Fitness-related self-conscious emotions (SCEs) have been proposed as antecedents of exercise addiction. However, the potential mechanisms underlying such a relationship remain unexplored. The present study examined the relationship between fitness-related SCEs and risk of exercise addiction (EA) by examining the mediating role of passion for exercise. A total of 296 male runners ($M=40.35$ years; $SD=10.69$) completed a survey assessing weekly exercise frequency/hours, fitness-related SCEs, passion for exercise, and the risk of EA. The relationships between the study variables were examined utilizing structural equation modeling. After controlling for age and weekly exercise frequency/hours, fitness-related SCEs of shame, guilt, and hubristic pride were positively associated with risk of EA. However, while guilt had direct effects on risk of EA, shame and hubristic pride showed indirect effects via obsessive passion. The results of the study are discussed, and some practical implications and future research directions are presented.

**Keywords:** body image; guilt; shame; pride; exercise addiction, exercise dependence
Exercise addiction (EA) is a possible behavioral disorder that involves exercising in a way that is difficult to control or reduce, and presents physiological symptoms (e.g., tolerance, withdrawal) and/or psychological symptoms (e.g., anxiety, depression) (Hausenblas & Symons-Downs, 2002). Although EA is still not a recognized disorder in the main diagnostic classifications (e.g., DSM-5; American Psychiatric Association, 2013; ICD-11; World Health Organization, 2018), interest in its study has been growing because of its association with physical, social, and psychological negative consequences (Hausenblas & Symons-Downs, 2002; Szabo, Demetrovics, & Griffiths, 2018). Given its potentially harmful consequences, understanding the factors that trigger EA is of interest in both preventing and treating this possible disorder.

Self-conscious emotions (SCEs) have been proposed to have a central role in explaining individual's behavior in achievement contexts such as exercise (Castonguay, Pila, Wrosch, & Sabiston, 2015; Castonguay, Sabiston, Kowalski, & Wilson, 2016). When it comes to examining exercise behavior, research on SCEs has focused on self-relevant domains such as body experiences (Castonguay et al., 2015; Castonguay, Sabiston, Crocker, & Mack, 2014; Tracy & Robins, 2007b). Body-related SCEs reflect evaluative experiences concerning how individuals perceive, feel, think, and behave regarding their bodies, and how they can be experienced in reference to appearance (i.e., what the body looks like) and functional aspects of the body (i.e., how the body performs) (Castonguay et al., 2015, 2014; Tagney & Tracy, 2012; Tracy & Robins, 2004). Their elicitation requires stable self-representations and self-evaluations of an individual’s own body, relative to internal and external standards (Robins & Schriber, 2009). Through this self-evaluation process, individuals compare their current self-representation (i.e., how individuals see themselves now) with their ideal self-representation (i.e., how they want to see themselves). The result that provokes such emotion depends on how
individuals appraise their current self-representation as either congruent or incongruent with their ideal self-representations.

Shame and guilt have been considered as negative SCEs insofar they reflect a discrepancy with respect to the (body) ideal with which an individual identifies. In both negative SCEs, individuals attribute the cause of the event to some internal factor, blaming themselves for the situation (Robins & Schriber, 2009; Tagney & Tracy, 2012; Tracy & Robins, 2004). However, shame and guilt can be differentiated based on the stability and globality of the causal attributions. Therefore, shame involves negative feelings about individual characteristics that are uncontrollable (e.g., individuals perceiving that they are not attractive/fit), whereas guilt involves negative feelings of individual behavior that are controllable (e.g., individuals perceiving that they are not doing enough to improve their own appearance/fitness).

Unlike shame and guilt, pride has been considered as a positive SCE because it is elicited by appraisals that are relevant and congruous with the identity's goal (e.g., body ideal) (Tagney & Tracy, 2012). However, as with shame and guilt, pride can also present two different facets according to the stability and globality of the causal attributions (Tracy & Robins, 2007a). Therefore, feelings of authentic pride are based on achievements derived from the individual's own behavior (e.g., looking good or being fit as a result of following a healthy diet and exercising regularly). Conversely, feelings of hubristic pride result from attributing these achievements to internal and stable causes, so that individuals evaluate themselves as better or superior to others (e.g., looking better or being fitter than others).

Although previous research has associated negative basic emotions (e.g., anger, anxiety) with risk of EA (Hausenblas & Symons-Downs, 2002), a study by Ertl et al. (2018) examined the association between body-related SCEs and risk of EA and found that body shame positively predicted risk of EA, both directly and indirectly (mediated via self-esteem).

These results suggest that women who are at risk of developing EA may not necessarily
experience low self-esteem while using exercise as a means of coping with, or compensating for, the negative evaluation they make of their bodies. Although the results of the Ertl et al. study are of interest, three limitations should be noted. First, this study only comprised a sample of undergraduate women, meaning further studies are necessary to examine the relationship between body-related SCEs and risk of EA in other populations (e.g., males, athletes). Second, the study did not consider positive SCEs although a recent study reported that positive body image encompasses unique features for the study of health-related variables such as exercise (Castonguay et al., 2014). Third, the study assessed an appearance-related SCE (i.e., body shame) and therefore did not consider other facets of body assessment that might explain risk of EA more fully. In fact, recent research has shown that that fitness-related aspects is a subdomain of body-related SCEs that might better explain exercise behavior than the appearance-related subdomain (Castonguay, Gilchrist, Mack, & Sabiston, 2013; Castonguay et al., 2016; Gilchrist, Pila, Castonguay, Sabiston, & Mack, 2018).

In addition to addressing the aforementioned limitations of the Ertl et al.’s (2018) study, the present study attempts to further advance our understanding of the relationship between the SCEs and risk of EA by considering the motivational process which might explain how these emotions may be associated with risk of EA. In fact, in the psychological literature, it has been suggested that body-related SCEs may underlie the motivational regulation of exercise behavior. (e.g., Gilchrist, Sabiston, Conroy, & Atkinson, 2018; Mack, Kouali, Gilchrist, & Sabiston, 2015; Sabiston et al., 2010). Similarly, research has shown that individuals who exercise for reasons that are more self-determined or autonomous (i.e., by choice or motives consistent with their identity goals), such as being healthier or learning new techniques, report a more positive body image and greater adherence to exercise than individuals exercising for controlled reasons or less self-determined motivation (i.e., deriving from internal pressure or external forces) such as appearance-related goals (Sabiston et al., 2010). Considering that exercise may be a reparative behavior of the immediate and salient feedback derived from
fitness-related SCEs (Castonguay et al., 2016; Mack et al., 2015), there is a possibility that the
relationship between such emotions and risk of EA could be affected by the motivational
process through which the individual is involved in exercise behavior. A construct that reflects
the motivational process in activities that involve intense and persistent participation, and
which might help explain the associations between fitness-related SCEs and EA, is the
construct of *passion* (Vallerand, 2015).

The Dualistic Model of Passion (DMP) proposed by Vallerand and colleagues
(Vallerand, 2008, 2012, 2015; Vallerand et al., 2003) has been widely applied to the exercise
context (De la Vega, Parastatidou, Ruiz-Barquín, & Szabo, 2016; Kovacsik et al., 2018;
Parastatidou, Doganis, Theodorakis, & Vlachopoulos, 2014; Sicilia, Alcaraz-Ibáñez, Lirola,
Burgueño, & Maher, 2018; Szabo, Griffiths, et al., 2018; Vallerand, 2012). From the DMP
perspective, passion is defined as a strong inclination toward an activity that individuals like,
that they find important, invest time in, and which defines part of their identity (Vallerand et
al., 2003). The DMP posits that two types of passion can be differentiated according to the
specific form in which the activity individuals feel passion for is internalized into their identity

In the context of exercise, harmonious passion (HP) reflects an autonomous
internalization of exercise which occurs when individuals have freely accepted exercise as
important to them without any contingencies attached to it (Vallerand, 2012, 2015). Thus,
individuals do not feel compelled or forced to exercise but rather choose to do it freely, being
in control of the activity and deciding when to do it, in such a way that they make it
harmonious with other life domains. Individuals who manifest HP towards exercise should be
in a position to concentrate on the activity and experience positive affect, psychological
wellbeing, and task satisfaction (Curran, Hill, Appleton, Vallerand, & Standage, 2015;
Vallerand, 2008). Conversely, obsessive passion (OP) results from a controlled internalization
of an activity within the individual’s identity (Vallerand, 2012, 2015). Controlled
internalization is produced by intrapersonal and/or interpersonal pressure deriving from contingencies attached to the exercise. Individuals who show OP eventually display a rigid persistence towards the exercise so that they experience an internal uncontrollable urge to engage in it, integrating the exercise practice into other life activities in a more rigid and conflicted way. OP has been associated positively with conflict between life activities, negative emotions, and risk of EA (De la Vega et al., 2016; Kovacsik et al., 2018; Marsh et al., 2013; Parastatidou et al., 2014; Sicilia et al., 2018; Vallerand et al., 2003).

According to DMP, the interpretation of social context plays a key role in the quality of the internalization process and, consequently, in the type of passion for exercise that individuals develop (Vallerand, 2015). Therefore, there is a possibility that individuals who feel forced to exercise to meet socially expectations in terms of physical fitness could develop a low-quality internalization or a controlled internalization process. Contrary to this, the fact that individuals do not feel forced to meet a given social standard in terms of physical fitness may lead them to act in an autonomous way, so that exercising is internalized autonomously (i.e., devoid of external contingencies) in the individual’s identity. In this regard, the elicitation of fitness-related SCEs may be considered an element rooted in the interpretation that individuals make from their social context which will affect the regulation of exercise behavior. Fitness-related SCEs are elicited through a self-evaluation process where individuals compare their current and ideal self-representations of fitness. However, as Leary (2007) suggests, SCEs are much more strongly associated with what individual thinks other individuals think than what individuals think of themselves, which can result in either an autonomous or controlled interpretation of the social context. Individuals who elicit negative fitness-related SCEs as a consequence of appraising the incongruence between their current self-representation and their ideal self-representation might feel a pressure to exercise as a way to live up to socially sanctioned standards, ideals, and expectations about fitness. These negative fitness-related SCEs reflect a process of internal control which implies a controlled interpretation of the social
context that would affect the internalization process of the behavior into the individual’s identity.

Although research has indicated that the type of passion for exercise helps explain risk of EA (De la Vega et al., 2016; Kovacsik et al., 2018; Sicilia et al., 2018), little previous research has examined the relationship between fitness-related SCEs and risk of EA, via the mediating role of passion for exercise. However, this appears to be endorsed by previous studies that have considered both positive and negative SCEs, and their differentiated results (Castonguay et al., 2016; Ertl et al., 2018; Sabiston et al., 2010).

Shame has been shown to have a positive association with risk of EA (Ertl et al., 2018). In turn, this emotion has shown to have a positive correlation with guilt (Castonguay et al., 2016), and both have been associated with maladaptive outcomes (Castonguay et al., 2016; Sabiston et al., 2010). In fact, both shame and guilt involve negative feelings and a specific blaming of the self for the situation or event assessed (Robins & Schriber, 2009; Tagney & Tracy, 2012; Tracy & Robins, 2004). Previous research has demonstrated that individuals experiencing a feeling of blame for not being able to exercise are likely to reflect a controlled internalization of the exercise and a rigid persistence towards this activity (Parastatidou et al., 2014; Sicilia et al., 2018). Therefore, among these individuals, EA may be a way of coping with the stress that these negative fitness-related SCEs (i.e., shame and guilt) would produce (Szabo, Demetrovics, et al., 2018).

In the case of fitness-related pride, previous research has shown a positive association between both facets of pride and exercise (Gilchrist, Pila, et al., 2018). However, each facet of pride appears to reflect a different interpretation of the social context that might explain the way in which exercise is internalized into an individual’s identity and how exercise can become addictive (De la Vega et al., 2016; Kovacsik et al., 2018; Parastatidou et al., 2014). Hubristic pride reflects positive affect by considering oneself superior to others, and which guides individuals to focus egotistically on goal-seeking at the expense of other individuals involved...
in that activity (Castonguay et al., 2016; Mack et al., 2015). Consequently, hubristic pride reflects an important need to succeed that derives from high self-worth contingencies, a characteristic that has been described in individuals with higher OP (Mageau, Carpentier, & Vallerand, 2011). Therefore, it is probable that feelings of arrogance and superiority towards others reflect pressure to maintain a social status and, consequently, this controlled interpretation of the social context leads the individual towards OP for exercise (Vallerand, 2012), which in turn has been associated with increased risk of developing EA (De la Vega et al., 2016; Kovacsik et al., 2018; Sicilia et al., 2018). Furthermore, hubristic pride has been associated with narcissistic personality traits, perfectionism, and low agreeableness (Castonguay et al., 2013; Tagney & Tracy, 2012), traits that are also observed in obsessive self-centered behaviors leading to risk of EA (Cook, Griffiths, & Pontes, 2018).

In contrast, authentic pride has generally been associated with adaptive behaviors (Castonguay et al., 2016; Sabiston et al., 2010) and is therefore more likely to be related to healthy ways of exercising. This might be because feelings of confidence and accomplishment that can be found among individuals who feel authentic pride would reflect an autonomous interpretation of the social context and would promote harmonious exercise internalization. During exercise, harmoniously passionate individuals are likely to feel confident because their sense of achievement is not contingent on successful exercise outcomes (Mageau et al., 2011). They are also more likely to feel accomplished because they tend to reach high exercise proficiency levels. Moreover, authentic pride seeks success mainly by mastering goals (Tagney & Tracy, 2012; Tracy & Robins, 2007b) which does not appear to predict risk of EA (González-Cutre & Sicilia, 2012).

Based on the aforementioned empirical and theoretical literature, the objective of the present study was to test an integrated model in which negative SCEs (guilt and shame) and hubristic pride would positively predict OP, which in turn would positively predict EA. It was...
also expected that authentic pride would positively predict HP, which in turn would not predict EA.

**Method**

**Participants**

The study utilized a convenience sample initially comprising 310 male and female runners who participated in a half-marathon race event held in a city located in southern Spain. However, given that only 14 females (4.5%) were recruited, they were excluded from the analyzed sample. This meant that the final study sample comprised 296 male runners aged between 18 and 70 years old ($M = 40.35; SD = 10.69$). Their Body Mass Index (BMI) ranged from 18.61 to 32.93 kg/m$^2$ ($M = 24.33; SD = 2.27$). Educationally, 4.7% of the participants had a middle school diploma, 31.1% had a high school diploma, and 63.9% had a university degree. According to the prevalence cut-off points proposed for the Exercise Dependence Scale-Revised (Symons-Downs, Hausenblas, & Nigg, 2004), 64.5% of participants were classified as asymptomatic, 32.1% as non-dependant-symptomatic, and 3.4% as being at-risk of exercise dependence.

**Measures**

*Demographic information.* Participants gave information concerning their age, gender, educational attainment, height, and weight.

*Fitness-related SCEs.* This was assessed using the Spanish version (authors - reference omitted) of the Body and Appearance Self-conscious Emotions Scale (Castonguay et al., 2016). This instrument comprises four factors: shame (four items, e.g. “*Inadequate when I think about my fitness*”), guilt (four items, e.g. “*Guilty that I do not do enough to improve my fitness*”), authentic pride (four items, e.g. “*Proud about my effort to improve my fitness*”), and hubristic pride (three items, e.g. “*Proud of my superior fitness*”). For the responses, a Likert-type scale was used that ranged from 1 (*never*) to 5 (*always*).
Passion for exercise. This was assessed using the Spanish version (Chamarro et al., 2015) of the revised Passion Scale (Marsh et al., 2013). The instrument comprises two factors: Harmonious Passion (six items, e.g., “My activity is well integrated into my life”) and Obsessive Passion (six items, e.g., “If I could, I would only do my activity”). For the responses, a Likert-type scale was used, which ranged from 1 (totally disagree) to 7 (totally agree).

Risk for exercise addiction. This was assessed using the Spanish version (Sicilia & González-Cutre, 2011) of the Exercise Dependence Scale-Revised (EDS-R; Symons-Downs et al., 2004). This instrument consists of seven factors comprising three items each: withdrawal (e.g., “I exercise to avoid feeling anxious”), continuance (e.g., “I exercise when injured”), tolerance (e.g., “I continually increase my exercise frequency to achieve the desired effect/benefits”), lack of control (e.g., “I am unable to reduce how long I exercise”), reduction in other activities (e.g., “I would rather exercise than spend time with family/friends”), time (e.g., “I spend most of my free time exercising”), and intention effects (e.g., “I exercise longer than I intend to”). For the responses, a Likert-type scale was used, which ranged from 1 (never) and 6 (always).

Frequency and hours of exercise. Participants reported the number of days and number of hours that they usually exercised in a typical week.

Procedure

After receiving the approval of the research team’s ethics committee, organizers of a half-marathon race event held in southern Spain were contacted to request their collaboration in recruiting participants. Following this, a banner asking for volunteers to enrol in research on exercise habits was posted on the official race event website. By clicking on the banner, participants were redirected to a website where they were informed about (i) the non-remunerated and anonymous nature of their involvement, and (ii) their right to withdraw from the study at any time. After providing their informed consent, participants completed an online
survey which included the measures described above. The automated response protocol employed prevented the loss of data.

**Data analysis**

First, descriptive statistics, correlations between study variables, and internal consistency for the employed psychometric instruments were obtained using IBM SPSS 25. The relationships of interest were examined using structural equation modelling (SEM); namely, specifying a path analysis regression model employing the Maximum Likelihood (ML) estimation method with 10,000 bootstrap replications in Mplus 7 (Muthén & Muthén, 1998-2015). This procedure allowed the present researchers to maintain a reasonable ratio between cases and free parameters (Kline, 2011) as well as dealing with any departures from the normality and homoscedasticity assumptions (Preacher & Hayes, 2008). In order to prevent a spurious overestimation of indirect effects, all direct/indirect effects were computed (Preacher & Hayes, 2008). Usual weekly exercise hours/frequency and age were introduced as covariates into the regression model. In accordance with suggestions by Preacher and Hayes (2008), when specifying regression models that included a multiple mediator, the error terms of the potential mediators (i.e., HP and OP) were allowed to freely correlate. Bias-corrected confidence intervals (95%), not including zero, were considered as indicative of significantly-different-from-zero relationships at the $p<.05$ level (Preacher & Hayes, 2008).

**Results**

The descriptive statistics, correlational analysis, and internal consistency are shown in Table 1. The mean scores for weekly exercise frequency, authentic pride, and HP were above the mid-point of their respective possible scores whereas the mean scores of the remaining variables were below this point. Apart from the negative relationship found between age and risk of EA, the latter was positively correlated with the remaining variables. According to Cohen's criteria (1988), these relationships ranging in magnitude from small (in the case of age, weekly frequency and hours of practice, authentic pride, and HP) to strong (in the case of...
Internal consistency ranged from .84 (the shame factor of the BSE-FIT) to .93 (the hubristic pride factor of the BSE-FIT and EDS-R).

A summary of the direct effects of fitness-related SCEs on HP/OP and risk of EA is shown in Figure 1. A full summary of the direct and indirect effects involved are shown in Tables 2 and 3. Results of the regression model showed: (i) a significant indirect shame effect on risk of EA ($\beta=.104, B=0.142, SEB=.069, 95\% CI [0.018, 0.291], p=.040$) via OP; (ii) a significant indirect effect of hubristic pride on risk of EA ($\beta=.135, B=0.092, SEB=.022, 95\% CI [0.051, 0.140], p<.001$) via OP; (iii) a significant direct effect of guilt on risk of EA ($\beta=.164, B=0.155, SEB=.055, 95\% CI [0.043, 0.258], p=.005$); and (iv) a non-significant indirect/direct effect of authentic pride on risk of EA. However, a significant direct effect of authentic pride on HP was found ($\beta=.551, B=0.791, SEB=.095, 95\% CI [0.596, 0.972], p<.001$). The model explained 57% of the variance for risk of EA.

**Discussion**

The objective of the present study was to analyze the relationship between fitness-related SCEs and risk of EA, and examining the mediating role of passion for exercise. It was hypothesized that guilt, shame, and hubristic pride would be positively associated with risk of EA and that this relationship would be mediated by OP. At the same time, it was hypothesized that authentic pride would positively predict HP, which in turn would not predict risk of EA.

The present study represents a significant advancement from previous research that examined the relationship between appearance-related SCEs and risk of EA (Ertl et al., 2018) because the research considered the relationship in the specific domain of fitness, an aspect of body-related SCEs, which has demonstrated a closer relationship to exercise behaviour than to the appearance aspect (Gilchrist, Pila, et al., 2018). Moreover, the study went further than previous research because it simultaneously included negative and positive SCE measures and a mediation analysis that provided a more nuanced insight concerning one of the potential
motivational process underlying EA. Although OP mediating effects were not observed in the association between guilt and risk of EA, in general (and as hypothesized), the results demonstrated that not only do negative fitness-related SCEs positively predict risk of EA but also the association between positive fitness-related SCEs (i.e., hubristic pride) and risk of EA remained positive when this relationship was mediated by OP.

The results showed that the two forms of negative fitness-related SCEs (i.e., shame and guilt) had moderate positive correlations with (and showed positive effects upon) risk of EA. These findings are in line with previous studies showing that when body appraisal is incongruous with the social standards with which the individual identifies, there are positive associations with maladaptive outcomes (Castonguay et al., 2016; Ertl et al., 2018; Tagney & Tracy, 2012). However, in line with the hypothesis raised, hubristic pride also showed a positive association with risk of EA. This is not particularly surprising given that the hubristic facet of pride has been associated with both adaptive and maladaptive outcomes (Castonguay et al., 2014; Tagney & Tracy, 2012). In this regard, hubristic pride showed (at the same level as negative SCEs) a higher positive correlation with risk of EA than that shown by authentic pride, and was also shown to be a positive predictor of risk of EA. Previous studies have reported a positive association between both facets of fitness-related pride and frequency of moderate-vigorous exercise (Gilchrist, Pila, et al., 2018). Nonetheless, as the results of the present study appear to show, the healthy or unhealthy form of exercise to which each facet of pride appears to relate may be explained by the form of passion that the exercise arouses, and therefore by how individuals integrate exercise as part of their identity.

The outcome of the mediation analysis showed that while fitness-related hubristic pride had positive effects on OP for exercise, authentic pride had positive effects on HP. Consequently, the results suggest that the way in which individuals interpret their social context (eliciting different facets of fitness-related pride) may affect risk of EA through a HP or OP for this activity, which could facilitate either the healthy or addictive character of the
exercise. In fact, while OP had a positive and statistically significant effect on risk of EA, the
effect of HP on risk of EA was weak and not statistically significant. These results are line with
previous research (De la Vega et al., 2016; Kovacsik et al., 2018; Sicilia et al., 2018) which
have shown that OP has a stronger predictive effect on risk of EA than HP, and support the
notion of differentiated consequences for the two types of passion (Vallerand, 2012, 2015).

On the one hand, the results suggest that individuals experiencing pride based on what
their body is capable of doing and achieving, likely regulate their exercise behavior in a
flexible way (Gilchrist, Sabiston, et al., 2018). Therefore, the positive affective experience
derived from fitness-related authentic pride is likely to facilitate an autonomous internalization
of the exercise behavior, probably because individuals base their positive experiences on
having defined success in their own skills and progress (Castonguay et al., 2016; Tagney &
Tracy, 2012). On the other hand, the results supporting the mediating role of OP for exercise in
the relationship between fitness-related hubristic pride and risk of EA are novel and it may
clarify the process by which this SCE may be associated with a potential maladaptive outcome
such as risk of EA. Attributing a positive event to global aspects of the self (i.e., hubristic
pride) may lead to socially valued exercise behavior but it also appears to result in a potential
unhealthy form of exercise due to the narcissistic self-aggrandizing and boastful nature of this
facet of pride (Castonguay et al., 2013; Tagney & Tracy, 2012). Indeed, individuals who
experience fitness-related hubristic pride tend to define their success on the basis of perceiving
themselves of being superior to others (Castonguay et al., 2016). Consequently, it is probable
that this constant comparison and desire to dominate others leads them into rigid persistence
concerning exercise behavior in order to maintain their perceived social status. This is
understandable if it is considered that developing OP for an activity facilitates intrapersonal
conflicts (Curran, Hill, Appleton, Vallerand, & Standage, 2015; Marsh et al., 2013), which
appears appropriate when (in the exercise context) individuals are constantly comparing
themselves with others and defining their fitness based on external references. When this
happens, it is often difficult for individuals to find a balance between the time spent exercising and other life activities, which leads to an increased risk of developing EA symptoms (Hausenblas & Symons-Downs, 2002; Symons-Downs et al., 2004; Terry, Szabo, & Griffiths, 2004). Therefore, the results suggest that when explaining the relationship between positive fitness-related SCEs and risk of EA, the internalization process of the behavior into the individual’s identity should be considered, as it would help explain why experiencing fitness-related SCE may lead to exercise in an addictive way.

The analysis of the mediating role of passion also helps to understand how the association between negative fitness-related SCEs and risk of EA is developed via different routes. While guilt showed direct and statistically significant positive effects on risk of EA, the effects of shame on risk of EA were mediated by OP. The findings suggest that experiencing fitness-related shame may result in becoming passionate about exercise in an obsessive way to the point that it would lead developing EA. However, experiencing fitness-related guilt does not imply that exercise is an activity that is desired and loved. Indeed, the individual would not value the exercise behaviour and may find it non-pleasurable, but feel compelled to do it. Consequently, the results here suggest that individuals who feel guilty for not having done enough to stay fit may be at risk of developing EA, without developing any type of passion for exercise, and therefore without this activity becoming an integral part of their goals and values. Future research should seek to identify the conditions underlying the mechanisms that may explain why fitness-related shame and guilt might lead to an increased risk of EA via different pathways.

The results of the present study suggest several strategies that could be tried to reduce the risk of developing EA. For example, by reducing self-evaluation processes through which individuals compare their current fitness to ideal standards. However, the effectiveness of these strategies could be limited because the assessment made of an individual’s fitness could be evoked implicitly (Tagney & Tracy, 2012), and the SCEs in this domain could be generated
even if individuals are trying not to focus attention on them. Therefore, a runner who fails to complete their training plan could apply strategies to avoid thinking explicitly about what this event means for their fitness. However, their goals and self-representation may be activated at an implicit level, eventually creating guilt or shame despite their attempt to protect themselves against these emotions. Therefore, along with strategies that reduce self-evaluation pressure, strategies could be applied that facilitate authentic pride emotions in the individual regarding their fitness. Strategies that aim to create the attribution of success based on effort and competence would help engender perceptions of prestige based on the possession of skills or expertise specific to authentic pride, avoiding prestige perceptions based on superiority over others.

Despite the novelty of the present study’s results, there were some specific limitations that should be highlighted when interpreting the study’s findings. First, the employment of a correlational and cross-sectional design does not allow the determining of causality. Consequently, we were unable to determine the extent to which the observed relationships reflect the effect of one variable on another over time and/or reflect ongoing stable relationships among variables. Therefore, future research with longitudinal and experimental designs are needed to examine the replication of results allowing statistical control for prior measures of variables, and contribute to establish the directionality of the relationships found in the present study. Second, the sample in the present study exclusively comprised male recreational runners, so the associations examined in the present study should be examined among more diverse populations and exercise practices. Finally, although it was expected (and the study assumed) that fitness-related SCEs would better explain exercise behavior than other body-related SCEs (e.g., those related to appearance), it would be of interest to consider the analysis of SCEs in relation to both body domains and their relationship to risk of EA in the same study.
In conclusion, the results of the present study replicate previous research by suggesting that OP may be strongly related to risk of EA than HP, and supports the notion that the two types of passion function differently. In addition, the present study furthers the understanding concerning the relationship between fitness-related SCEs and risk of EA, showing that the type of passion may affect this relationship. In this sense, both fitness-related shame and hubristic pride may positively lead to risk of EA, by eliciting an obsessive passion for exercise. Therefore, the results suggest that the type of passion is important with respect to the relationship between the fitness-related SCEs and risk of EA.
References


Curran, T., Hill, A. P., Appleton, P. R., Vallerand, R. J., & Standage, M. (2015). The psychology
of passion: A meta-analytical review of a decade of research on intrapersonal outcomes. 


https://doi.org/10.1080/16066359.2017.1347257


https://doi.org/10.1016/j.bodyim.2018.08.010


https://doi.org/10.1016/j.psychsport.2018.05.007


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Table 1. Descriptive Statistics, Internal Consistency and Correlational Analysis of Study Variables (N=296)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Range</th>
<th>M</th>
<th>SD</th>
<th>Skewness</th>
<th>Kurtosis</th>
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<th>3</th>
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<td>2. Weekly Exercise Frequency</td>
<td>1-7</td>
<td>4.51</td>
<td>1.48</td>
<td>-0.13</td>
<td>-0.55</td>
<td>.00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3. Weekly Exercise Hours</td>
<td>1-26</td>
<td>7.19</td>
<td>4.39</td>
<td>0.94</td>
<td>1.49</td>
<td>.18***</td>
<td>.56***</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4. Shame</td>
<td>1-5</td>
<td>1.44</td>
<td>0.63</td>
<td>1.76</td>
<td>3.09</td>
<td>.84</td>
<td>-.19**</td>
<td>-.06</td>
<td>.01</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5. Guilt</td>
<td>1-5</td>
<td>1.84</td>
<td>0.91</td>
<td>1.08</td>
<td>0.65</td>
<td>.89</td>
<td>-.22***</td>
<td>-.03</td>
<td>.01</td>
<td>.77***</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6. Authentic pride</td>
<td>1-5</td>
<td>3.64</td>
<td>0.96</td>
<td>-0.58</td>
<td>-0.07</td>
<td>.90</td>
<td>-.02</td>
<td>.36***</td>
<td>.22***</td>
<td>-.14*</td>
<td>-.10</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7. Hubristic pride</td>
<td>1-5</td>
<td>2.77</td>
<td>1.27</td>
<td>0.12</td>
<td>-1.15</td>
<td>.93</td>
<td>-.03</td>
<td>.33***</td>
<td>.19**</td>
<td>.09</td>
<td>.15*</td>
<td>.51***</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8. Harmonious Passion</td>
<td>1-7</td>
<td>5.02</td>
<td>1.39</td>
<td>-0.70</td>
<td>0.00</td>
<td>.91</td>
<td>-.13*</td>
<td>.23***</td>
<td>.16**</td>
<td>.00</td>
<td>.01</td>
<td>.54***</td>
<td>.25***</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>9. Obsessive Passion</td>
<td>1-7</td>
<td>2.40</td>
<td>1.18</td>
<td>0.97</td>
<td>0.82</td>
<td>.85</td>
<td>-.18**</td>
<td>.19**</td>
<td>.13*</td>
<td>.34***</td>
<td>.36***</td>
<td>.20**</td>
<td>.37***</td>
<td>.21***</td>
<td>-</td>
</tr>
<tr>
<td>10. Risk of EA (EDS-R)</td>
<td>1-6</td>
<td>2.36</td>
<td>0.86</td>
<td>0.53</td>
<td>-0.20</td>
<td>.93b</td>
<td>.26***</td>
<td>.28***</td>
<td>.17**</td>
<td>.40***</td>
<td>.44***</td>
<td>.18**</td>
<td>.35***</td>
<td>.17**</td>
<td>.69***</td>
</tr>
</tbody>
</table>

Note. EA=Exercise Addiction, EDS-R=Exercise Dependence Scale-Revised.

*a* Observed for age and weekly exercise hours, possible for remaining variables.

*b* Internal consistency values (✓) for the EDS-R sub-factors were .86 (Withdrawal), .84 (Continuance), .88 (Tolerance), .83 (Lack of control), .70 (Reduction in other activities), .87 (Time), and .83 (Intention effects).

*p<.05, **p<.01, ***p<.001
Table 2. Summary of Directs Effects of Fitness-Related Self-Conscious Emotions on Passion and Risk for Exercise Addiction

<table>
<thead>
<tr>
<th></th>
<th>$\beta$</th>
<th>$B$</th>
<th>$SEB$</th>
<th>95% BcCI</th>
<th>$p$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower</td>
<td>Upper</td>
</tr>
<tr>
<td>Shame $\to$ HP</td>
<td>.068</td>
<td>0.148</td>
<td>.159</td>
<td>-0.156</td>
<td>0.468</td>
</tr>
<tr>
<td>Guilt $\to$ HP</td>
<td>-.010</td>
<td>-0.016</td>
<td>.106</td>
<td>-0.234</td>
<td>0.185</td>
</tr>
<tr>
<td><strong>Authentic Pride $\to$ HP</strong></td>
<td><strong>.551</strong></td>
<td><strong>0.791</strong></td>
<td><strong>.095</strong></td>
<td><strong>0.596</strong></td>
<td><strong>0.972</strong></td>
</tr>
<tr>
<td>Hubristic Pride $\to$ HP</td>
<td>-.052</td>
<td>-0.057</td>
<td>.072</td>
<td>-0.196</td>
<td>0.084</td>
</tr>
<tr>
<td>Weekly Exercise Frequency $\to$ HP</td>
<td>.024</td>
<td>0.023</td>
<td>.051</td>
<td>-0.078</td>
<td>0.125</td>
</tr>
<tr>
<td>Weekly Exercise Hours $\to$ HP</td>
<td>.056</td>
<td>0.018</td>
<td>.019</td>
<td>-0.019</td>
<td>0.053</td>
</tr>
<tr>
<td>Age $\to$ HP</td>
<td>-.124</td>
<td>-0.016</td>
<td>.006</td>
<td>-0.017</td>
<td>-0.003</td>
</tr>
<tr>
<td>Shame $\to$ OP</td>
<td>.197</td>
<td>0.367</td>
<td>.168</td>
<td>0.044</td>
<td>0.701</td>
</tr>
<tr>
<td>Guilt $\to$ OP</td>
<td>.155</td>
<td>0.201</td>
<td>.124</td>
<td>-0.038</td>
<td>0.450</td>
</tr>
<tr>
<td>Authentic Pride $\to$ OP</td>
<td>.072</td>
<td>0.088</td>
<td>.073</td>
<td>-0.057</td>
<td>0.233</td>
</tr>
<tr>
<td><strong>Hubristic Pride $\to$ OP</strong></td>
<td><strong>.256</strong></td>
<td><strong>0.237</strong></td>
<td><strong>0.055</strong></td>
<td><strong>0.128</strong></td>
<td><strong>0.346</strong></td>
</tr>
<tr>
<td>Weekly Exercise Frequency $\to$ OP</td>
<td>.073</td>
<td>0.058</td>
<td>.061</td>
<td>-0.062</td>
<td>0.176</td>
</tr>
<tr>
<td>Weekly Exercise Hours $\to$ OP</td>
<td>.034</td>
<td>0.009</td>
<td>.020</td>
<td>-0.028</td>
<td>0.049</td>
</tr>
<tr>
<td>Age $\to$ OP</td>
<td>-.103</td>
<td>-0.011</td>
<td>.006</td>
<td>-0.024</td>
<td>0.000</td>
</tr>
<tr>
<td>Shame $\to$ EDS-R</td>
<td>.082</td>
<td>0.112</td>
<td>.078</td>
<td>-0.036</td>
<td>0.273</td>
</tr>
<tr>
<td><strong>Guilt $\to$ Risk of EA</strong></td>
<td><strong>.164</strong></td>
<td><strong>0.155</strong></td>
<td><strong>0.055</strong></td>
<td><strong>0.043</strong></td>
<td><strong>0.258</strong></td>
</tr>
<tr>
<td>Authentic Pride $\to$ Risk of EA</td>
<td>.031</td>
<td>0.028</td>
<td>.052</td>
<td>-0.073</td>
<td>0.130</td>
</tr>
<tr>
<td>Hubristic Pride $\to$ Risk of EA</td>
<td>.060</td>
<td>0.041</td>
<td>.035</td>
<td>-0.028</td>
<td>0.107</td>
</tr>
<tr>
<td>HP $\to$ EDS-R</td>
<td>-.031</td>
<td>-0.020</td>
<td>.031</td>
<td>-0.081</td>
<td>0.042</td>
</tr>
<tr>
<td><strong>OP $\to$ Risk of EA</strong></td>
<td><strong>.528</strong></td>
<td><strong>0.387</strong></td>
<td><strong>0.038</strong></td>
<td><strong>0.313</strong></td>
<td><strong>0.462</strong></td>
</tr>
<tr>
<td>Weekly Exercise Frequency $\to$ Risk of EA</td>
<td>.162</td>
<td>0.094</td>
<td>.010</td>
<td>0.032</td>
<td>0.158</td>
</tr>
<tr>
<td><strong>Weekly Exercise Hours $\to$ Risk of EA</strong></td>
<td><strong>.018</strong></td>
<td><strong>0.004</strong></td>
<td><strong>0.033</strong></td>
<td><strong>-0.015</strong></td>
<td><strong>0.025</strong></td>
</tr>
<tr>
<td>Age $\to$ Risk of EA</td>
<td>-.117</td>
<td>-0.009</td>
<td>.004</td>
<td>-0.017</td>
<td>-0.003</td>
</tr>
</tbody>
</table>

Note. $B$ = Unstandardized estimates; $SE$ = Standard error; $SEB$ = Standardized estimates; BcCI = Bias corrected Confidence Interval, HP = Harmonious passion, OP = Obsessive passion, EA = Exercise addiction. Results derived from a 10,000 resamples bootstrapping analysis. Bolded estimates indicate statically significant ($p<.05$) indirect effects.
Table 3. Summary of Indirect Effects of Fitness-Related Self-Conscious Emotions on Risk for Exercise Addiction via Passion

<table>
<thead>
<tr>
<th>Path</th>
<th>$\beta$</th>
<th>$B$</th>
<th>$SEB$</th>
<th>Lower</th>
<th>Upper</th>
<th>$p$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shame $\rightarrow$ HP $\rightarrow$ Risk of EA</td>
<td>-.002</td>
<td>-0.003</td>
<td>.007</td>
<td>-0.029</td>
<td>0.005</td>
<td>.687</td>
</tr>
<tr>
<td>Shame $\rightarrow$ OP $\rightarrow$ Risk of EA</td>
<td><strong>.104</strong></td>
<td><strong>0.142</strong></td>
<td><strong>.069</strong></td>
<td><strong>0.018</strong></td>
<td><strong>0.291</strong></td>
<td><strong>.040</strong></td>
</tr>
<tr>
<td>Guilt $\rightarrow$ HP $\rightarrow$ Risk of EA</td>
<td>.000</td>
<td>0.000</td>
<td>.004</td>
<td>-0.006</td>
<td>0.012</td>
<td>.938</td>
</tr>
<tr>
<td>Guilt $\rightarrow$ OP $\rightarrow$ Risk of EA</td>
<td>.082</td>
<td>0.078</td>
<td>.048</td>
<td>-0.013</td>
<td>0.176</td>
<td>.105</td>
</tr>
<tr>
<td>Authentic Pride $\rightarrow$ HP $\rightarrow$ Risk of EA</td>
<td>-.017</td>
<td>-0.015</td>
<td>.025</td>
<td>-0.064</td>
<td>0.034</td>
<td>.535</td>
</tr>
<tr>
<td>Authentic Pride $\rightarrow$ OP $\rightarrow$ Risk of EA</td>
<td>.038</td>
<td>0.034</td>
<td>.029</td>
<td>-0.020</td>
<td>0.096</td>
<td>.242</td>
</tr>
<tr>
<td>Hubristic Pride $\rightarrow$ HP $\rightarrow$ Risk of EA</td>
<td>.002</td>
<td>0.001</td>
<td>.003</td>
<td>-0.002</td>
<td>0.014</td>
<td>.724</td>
</tr>
<tr>
<td><strong>Hubristic Pride $\rightarrow$ OP $\rightarrow$ Risk of EA</strong></td>
<td><strong>.135</strong></td>
<td><strong>0.092</strong></td>
<td><strong>.022</strong></td>
<td><strong>0.051</strong></td>
<td><strong>0.140</strong></td>
<td>&lt; <strong>.001</strong></td>
</tr>
</tbody>
</table>

*Note. B=Unstandardized estimates; SE=Standard error; $se$= Standardized estimates; BcCI=Bias corrected Confidence Interval, HP= Harmonious passion, OP= Obsessive passion, EA=Exercise addiction. Results derived from a 10,000 resamples bootstrapping analysis. Bolded estimates indicate statically significant ($p<.05$) indirect effects.*
Figure 1. Summary of Standardized Directs Effects of Fitness-Related Self-Conscious Emotions on Passion and Risk for Exercise Addiction. For clarity, the effects of weekly exercise hours/frequency and age on endogenous variables are not depicted. EDS-R=Exercise Dependence Scale-Revised. Results derived from a 10,000 resamples bootstrapping analysis. Continuous lines and bolded estimates indicate statically significant ($p<.05$) effects. Values inside brackets reflect specific $p$-values.