.68$; $p < .001$) and of −.30 on sports anxiety ($b_{mindfulness} = -0.34$; $SE_b = .08$; $Z = -4.33$; $p < .001$). Psychological inflexibility had a direct effect of .14 on sports anxiety ($b_{psychological\ inflexibility} = 0.17$; $SE_b = .09$; $Z = 1.97$; $p = .040$). Results also showed that age had a direct effect of −.11 on sports anxiety ($b_{age} = -0.50$; $SE_b = .24$; $Z = -2.09$; $p = .037$). The analyses of indirect effects showed that sport shame presented an indirect effect on psychological inflexibility through mindfulness ($\beta = 0.27$; 95% CI [0.19, 0.35]), and on sports anxiety through mindfulness and psychological inflexibility ($\beta = 0.23$; 95% CI [0.15, 0.32]). Finally, mindfulness presented an indirect effect on sports anxiety through psychological inflexibility ($\beta = -0.08$; 95% CI [0.01, 0.15]).

Overall, this model explained 26%, 54%, and 49% of the variance of mindfulness, psychological inflexibility, and sports anxiety, respectively, and revealed that mindfulness and psychological inflexibility partially mediate the effect of sport shame on sports anxiety (Figure 1).

Discussion

Research in the sports context has been largely focused on the study of sports anxiety (Correia & Rosado, 2019; Koehn, 2013). In fact, sports anxiety is commonly experienced by most athletes (Hasanah & Refanthira, 2020). Similarly, shame is also one of the most commonly felt experiences by athletes (Ryall, 2019). However, there are few studies that explore the relationship between these variables, especially among adolescent athletes. Taking into account that mindfulness and acceptance-based interventions have shown promising results in promoting different outcomes, such as sports performance, flow states, and others (Gardner, & Moore, 2004; Kaufman et al., 2009), the present study aimed to test an integrative model that explored the mediating role of mindfulness and psychological inflexibility in the relationship between sport shame and sports anxiety. More emphasis in the literature is needed in youth sport where the potential of supporting mental health at an earlier age could have significant effects later in life (Swann et al., 2018). This study addresses this need by specifically targeting adolescent athletes.

Correlational results demonstrated that, as expected, sport shame was negatively correlated with mindfulness and positively associated with psychological inflexibility and sports anxiety. Mindfulness was negatively associated with sports anxiety. Our results are in accordance with previous studies. For example, a positive association between sport shame scores and anxiety traits in competitive athletes has been found (Partridge &Wiggins, 2008). In fact, sports are highly visible and exist in a value achievement context, where failure can be interpreted by the athlete as a personal failure/lack of ability, which may be associated with more anxiety and performance issues. In our study, sport shame was negatively associated with mindfulness and positively with psychological inflexibility. These results are in accordance with previous studies in other populations of nonathletes. For example, a negative correlation between shame and mindfulness was found in adults of the general population and undergraduate participants (Sedighimornani et al., 2019; Woods & Proeve, 2014). Also, another recent study demonstrated a positive association between general feelings of shame and psychological inflexibility in adolescent girls of the general population (Mendes et al., 2021). However, to our knowledge, there are no studies that explore the relationship between shame, mindfulness, and psychological inflexibility in the sports context, especially with adolescent athletes.

On the other hand, the negative association between mindfulness and sports anxiety was supported by other studies in adult athletes (Plisco & Lyon, 2020; Scott-Hamilton et al., 2016). Also, the relationship between psychological inflexibility and sports anxiety seems to be new in the literature among adolescent athletes. For example, psychological inflexibility was correlated positively with anxiety as measured by Depression, Anxiety, and Stress Scale-21 (Lovibond & Lovibond, 1995) in a research study conducted by Hollingsworth (2018). Furthermore, in a study conducted by Zhang et al. (2014), mindfulness and psychological inflexibility predicted traits of anxiety in Chinese adult athletes. However, all these studies were conducted on adult athletes.

The path model further illuminated these relationships and clarified the particular role that mindfulness and psychological inflexibility play in the

relationship between sport shame and sports anxiety. The proposed theoretical model explained 26%, 54%, and 49% of the variance of mindfulness, psychological inflexibility, and sports anxiety, respectively, and revealed that mindfulness is associated with psychological inflexibility, and both partially mediate the effect of sport shame on sports anxiety. In other words, although shame demonstrates a direct effect on sports anxiety, this relationship is also mediated by mindfulness and psychological inflexibility. Indeed, the findings of this study indicated that adolescent athletes who reported experiencing higher levels of sport shame, which encompasses feelings of inferiority and inadequacy, tended to exhibit elevated levels of sports anxiety. This relationship was mediated by lower levels of the ability to be aware of the present moment in a mindful and nonjudgmental way and higher levels of psychological inflexibility or difficulty in adapting to changes, dealing with uncomfortable emotions, and adopting different perspectives. In fact, when athletes experience high levels of sport shame, they tend to focus on the past and/or the future and less on the present moment. As a result, they are more likely to become entangled in their thoughts and tend to avoid unwanted and uncomfortable events, even if they are important to them.

This innovative model that explores the relationship between sport shame, mindfulness, psychological inflexibility, and sports anxiety can be very useful in both practical and theoretical fields. An important contribution of this study is the fact that it focuses on adolescent athletes, allowing the exploration of the relationship between the aforementioned variables in this particular population and providing clues for possible interventions in this context. Interventions based on mindfulness and acceptance seem to be essential in the context of sport. Athletes are taught to control and/or reduce unwanted thoughts, feelings, and sensations, with the intended goal of directing all efforts toward achieving optimal performance (Bickley et al., 2016; Hardy et al., 1996). Striving for perfection and achievement often leads athletes to suppress emotions that may be perceived as weak or inappropriate (Sinden, 2014). Consequently, emotional suppression can eventually lead to increased distress that negatively affects the athletes (Lundqvist & Raglin, 2015). In fact, these strategies of control/suppression and of experiential avoidance (efforts made to avoid emotions, thoughts, memories, and other internal and external events) work as an omnipresent process, learned in the early years and reinforced by the socioverbal community throughout life. These strategies may promote psychological inflexibility, which leads to the exaggeration of human suffering (Eifert & Forsyth, 2005; Hayes et al., 1999).

In contrast, mindfulness is characterized as an alternative and adaptive strategy, given that it focuses on paying attention to the present moment in an intentional and nonjudgmental way, allowing us to accept the experience as it is, and therefore it can allow us to identify rigid patterns of functioning that prevent them from taking actions that are truly valued (Sedighimornani et al., 2019). In fact, mindfulness can help to mitigate psychological inflexibility, as it promotes the development of greater awareness of thoughts and emotions, allowing us to observe patterns of thought and behavior objectively without getting too involved in them. In this sense, it is possible to identify points of rigidity and inflexibility and explore more adaptive alternatives. Furthermore, practicing mindfulness can also help athletes regulate impulsive and emotional reactions, making them more aware of their habitual responses to stressful stimuli (Sánchez-Sánchez et al., 2023).

In this way, it allows athletes to consciously choose how to act rather than reacting automatically according to patterns of psychological inflexibility. Therefore, mindfulness practice can be an effective tool for decreasing psychological inflexibility.

Contrary to psychological inflexibility, mindfulness represents an adaptive way to deal with difficult emotions, such as shame. An important aspect of the experience of shame is the way in which one copes with or defends themselves against it. Shame and shame-coping may be adaptive or maladaptive (e.g., Nathanson, 1992). Thus, athletes who present more skills of mindfulness and less psychological inflexibility tend to regulate their difficult emotions effectively and do not tend to engage in higher levels of suffering.

Limitations

The following are some limitations to take into account. First, the cross-sectional design of the study does not allow the establishment of causal relationships among the variables. Despite the data of the present study being supported by robust statistical analyses, future research should test a longitudinal design to better explore the nature and directionality of the relationships among variables over time. Another limitation was the failure to control the quality of the data submitted associated with the exclusive use of self-report measures, which may introduce some bias (such as social desirability) that may compromise the validity of the findings. Thus, future studies should include the use of other assessment methodologies (e.g., structural interviews). Also, although the AFQY-8 is a measure to assess psychological inflexibility, it may be important to use other measures encompassing all the core processes inherent to the model of psychological (in)flexibility proposed by acceptance and commitment therapy (see Hayes et al., 2012). Measures such as Psy-Flex (Gloster et al., 2021), a questionnaire that assesses all six core processes involved in acceptance and commitment therapy, may be more suitable for future studies. Finally, though this study's objective was to specifically address the effect of shame on sports anxiety, the parsimonious model examined in the present study could not encompass all potentially relevant psychological processes, and other constructs (e.g., self-compassion) should be explored in future studies.

Clinical Implications

The present study offers new empirical data that may be relevant for clinical and sport psychology practitioners. This study seems to suggest that perceiving failures as a lack of aptitude or a personal inability (feelings of shame) may be at the root of young athletes' sports anxiety. Indeed, these novel findings seem to underline the importance of addressing sport shame and, consequently, sports anxiety in adolescent athletes, given that these are very common experiences in the sports context. Also, another implication of our research concerns the importance of mindfulness and psychological inflexibility in the sports context, especially for adolescent athletes.

Furthermore, this study intends to investigate the relationships between the variables under consideration in order to contribute to a better understanding of

shame and sports anxiety responsible for the difficulties experienced by many adolescent athletes. In fact, in the case of adolescents with higher levels of sports anxiety, due to the frequency of unwanted and intrusive thoughts and other internal events on one side and the high emotional levels on the other, we believe it is important to develop focus and concentration to present moment skills without critical judgment (mindfulness skills), as well as promote acceptance of internal experiences, imperfections, less successful performances, and difficult circumstances (contrarily to psychological inflexibility). Therefore, interventions in the sport context should be focused on promoting mindfulness skills and reducing the psychological inflexibility of athletes, promoting skills to focus attention on the present moment and concentrating on the task at hand instead of becoming entangled in thoughts associated with possible external judgments, and failing to do things that are important to them. This study reinforces the pertinence of developing more mindfulness skills and, inherently, decreasing psychological inflexibility among adolescent athletes in a phase where sport can play a crucial role.

Particularly in the Portuguese sporting context, approximately two-thirds of participants between 7 and 18 years old cease their involvement in competitive sport annually, and dropout rates reach especially high numbers in adolescence (Dias et al., 2010). Thus, although the benefits of practicing sports for children and young people are widely recognized in Portugal, the dropout rate during adolescence continues to be a concern for researchers in Portugal (Dias et al., 2010). A study conducted in the past decade in Portugal demonstrated that among the different reasons for abandoning sports among adolescents were "I lost the pleasure for practicing the sport" and "there was too much competition" (Dias et al., 2010). In this sense, the present study has important implications for the work that can be done with young athletes, allowing them to work on skills that could mitigate the sports dropout rate in Portugal.

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