

## Fitness-Related Self-Conscious Emotions and Risk for Exercise Addiction: Examining the Mediating Role of Passion

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### Abstract

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

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18 **Mediating Role of Passion**

19 Exercise addiction (EA) is a possible behavioral disorder that involves exercising in a  
20 way that is difficult to control or reduce, and presents physiological symptoms (e.g., tolerance,  
21 withdrawal) and/or psychological symptoms (e.g., anxiety, depression) (Hausenblas &  
22 Symons-Downs, 2002). Although EA is still not a recognized disorder in the main diagnostic  
23 classifications (e.g., DSM-5; American Psychiatric Association, 2013; ICD-11; World Health  
24 Organization, 2018), interest in its study has been growing because of its association with  
25 physical, social, and psychological negative consequences ( Hausenblas & Symons-Downs,  
26 2002; Szabo, Demetrovics, & Griffiths, 2018). Given its potentially harmful consequences,  
27 understanding the factors that trigger EA is of interest in both preventing and treating this  
28 possible disorder.

29 Self-conscious emotions (SCEs) have been proposed to have a central role in in  
30 explaining individual's behavior in achievement contexts such as exercise (Castonguay, Pila,  
31 Wrosch, & Sabiston, 2015; Castonguay, Sabiston, Kowalski, & Wilson, 2016). When it comes  
32 to examining exercise behavior, research on SCEs has focused on self-relevant domains such  
33 as body experiences (Castonguay et al., 2015; Castonguay, Sabiston, Crocker, & Mack, 2014;  
34 Tracy & Robins, 2007b). Body-related SCEs reflect evaluative experiences concerning how  
35 individuals perceive, feel, think, and behave regarding their bodies, and how they can be  
36 experienced in reference to appearance (i.e., what the body looks like) and functional aspects  
37 of the body (i.e., how the body performs) (Castonguay et al., 2015, 2014; Tagney & Tracy,  
38 2012; Tracy & Robins, 2004). Their elicitation requires stable self-representations and self-  
39 evaluations of an individual's own body, relative to internal and external standards (Robins &  
40 Schriber, 2009). Through this self-evaluation process, individuals compare their current self-  
41 representation (i.e., how individuals see themselves now) with their ideal self-representation  
42 (i.e., how they want to see themselves). The result that provokes such emotion depends on how

43 individuals appraise their current self-representation as either congruent or incongruent with  
44 their ideal self-representations.

45 Shame and guilt have been considered as negative SCEs insofar they reflect a  
46 discrepancy with respect to the (body) ideal with which an individual identifies. In both  
47 negative SCEs, individuals attribute the cause of the event to some internal factor, blaming  
48 themselves for the situation (Robins & Schriber, 2009; Tagney & Tracy, 2012; Tracy & Robins,  
49 2004). However, shame and guilt can be differentiated based on the stability and globality of  
50 the causal attributions. Therefore, shame involves negative feelings about individual  
51 characteristics that are uncontrollable (e.g., individuals perceiving that they are not  
52 attractive/fit), whereas guilt involves negative feelings of individual behavior that are  
53 controllable (e.g., individuals perceiving that they are not doing enough to improve their own  
54 appearance/fitness).

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

64 Although previous research has associated negative basic emotions (e.g., anger,  
65 anxiety) with risk of EA (Hausenblas & Symons-Downs, 2002), a study by Ertl et al. (2018)  
66 examined the association between body-related SCEs and risk of EA and found that body  
67 shame positively predicted risk of EA, both directly and indirectly (mediated via self-esteem).  
68 These results suggest that women who are at risk of developing EA may not necessarily

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

82         In addition to addressing the aforementioned limitations of the Ertl et al.'s (2018) study,  
83 the present study attempts to further advance our understanding of the relationship between the  
84 SCEs and risk of EA by considering the motivational process which might explain how these  
85 emotions may be associated with risk of EA. In fact, in the psychological literature, it has been  
86 suggested that body-related SCEs may underlie the motivational regulation of exercise  
87 behavior. (e.g., Gilchrist, Sabiston, Conroy, & Atkinson, 2018; Mack, Kouali, Gilchrist, &  
88 Sabiston, 2015; Sabiston et al., 2010). Similarly, research has shown that individuals who  
89 exercise for reasons that are more self-determined or autonomous (i.e., by choice or motives  
90 consistent with their identity goals), such as being healthier or learning new techniques, report  
91 a more positive body image and greater adherence to exercise than individuals exercising for  
92 controlled reasons or less self-determined motivation (i.e., deriving from internal pressure or  
93 external forces) such as appearance-related goals (Sabiston et al., 2010). Considering that  
94 exercise may be a reparative behavior of the immediate and salient feedback derived from

95 fitness-related SCEs (Castonguay et al., 2016; Mack et al., 2015), there is a possibility that the  
96 relationship between such emotions and risk of EA could be affected by the motivational  
97 process through which the individual is involved in exercise behavior. A construct that reflects  
98 the motivational process in activities that involve intense and persistent participation, and  
99 which might help explain the associations between fitness-related SCEs and EA, is the  
100 construct of *passion* (Vallerand, 2015).

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

111         In the context of exercise, harmonious passion (HP) reflects an autonomous  
112 internalization of exercise which occurs when individuals have freely accepted exercise as  
113 important to them without any contingencies attached to it (Vallerand, 2012, 2015). Thus,  
114 individuals do not feel compelled or forced to exercise but rather choose to do it freely, being  
115 in control of the activity and deciding when to do it, in such a way that they make it  
116 harmonious with other life domains. Individuals who manifest HP towards exercise should be  
117 in a position to concentrate on the activity and experience positive affect, psychological  
118 wellbeing, and task satisfaction (Curran, Hill, Appleton, Vallerand, & Standage, 2015;  
119 Vallerand, 2008). Conversely, obsessive passion (OP) results from a controlled internalization  
120 of an activity within the individual's identity (Vallerand, 2012, 2015). Controlled

121 internalization is produced by intrapersonal and/or interpersonal pressure deriving from  
122 contingencies attached to the exercise. Individuals who show OP eventually display a rigid  
123 persistence towards the exercise so that they experience an internal uncontrollable urge to  
124 engage in it, integrating the exercise practice into other life activities in a more rigid and  
125 conflicted way. OP has been associated positively with conflict between life activities, negative  
126 emotions, and risk of EA (De la Vega et al., 2016; Kovacsik et al., 2018; Marsh et al., 2013;  
127 Parastatidou et al., 2014; Sicilia et al., 2018; Vallerand et al., 2003).

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

147 context that would affect the internalization process of the behavior into the individual's  
148 identity.

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

155         Shame has been shown to have a positive association with risk of EA (Ertl et al., 2018).  
156 In turn, this emotion has shown to have a positive correlation with guilt (Castonguay et al.,  
157 2016), and both have been associated with maladaptive outcomes (Castonguay et al., 2016;  
158 Sabiston et al., 2010). In fact, both shame and guilt involve negative feelings and a specific  
159 blaming of the self for the situation or event assessed (Robins & Schriber, 2009; Tagney &  
160 Tracy, 2012; Tracy & Robins, 2004). Previous research has demonstrated that individuals  
161 experiencing a feeling of blame for not being able to exercise are likely to reflect a controlled  
162 internalization of the exercise and a rigid persistence towards this activity (Parastatidou et al.,  
163 2014; Sicilia et al., 2018). Therefore, among these individuals, EA may be a way of coping  
164 with the stress that these negative fitness-related SCEs (i.e., shame and guilt) would produce  
165 (Szabo, Demetrovics, et al., 2018).

166         In the case of fitness-related pride, previous research has shown a positive association  
167 between both facets of pride and exercise (Gilchrist, Pila, et al., 2018). However, each facet of  
168 pride appears to reflect a different interpretation of the social context that might explain the  
169 way in which exercise is internalized into an individual's identity and how exercise can become  
170 addictive (De la Vega et al., 2016; Kovacsik et al., 2018; Parastatidou et al., 2014). Hubristic  
171 pride reflects positive affect by considering oneself superior to others, and which guides  
172 individuals to focus egotistically on goal-seeking at the expense of other individuals involved

173 in that activity (Castonguay et al., 2016; Mack et al., 2015). Consequently, hubristic pride  
174 reflects an important need to succeed that derives from high self-worth contingencies, a  
175 characteristic that has been described in individuals with higher OP (Mageau, Carpentier, &  
176 Vallerand, 2011). Therefore, it is probable that feelings of arrogance and superiority towards  
177 others reflect pressure to maintain a social status and, consequently, this controlled  
178 interpretation of the social context leads the individual towards OP for exercise (Vallerand,  
179 2012), which in turn has been associated with increased risk of developing EA (De la Vega et  
180 al., 2016; Kovacsik et al., 2018; Sicilia et al., 2018). Furthermore, hubristic pride has been  
181 associated with narcissistic personality traits, perfectionism, and low agreeableness  
182 (Castonguay et al., 2013; Tagney & Tracy, 2012), traits that are also observed in obsessive self-  
183 centered behaviors leading to risk of EA (Cook, Griffiths, & Pontes, 2018).

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

195 Based on the aforementioned empirical and theoretical literature, the objective of the  
196 present study was to test an integrated model in which negative SCEs (guilt and shame) and  
197 hubristic pride would positively predict OP, which in turn would positively predict EA. It was



198 also expected that authentic pride would positively predict HP, which in turn would not predict  
199 EA.

## 200 **Method**

### 201 ***Participants***

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

### 213 ***Measures***

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

216 *Fitness-related SCEs.* This was assessed using the Spanish version (authors - reference  
217 omitted) of the Body and Appearance Self-conscious Emotions Scale (Castonguay et al., 2016).  
218 This instrument comprises four factors: shame (four items, e.g. “*Inadequate when I think about*  
219 *my fitness*”), guilt (four items, e.g. “*Guilty that I do not do enough to improve my fitness*”),  
220 authentic pride (four items, e.g. “*Proud about my effort to improve my fitness*”), and hubristic  
221 pride (three items, e.g. “*Proud of my superior fitness*”). For the responses, a Likert-type scale  
222 was used that ranged from 1 (*never*) to 5 (*always*).

223 *Passion for exercise.* This was assessed using the Spanish version (Chamarro et al.,  
224 2015) of the revised Passion Scale (Marsh et al., 2013). The instrument comprises two factors:  
225 Harmonious Passion (six items, e.g., “*My activity is well integrated into my life*”) and  
226 Obsessive Passion (six items, e.g., “*If I could, I would only do my activity*”). For the responses,  
227 a Likert-type scale was used, which ranged from 1 (*totally disagree*) to 7 (*totally agree*).

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

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

## 240 **Procedure**

241 After receiving the approval of the research team’s ethics committee, organizers of a  
242 half-marathon race event held in southern Spain were contacted to request their collaboration  
243 in recruiting participants. Following this, a banner asking for volunteers to enrol in research on  
244 exercise habits was posted on the official race event website. By clicking on the banner,  
245 participants were redirected to a website where they were informed about (i) the non-  
246 remunerated and anonymous nature of their involvement, and (ii) their right to withdraw from  
247 the study at any time. After providing their informed consent, participants completed an online

248 survey which included the measures described above. The automated response protocol  
249 employed prevented the loss of data.

### 250 ***Data analysis***

251 First, descriptive statistics, correlations between study variables, and internal  
252 consistency for the employed psychometric instruments were obtained using IBM SPSS 25.  
253 The relationships of interest were examined using structural equation modelling (SEM);  
254 namely, specifying a path analysis regression model employing the Maximum Likelihood  
255 (ML) estimation method with 10,000 bootstrap replications in Mplus 7 (Muthén & Muthén,  
256 1998-2015). This procedure allowed the present researchers to maintain a reasonable ratio  
257 between cases and free parameters (Kline, 2011) as well as dealing with any departures from  
258 the normality and homoscedasticity assumptions (Preacher & Hayes, 2008). In order to prevent  
259 a spurious overestimation of indirect effects, all direct/indirect effects were computed  
260 (Preacher & Hayes, 2008). Usual weekly exercise hours/frequency and age were introduced as  
261 covariates into the regression model. In accordance with suggestions by Preacher and Hayes  
262 (2008), when specifying regression models that included a multiple mediator, the error terms of  
263 the potential mediators (i.e., HP and OP) were allowed to freely correlate. Bias-corrected  
264 confidence intervals (95%), not including zero, were considered as indicative of significantly-  
265 different-from-zero relationships at the  $p < .05$  level (Preacher & Hayes, 2008).

### 266 **Results**

267 The descriptive statistics, correlational analysis, and internal consistency are shown in  
268 Table 1. The mean scores for weekly exercise frequency, authentic pride, and HP were above  
269 the mid-point of their respective possible scores whereas the mean scores of the remaining  
270 variables were below this point. Apart from the negative relationship found between age and  
271 risk of EA, the latter was positively correlated with the remaining variables. According to  
272 Cohen's criteria (1988), these relationships ranging in magnitude from small (in the case of  
273 age, weekly frequency and hours of practice, authentic pride, and HP) to strong (in the case of

274 OP). Internal consistency ranged from .84 (the shame factor of the BSE-FIT) to .93 (the  
275 hubristic pride factor of the BSE-FIT and EDS-R).

276 A summary of the direct effects of fitness-related SCEs on HP/OP and risk of EA is  
277 shown in Figure 1. A full summary of the direct and indirect effects involved are shown in  
278 Tables 2 and 3. Results of the regression model showed: (i) a significant indirect shame effect  
279 on risk of EA ( $\beta=.104$ ,  $B=0.142$ ,  $SEB=.069$ , 95%CI [0.018, 0.291],  $p=.040$ ) via OP; (ii) a  
280 significant indirect effect of hubristic pride on risk of EA ( $\beta=.135$ ,  $B=0.092$ ,  $SEB=.022$ , 95%CI  
281 [0.051, 0.140],  $p<.001$ ) via OP; (iii) a significant direct effect of guilt on risk of EA ( $\beta=.164$ ,  
282  $B=0.155$ ,  $SEB=.055$ , 95%CI [0.043, 0.258],  $p=.005$ ); and (iv) a non-significant indirect/direct  
283 effect of authentic pride on risk of EA. However, a significant direct effect of authentic pride  
284 on HP was found ( $\beta=.551$ ,  $B=0.791$ ,  $SEB=.095$ , 95%CI [0.596, 0.972],  $p<.001$ ). The model  
285 explained 57% of the variance for risk of EA.

## 286 Discussion

287 The objective of the present study was to analyze the relationship between fitness-  
288 related SCEs and risk of EA, and examining the mediating role of passion for exercise. It was  
289 hypothesized that guilt, shame, and hubristic pride would be positively associated with risk of  
290 EA and that this relationship would be mediated by OP. At the same time, it was hypothesized  
291 that authentic pride would positively predict HP, which in turn would not predict risk of EA.  
292 The present study represents a significant advancement from previous research that examined  
293 the relationship between appearance-related SCEs and risk of EA (Ertl et al., 2018) because the  
294 research considered the relationship in the specific domain of fitness, an aspect of body-related  
295 SCEs, which has demonstrated a closer relationship to exercise behaviour than to the  
296 appearance aspect (Gilchrist, Pila, et al., 2018). Moreover, the study went further than previous  
297 research because it simultaneously included negative and positive SCE measures and a  
298 mediation analysis that provided a more nuanced insight concerning one of the potential

299 motivational process underlying EA. Although OP mediating effects were not observed in the  
300 association between guilt and risk of EA, in general (and as hypothesized), the results  
301 demonstrated that not only do negative fitness-related SCEs positively predict risk of EA but  
302 also the association between positive fitness-related SCEs (i.e., hubristic pride) and risk of EA  
303 remained positive when this relationship was mediated by OP.

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

320         The outcome of the mediation analysis showed that while fitness-related hubristic pride  
321 had positive effects on OP for exercise, authentic pride had positive effects on HP.  
322 Consequently, the results suggest that the way in which individuals interpret their social  
323 context (eliciting different facets of fitness-related pride) may affect risk of EA through a HP or  
324 OP for this activity, which could facilitate either the healthy or addictive character of the

325 exercise. In fact, while OP had a positive and statistically significant effect on risk of EA, the  
326 effect of HP on risk of EA was weak and not statistically significant. These results are line with  
327 previous research (De la Vega et al., 2016; Kovacsik et al., 2018; Sicilia et al., 2018) which  
328 have shown that OP has a stronger predictive effect on risk of EA than HP, and support the  
329 notion of differentiated consequences for the two types of passion (Vallerand, 2012, 2015).

330 On the one hand, the results suggest that individuals experiencing pride based on what  
331 their body is capable of doing and achieving, likely regulate their exercise behavior in a  
332 flexible way (Gilchrist, Sabiston, et al., 2018). Therefore, the positive affective experience  
333 derived from fitness-related authentic pride is likely to facilitate an autonomous internalization  
334 of the exercise behavior, probably because individuals base their positive experiences on  
335 having defined success in their own skills and progress (Castonguay et al., 2016; Tagney &  
336 Tracy, 2012). On the other hand, the results supporting the mediating role of OP for exercise in  
337 the relationship between fitness-related hubristic pride and risk of EA are novel and it may  
338 clarify the process by which this SCE may be associated with a potential maladaptive outcome  
339 such as risk of EA. Attributing a positive event to global aspects of the self (i.e., hubristic  
340 pride) may lead to socially valued exercise behavior but it also appears to result in a potential  
341 unhealthy form of exercise due to the narcissistic self-aggrandizing and boastful nature of this  
342 facet of pride (Castonguay et al., 2013; Tagney & Tracy, 2012). Indeed, individuals who  
343 experience fitness-related hubristic pride tend to define their success on the basis of perceiving  
344 themselves of being superior to others (Castonguay et al., 2016). Consequently, it is probable  
345 that this constant comparison and desire to dominate others leads them into rigid persistence  
346 concerning exercise behavior in order to maintain their perceived social status. This is  
347 understandable if it is considered that developing OP for an activity facilitates intrapersonal  
348 conflicts (Curran, Hill, Appleton, Vallerand, & Standage, 2015; Marsh et al., 2013), which  
349 appears appropriate when (in the exercise context) individuals are constantly comparing  
350 themselves with others and defining their fitness based on external references. When this

351 happens, it is often difficult for individuals to find a balance between the time spent exercising  
352 and other life activities, which leads to an increased risk of developing EA symptoms  
353 (Hausenblas & Symons-Downs, 2002; Symons-Downs et al., 2004; Terry, Szabo, & Griffiths,  
354 2004). Therefore, the results suggest that when explaining the relationship between positive  
355 fitness-related SCEs and risk of EA, the internalization process of the behavior into the  
356 individual's identity should be considered, as it would help explain why experiencing fitness-  
357 related SCE may lead to exercise in an addictive way.

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

372         The results of the present study suggest several strategies that could be tried to reduce  
373 the risk of developing EA. For example, by reducing self-evaluation processes through which  
374 individuals compare their current fitness to ideal standards. However, the effectiveness of these  
375 strategies could be limited because the assessment made of an individual's fitness could be  
376 evoked implicitly (Tagney & Tracy, 2012), and the SCEs in this domain could be generated

377 even if individuals are trying not to focus attention on them. Therefore, a runner who fails to  
378 complete their training plan could apply strategies to avoid thinking explicitly about what this  
379 event means for their fitness. However, their goals and self-representation may be activated at  
380 an implicit level, eventually creating guilt or shame despite their attempt to protect themselves  
381 against these emotions. Therefore, along with strategies that reduce self-evaluation pressure,  
382 strategies could be applied that facilitate authentic pride emotions in the individual regarding  
383 their fitness. Strategies that aim to create the attribution of success based on effort and  
384 competence would help engender perceptions of prestige based on the possession of skills or  
385 expertise specific to authentic pride, avoiding prestige perceptions based on superiority over  
386 others.

387         Despite the novelty of the present study's results, there were some specific limitations  
388 that should be highlighted when interpreting the study's findings. First, the employment of a  
389 correlational and cross-sectional design does not allow the determining of causality.  
390 Consequently, we were unable to determine the extent to which the observed relationships  
391 reflect the effect of one variable on another over time and/or reflect ongoing stable  
392 relationships among variables. Therefore, future research with longitudinal and experimental  
393 designs are needed to examine the replication of results allowing statistical control for prior  
394 measures of variables, and contribute to establish the directionality of the relationships found  
395 in the present study. Second, the sample in the present study exclusively comprised male  
396 recreational runners, so the associations examined in the present study should be examined  
397 among more diverse populations and exercise practices. Finally, although it was expected (and  
398 the study assumed) that fitness-related SCEs would better explain exercise behavior than other  
399 body-related SCEs (e.g., those related to appearance), it would be of interest to consider the  
400 analysis of SCEs in relation to both body domains and their relationship to risk of EA in the  
401 same study.



402           In conclusion, the results of the present study replicate previous research by suggesting  
403 that OP may be strongly related to risk of EA than HP, and supports the notion that the two  
404 types of passion function differently. In addition, the present study furthers the understanding  
405 concerning the relationship between fitness-related SCEs and risk of EA, showing that the type  
406 of passion may affect this relationship. In this sense, both fitness-related shame and hubristic  
407 pride may positively lead to risk of EA, by eliciting an obsessive passion for exercise.  
408 Therefore, the results suggest that the type of passion is important with respect to the  
409 relationship between the fitness-related SCEs and risk of EA.

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

	Range <sup>a</sup>	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	$\alpha$	1	2	3	4	5	6	7	8	9
1. Age	18-70	40.35	10.69	-0.16	-0.38	-	-								
2. Weekly Exercise Frequency	1-7	4.51	1.48	-0.13	-0.55	-	.00	-							
3. Weekly Exercise Hours	1-26	7.19	4.39	0.94	1.49	-	.18**	.56***	-						
4. Shame	1-5	1.44	0.63	1.76	3.09	.84	-.19**	-.06	.01	-					
5. Guilt	1-5	1.84	0.91	1.08	0.65	.89	-.22***	-.03	.01	.77***	-				
6. Authentic pride	1-5	3.64	0.96	-0.58	-0.07	.90	-.02	.36***	.22***	-.14*	-.10	-			
7. Hubristic pride	1-5	2.77	1.27	0.12	-1.15	.93	-.03	.33***	.19**	.09	.15*	.51***	-		
8. Harmonious Passion	1-7	5.02	1.39	-0.70	0.00	.91	-.13*	.23***	.16**	.00	.01	.54***	.25***	-	
9. Obsessive Passion	1-7	2.40	1.18	0.97	0.82	.85	-.18**	.19**	.13*	.34***	.36***	.20**	.37***	.21***	-
10. Risk of EA (EDS-R)	1-6	2.36	0.86	0.53	-0.20	.93 <sup>b</sup>	-.26***	.28***	.17**	.40***	.44***	.18**	.35***	.17**	.69***

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

<sup>a</sup> Observed for age and weekly exercise hours, possible for remaining variables.

<sup>b</sup> 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

	$\beta$	$B$	$SEB$	95% BcCI		$p$ -value
				Lower	Upper	
Shame → HP	.068	0.148	.159	-0.156	0.468	.350
Guilt → HP	-.010	-0.016	.106	-0.234	0.185	.881
<b>Authentic Pride → HP</b>	<b>.551</b>	<b>0.791</b>	<b>.095</b>	<b>0.596</b>	<b>0.972</b>	<b>&lt; .001</b>
Hubristic Pride → HP	-.052	-0.057	.072	-0.196	0.084	.430
Weekly Exercise Frequency → HP	.024	0.023	.051	-0.078	0.125	.659
Weekly Exercise Hours → HP	.056	0.018	.019	-0.019	0.053	.337
<b>Age → HP</b>	<b>-.124</b>	<b>-0.016</b>	<b>.006</b>	<b>-0.017</b>	<b>-0.003</b>	<b>.008</b>
<b>Shame → OP</b>	<b>.197</b>	<b>0.367</b>	<b>.168</b>	<b>0.044</b>	<b>0.701</b>	<b>.029</b>
Guilt → OP	.155	0.201	.124	-0.038	0.450	.105
Authentic Pride → OP	.072	0.088	.073	-0.057	0.233	.227
<b>Hubristic Pride → OP</b>	<b>.256</b>	<b>0.237</b>	<b>.055</b>	<b>0.128</b>	<b>0.346</b>	<b>&lt; .001</b>
Weekly Exercise Frequency → OP	.073	0.058	.061	-0.062	0.176	.341
Weekly Exercise Hours → OP	.034	0.009	.020	-0.028	0.049	.640
Age → OP	-.103	-0.011	.006	-0.024	0.000	.064
Shame → EDS-R	.082	0.112	.078	-0.036	0.273	.150
<b>Guilt → Risk of EA</b>	<b>.164</b>	<b>0.155</b>	<b>.055</b>	<b>0.043</b>	<b>0.258</b>	<b>.005</b>
Authentic Pride → Risk of EA	.031	0.028	.052	-0.073	0.130	.596
Hubristic Pride → Risk of EA	.060	0.041	.035	-0.028	0.107	.238
HP → EDS-R	-.031	-0.020	.031	-0.081	0.042	.534
<b>OP → Risk of EA</b>	<b>.528</b>	<b>0.387</b>	<b>.038</b>	<b>0.313</b>	<b>0.462</b>	<b>&lt; .001</b>
Weekly Exercise Frequency → Risk of EA	<b>.162</b>	<b>0.094</b>	<b>.010</b>	<b>0.032</b>	<b>0.158</b>	<b>.004</b>
<b>Weekly Exercise Hours → Risk of EA</b>	<b>.018</b>	<b>0.004</b>	<b>.033</b>	<b>-0.015</b>	<b>0.025</b>	<b>.734</b>
<b>Age → Risk of EA</b>	<b>-.117</b>	<b>-0.009</b>	<b>.004</b>	<b>-0.017</b>	<b>-0.003</b>	<b>.008</b>

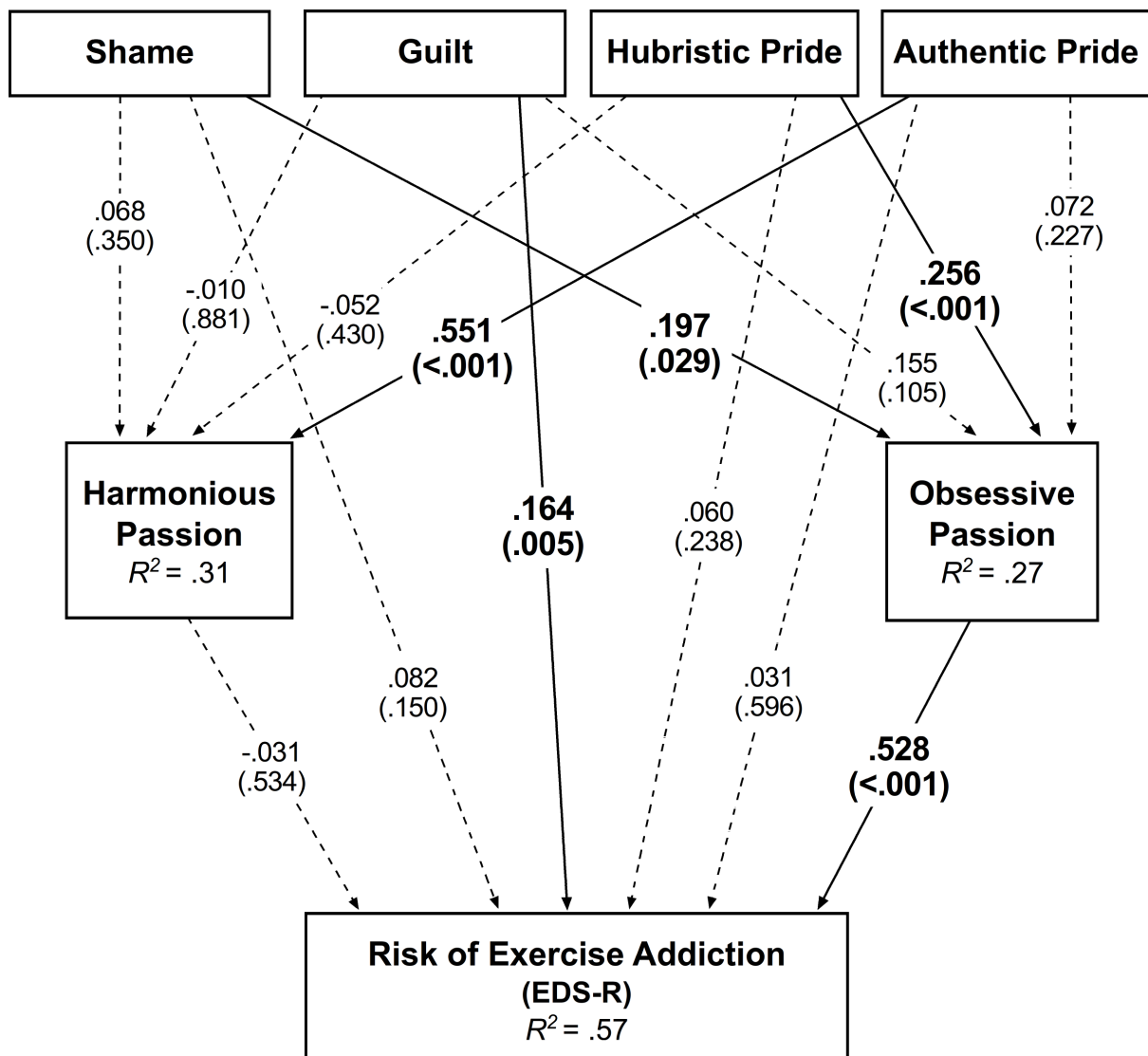
Note.  $B$ =Unstandardized estimates;  $SE$ =Standard error;  $\beta$  = Standardized estimates; BcCI=Bias corrected Confidence Interval, HP = Harmonious passion, OP = Obsessive passion, EA=Exercise addiction. Results derived from a 10,000 resamples bootstrapping analysis. Bolded estimates indicate statically significant ( $p < .05$ ) indirect effects.



Table 3. *Summary of Indirect Effects of Fitness-Related Self-Conscious Emotions on Risk for Exercise Addiction via Passion*

Path	$\beta$	<i>B</i>	<i>SEB</i>	95% BcCI		<i>p</i> -value
				Lower	Upper	
Shame → HP → Risk of EA	-.002	-0.003	.007	-0.029	0.005	.687
<b>Shame → OP → Risk of EA</b>	<b>.104</b>	<b>0.142</b>	<b>.069</b>	<b>0.018</b>	<b>0.291</b>	<b>.040</b>
Guilt → HP → Risk of EA	.000	0.000	.004	-0.006	0.012	.938
Guilt → OP → Risk of EA	.082	0.078	.048	-0.013	0.176	.105
Authentic Pride → HP → Risk of EA	-.017	-0.015	.025	-0.064	0.034	.535
Authentic Pride → OP → Risk of EA	.038	0.034	.029	-0.020	0.096	.242
Hubristic Pride → HP → Risk of EA	.002	0.001	.003	-0.002	0.014	.724
<b>Hubristic Pride → OP → Risk of EA</b>	<b>.135</b>	<b>0.092</b>	<b>.022</b>	<b>0.051</b>	<b>0.140</b>	<b>&lt; .001</b>

*Note.* *B*=Unstandardized estimates; *SE*=Standard error;  $\beta$  = 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 reflects specific  $p$ -values.