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Article

Examining the association among physical activity shame, self-compassion, shame-coping styles, and physical activity behavior

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Abstract: The purpose of this study was two-fold. First, to further evaluate the psychometric properties of the Physical Activity Shame Scale (PASS), a new trait self-report measure designed to assess the multifaceted phenomenological experience of shame in the physical domain. Second, to investigate the associations among physical activity shame, physical activity, four maladaptive shame-coping styles—Attack Self, Withdrawal, Attack Other, Avoidance—and self-compassion, a more adaptive response to shame. Results demonstrated further support for the PASS as a psychometrically sound measure of physical activity shame with high internal consistency and evidence of validity based on factor structure and associations with other variables. Consistent with predictions, physical activity shame was negatively linked to self-compassion and physical activity, and positively linked with maladaptive shame-coping styles. Conversely, self-compassion was positively linked to physical activity and negatively linked with maladaptive shame-coping styles. In the current study, women were significantly higher than men in physical activity shame, Attack Self, Withdrawal, and Attack Other, while men were significantly higher than women in self-compassion. Furthermore, we found significant indirect effects of physical activity shame on physical activity via both self-compassion and Attack Self. Implications and recommendations for future research are discussed.

Keywords: affect; exercise; maladaptive coping; measurement; Physical Activity Shame Scale; psychology; psychometrics; sport

1. Introduction

Due to the highly visible, evaluative, and competitive aspects of physical activity, shame is an expected emotional response (Nathanson, 1992; Huellemann et al., 2023; Partridge and Elison, 2010; Wilson and Kerr, 2022). Moreover, research has linked shame experiences in the physical domain to decreased physical activity motivation and participation, exercise relapse, and dropout (Castonguay et al., 2015; Massey et al., 2021; Raspovic et al., 2023; Rogers and Ebbeck, 2016; Smith et al., 2024). However, it seems that an important aspect of shame is how one responds or defends against it, and the experience of shame can be positively influenced by providing a model of adaptive coping (Carter et al., 2023; Elison and Partridge, 2012; Stage and Nielsen, 2023). With respect to these findings, the purpose of this study was to examine the associations among physical activity shame, how one copes with shame, and physical activity behavior. This may provide valuable insights into developing effective strategies for

reducing or even eliminating the harmful effects of shame related to physical activity.

Shame represents an unusual and distinct form of self-perception, whereby the self is exposed to the self (Lewis, 1992). Based on his cognitive attributional theory of self-conscious emotions, Lewis defined shame as a global attack on the self, triggered by a failure to attain standards, goals, or rules, attributing the failure to global shortcomings within the self, and believing that the failure exposes a damaged self. Moreover, according to Lewis, shame "encompasses the whole of ourselves" (p. 2) and is characterized by four phenomenological features: (a) intense emotional pain; (b) feelings that one's global self is flawed, bad, inadequate, and unworthy; (c) feelings of powerlessness, paralysis, helplessness, and being frozen; and (d) the overpowering desire to run, hide, or disappear.

Lewis (1992) further contends that shame is produced, not by the situation, but by how it is interpreted, and thus, shame is not contingent upon an actual observing audience. Therefore, shame can be experienced publicly or in private through either the specific physical event or thoughts about the self. Lewis also suggests that the triggers and behavioral responses to shame are unique to each individual, based on one's history of experiences, expectations, desires, and needs. Consequently, there are no specific events or universal stimuli that trigger shame. Instead, what is key to shame is the failure to live up to an actual or ideal self-representation, and the exposure of an unwanted identity (i.e., the self at its worst), a viewpoint shared by many authors (Brown, 2006; Ferguson et al., 2000; Lewis, 1971). The experience of shame can be considered in two contexts: a) a transitory, situational, in-the-moment feeling (i.e., state shame); and b) frequent experiences of shame that crystalize into a stable, internalized, trait-like disposition or shame proneness (i.e., trait shame), one that becomes a central part of one's identity (Velotti et al., 2017). Over time, trait shame may lead to emotional suppression and maladaptive shame regulation strategies, resulting in an increased vulnerability to psychological distress, psychopathology, and aggression (Elison et al., 2006; Elison et al., 2014).

Lazarus and Folkman (1984) defined coping as "the thoughts and behaviors used to manage the internal and external demands of situations that are appraised as stressful" (p. 746), which are initiated in response to the individual appraisal of harm, loss, or threat. Moreover, these appraisals are often characterized by intensely negative emotions. Thus, it has been argued that an important aspect of shame, which may make the actual experience of shame more problematic, is how one handles shame or defends against it (Partridge and Elison, 2010).

According to Nathanson (1992), the experience of shame triggers a repertoire of behavioral responses that can be classified into two categories—acceptance or defense. Acceptance involves more adaptive responses, such as identifying the source of shame and taking steps to alleviate the pain and to prevent reoccurrence, while defensive responses are characterized by reducing, magnifying, or ignoring shame, without addressing the source. Due to the overwhelmingly negative experience of shame, Nathanson argued that individuals are much more likely to attenuate the pain of shame by responding defensively.

Nathanson (1992) proposed a model of shame-coping styles—the Compass of

Shame (CoS). Within this model, four patterns of maladaptive behavioral responses to shame are defined, each representing one pole of the compass. The four poles—Withdrawal, Avoidance, Attack Self, Attack Other—consist of a set of action strategies or techniques used to cope with the experience of shame. At the northern pole of the compass is Withdrawal. Withdrawal is about escape—running and hiding from the shame-inducing situation. In essence, Withdrawal provides a retreat to safety to contemplate and recover from the wounds of shame. Individuals in the Avoidance or southern pole go out of their way to reduce, minimize, limit, or distract themselves from the painful feeling of shame. In the eastern pole of Attack Self are those individuals who accept the feeling of shame but find the helplessness and isolation characteristic of shame-induced withdrawal intolerable. In an attempt to take control over the experience of shame, they intentionally engage in punitive responses directed at the self, including anger, ridicule, contempt, and abnegation. Finally, the experience of shame is directed outward in the western pole of Attack Other. Verbal and physical attacks are used to lessen one's shame by making others feel inferior. It is important to note that these shame-coping styles are not necessarily independent; multiple styles can be employed in response to shame, although over time, individuals typically employ the use of one coping style or pairs of coping styles as a preferred defense against shame.

Elison et al. (2006) reported that the four poles of the compass can be rank-ordered based on the degree to which they reflect consciousness (i.e., the recognition of the negative experience of self) and internalization (i.e., acceptance of shame's message). By way of illustration, in descending order, Attack Self includes both the negative experience of self and the internalization of the shame message. However, due to the intrapunitive responses directed at the self, Attack Self goes above and beyond internalization to the magnification of shame's message and therefore ranks at the top. Next in order, Withdrawal involves both a recognition of the negative experience of self and the internalization of the shame message, followed by Attack Other, whereby individuals may or may not acknowledge the negative experience of self, but typically do not accept the message of shame. Finally, with Avoidance, individuals neither acknowledge the negative experience of self nor typically accept shame's message. In essence, Attack Self and Withdrawal represent internalized maladaptive shame-coping styles, while Attack Other and Avoidance represent externalized styles.

To date, the few studies that have explored CoS shame-coping styles have focused primarily on gender differences and correlations. However, it has been suggested that shame-coping styles could mediate the associations between the experience of shame and external criteria, with different associations predicted for each style adopted (Elison et al., 2006), a hypothesis that will be tested in the current study.

The intensity and impact of shame can be positively influenced by providing a model of adaptive coping (Partridge and Elison, 2010). One such adaptive coping strategy is self-compassion. Research indicates that self-compassion plays a significant role in attenuating negative emotions by acting as a buffer to negative life experiences, such as failure and rejection (Cepni et al., 2025; Germer, 2025). Several authors have also contended that the protective mechanism of self-compassion can help build resilience to the experience of shame (Brown, 2006; Frentz et al., 2020; Turk et al.,

2023).

According to Neff (2003), self-compassion is a kind, understanding, and non-judgmental sensitivity and response to one's perceived inadequacies, failures, mistakes, flaws, and imperfections, coupled with the commitment and action required to soothe, relieve, or remove this suffering. Neff's conceptualization of self-compassion includes three main components: (a) self-kindness—being kind, understanding, and nonjudgmental toward oneself during times of pain or suffering, rather than being self-critical; (b) common humanity—perceiving one's experiences as being shared by others, as opposed to feeling isolated and separated; and (c) mindfulness—holding painful thoughts and feelings in balanced awareness without over identifying with or exaggerating them. Neff (2023) posits that self-compassion is unique in that it is not dependent upon success, achievement, or doing better than anyone else; it eliminates the process of self-evaluation all together because it is not based on performance, measuring up, or comparisons to others.

Surprisingly, only a scant body of research has investigated the link between shame and self-compassion in the context of physical activity (Mosewich et al., 2011; Rogers and Ebbeck, 2016; Webb et al., 2016). For example, one study explored self-compassion as a potential resource for young women athletes (Mosewich et al., 2011). Results demonstrated a negative association between self-compassion and shame proneness ($r = -0.32$, $p < 0.01$). Based on their findings, the authors pointed to self-compassion as a potential coping strategy against shame and its utility for promoting positive sport experiences for coaches and young women athletes.

Rogers and Ebbeck (2016) qualitatively investigated the lived experiences of shame and self-compassion among women participating in cardio-based exercise classes. Their study revealed that shame experiences, particularly those related to performance, body image, and the exercise environment, directed the narratives of decreased physical activity motivation, behavior, and adherence. In contrast, self-compassion was identified as a significant protective mechanism against the negative experience of shame, by fostering gratitude, self-acceptance, self-forgiveness, and connection with others.

In another study, Webb et al. (2016) explored the associations among self-compassion, body shame, and explicit weight bias in the form of anti-fat attitudes and engaging in fat talk. Their study demonstrated that self-compassion moderated the indirect association between anti-fat bias and fat talk via body shame. Taken together, these findings provide strong evidence that self-compassion may have a significant influence in the direct and indirect associations among shame and shame-coping styles, particularly in the physical domain where a great deal of emphasis is placed on appearance, performance, and evaluation.

Generally, shame is considered a "feminine" emotion, and thus, women are often stereotyped to experience more shame than men (Nathanson, 1992). Furthermore, any gender differences are the result of issues related to socialization and the methodology by which shame is assessed (Else-Quest et al., 2012; Ferguson et al., 2000; Lewis, 1992). Gender differences in shame have been previously identified in the literature (Else-Quest et al., 2012; Ferguson et al., 2000; Woods and Proeve, 2014), although

not to the degree or direction that might be expected. For example, Else-Quest et al. (2012) conducted a meta-analysis of 382 studies examining gender differences in self-conscious emotions. Collectively, these studies included both state and trait measures of shame and four testing formats (i.e., scenario, situation, statement, and adjective-based). Results revealed only small gender differences in shame ($d = -0.29$), with women reporting slightly higher shame scores. An alternative view is that there are no gender differences in shame and that men and women experience shame equally. Rather, any observed gender differences exist in the response to shame (Herring, 2018). Specifically, boys and men tend to externalize shame, and thus, the experience of shame is often unrecognized, while girls and women tend to recognize, accept, and internalize the experience of shame. The conflicting results from research on gender differences with shame have also been attributed to a failure to take into account the mediating influence of other variables (Gross and Hanson, 2000).

Research has also indicated gender differences in self-compassion, with men consistently demonstrating higher levels of self-compassion than women (Neff, 2003; McDonald and Kanske, 2023; Reilly et al., 2014; Woods and Proeve, 2014). However, other studies have shown men with lower levels of self-compassion, or no significant gender differences (Albertson et al., 2015; Neff and McGehee, 2010). To account for this, Reilly et al. (2014) suggested that self-compassion is more associated with emotional socialization patterns and masculine or feminine norm adherence, and to a greater extent, one's level of trait shame. Their study revealed that men who adhered to traditional masculine norms demonstrated significantly lower levels of self-compassion, and the association between masculine norm adherence and self-compassion levels in men varied greatly depending on levels of shame; for men with lower shame, lower masculine norm adherence was related to higher levels of self-compassion, while men with higher shame had lower levels of self-compassion regardless of norm adherence.

Although gender differences have also been found in maladaptive shame-coping styles, results from this body of research have varied. In one study, women favored the internalized coping defenses of Attack Self and Withdrawal, while men favored the externalized coping defenses of Attack Other and Avoidance, although the gender differences in Withdrawal were not statistically significant (Elison and Partridge, 2012). In two studies, men exhibited more Avoidance, and women exhibited more Attack Self and Withdrawal (Elison et al., 2006; Partridge and Wiggins, 2008), while in two other studies, no significant gender differences in coping styles were observed (Massey and Partridge, 2010; Yelsma et al., 2002). Despite these inconsistencies, it could be argued that women tend to gravitate toward more internalized forms of shame coping. However, considering the paucity of this research and that each of these studies was conducted exclusively with competitive athletes, further investigation of the shame-coping styles of men and women in the general population is warranted.

The first aim of this study was to provide further evidence of reliability and validity for the Physical Activity Shame Scale (PASS; Rogers et al., 2026). This newly developed trait measure was specifically designed to assess the phenomenological features of shame in the physical domain.

The second aim was to test the associations among physical activity shame

(as measured by the PASS), self-compassion, maladaptive shame-coping styles, and physical activity behavior. Consistent with the aforementioned theoretical and empirical findings, we hypothesized that physical activity shame would be inversely related to self-compassion (H_1) and physical activity (H_2). Based on Nathanson's (1992) CoS model and the degree of consciousness and internalization characteristic of each shame-coping style, we also hypothesized physically activity shame to be positively associated with shame-coping styles in a magnitude of descending order from internalized to externalized shame coping: Attack Self/Withdrawal, Attack Other, Avoidance (H_3). This hypothesis is predicated on several studies that observed similar associations between shame-coping styles and maladaptive variables, including psychological distress, depression, hostility, aggression, internalized shame, maladaptive perfectionism, and fear of failure (Elison et al., 2006; Elison and Partridge, 2012). Additionally, we hypothesized that self-compassion, a more adaptive response to shame, would be inversely related to shame-coping styles in a similar pattern of descending order (H_4), and positively associated with physical activity (H_5). We also hypothesized that physical activity shame would be indirectly associated with physical activity through self-compassion (H_6), and through Attack Self (H_7) and Withdrawal (H_8), both internalized maladaptive shame-coping styles. Due to the externalized nature of Attack Other and Avoidance, we made no predictions about their indirect association with physical activity. Ultimately, we are interested in the role of self-compassion as a potential resource for individuals who experience shame in the context of physical activity, and for those who may currently adopt a maladaptive shame-coping style.

As a third aim of this study, we examined study variables by gender. With consideration of the inconsistencies found in previously reviewed literature, we adopted a more exploratory approach in our examination of gender differences without specific hypotheses.

2. Materials and methods

A sample of 519 U.S. adults (M_{age} = 46.45 years, *SD* = 17.13, range = 16–82 years) participated in this cross-sectional study (females: n = 269, M_{age} = 41.72 years, *SD* = 16.59, range = 16–82 years; males: n = 250, M_{age} = 51.55 years, *SD* = 16.24, range = 17–82 years). The number of participants satisfied the minimum sample size required to conduct the primary analyses (Kline, 2023). The majority of the sample self-identified as White (85.55%), followed by Black or African American (5.78%), Asian (4.43%), American Indian or Alaska Native (1.73%), Multiple Races (1.73%), and Native Hawaiian or Other Pacific Islander (0.78%). With respect to ethnicity (i.e., "Are you Hispanic or Latino?"), 93.06% of the sample selected "no," 6.74% selected "yes," and 0.20% selected "don't know/not sure." Most participants were educated beyond high school (23.72% = some college; 43.35% = 2-year college degree or higher), with 36.80% employed full-time, 28.13% employed part-time, 23.51% unemployed, and 27.36% retired. Of the total sample, 65.70% reported household incomes less than $60,000. Overall, the majority of the participants (62.81%) were categorized as "active" (females: n = 165, males: n = 161), 16.76% as "moderately active" (females: n = 49, males: n = 38), and 20.43% as "insufficiently active" (females: n = 55, males: n = 51).

Among those categorized as "insufficiently active," a total of 73 participants reported no physical activity (females: $n = 38$, males: $n = 35$).

After receiving Institutional Review Board approval (IRB #7891), study participants ($N = 519$) were recruited through the use of a Qualtrics panel. Qualtrics sent an invitation email to potential participants who previously indicated an interest in completing online surveys. Individuals who responded to the invitation were required to complete a screener question asking if they were adults in the state in which they resided and could read and write English. Those who met the inclusion criteria were directed to the Explanation of Research (EOR), which provided details about the current study. Upon reading the EOR, individuals were asked to volunteer to participate in the research study. Individuals selecting "no" were thanked for their interest and time and directed out of the site. Those who selected "yes" were asked the following data quality check question: "We care about the quality of our data. In order for us to get the most accurate measures of your opinions, it is important that you thoughtfully provide your best answers to each question in this survey. Do you commit to thoughtfully provide your best answers to each question in this survey? Only those participants who responded "yes" were allowed to complete the series of randomized questionnaires. To further enhance the quality of the data, a variety of techniques were employed, including attention checks embedded within the questionnaires (e.g., "Please select 'Always' in response to this question"), speed checks (i.e., respondent completion time ≥ than 1/3 of the average completion time), and one additional item following the Physical Activity Shame Scale (PASS) to assess the frequency to which individuals were thinking about physical activity while responding to the PASS (i.e., "When responding to the previous 16 items, how often were you thinking about your experiences with physical activity?"). Individuals who selected "never" or "rarely" to this question, and individuals who did not pass the attention or speed checks, were automatically replaced in the Qualtrics panel. Participants were paid approximately $0.75 for completing the online survey. Finally, to anonymize participant responses, no IP addresses was collected and items within each questionnaire were randomly ordered to control for order effects (Schweizer and DiStefano, 2016). On average, the total time spent completing the survey was 13.01 min.

2.1. Measures

The online survey used in this study consisted of established self-report measures appropriate for the target sample, each with acceptable validity and reliability estimates. General demographic information (i.e., age, gender, race, ethnicity, education, income, employment) were collected for all study participants.

2.1.1. Physical activity shame

The recently developed 16-item Physical Activity Shame Scale (PASS; Rogers et al., 2026) is a self-report measure designed to assess shame in the context of physical activity. The PASS captures the four phenomenological features of shame—Emotional Pain (e.g., "I feel intense emotional pain"), Feeling Inadequate (e.g., "I feel like I don't measure up"), Feeling Powerless (e.g., "I feel like I have no control"), and the Desire to Escape (e.g., "I wish I could sneak away without being noticed"). Each item is

rated on a 5-point Likert-type scale from 1 (never feel this way) to 5 (always feel this way), with higher values on a total score indicating greater levels of physical activity shame. Psychometrics for this scale were evaluated and reported by Rogers et al. (2026). Specifically, the overall alpha coefficient for the PASS was 0.97; each PASS subscale demonstrated satisfactory internal consistency as well (i.e., Emotional Pain = 0.93, Feeling Inadequate = 0.91, Feeling Powerless = 0.91, and Desire to Escape = 0.90).

2.1.2. Self-compassion

The Self-Compassion Scale (SCS; Neff, 2003) is a 26-item measure designed to assess self-compassion using three positive and three negative subscales: self-kindness (e.g., "I try to be loving towards myself when I'm feeling emotional pain"), common humanity (e.g., "I try to see my failings as part of the human condition"), mindfulness (e.g., "When I fail at something important to me, I try to keep things in perspective"), self-judgment (e.g., "When times are really difficult, I tend to be tough on myself"), isolation (e.g., "When I think about my inadequacies, it tends to make me feel more separate and cut off from the rest of the world"), and over-identification (e.g., "When something painful happens, I tend to blow the incident out of proportion"). Items are rated on a 5-point Likert-type scale from 1 (almost never) to 5 (almost always). The negative SCS subscale scores can be reverse-coded and tabulated with positive subscales scores to create one composite score with higher scores indicating greater self-compassion. The SCS has shown internal consistency with alpha coefficients ranging from 0.92 to 0.95, and evidence of construct validity, as well as test-retest reliability (Albertson et al., 2015; Neff, 2003). In the current study, reliability estimates demonstrated adequate internal consistency for the overall SCS ($\alpha = 0.93$). Additionally, findings from a recent study (Neff et al., 2017) provided justification for the use of a total SCS score to measure the construct of self-compassion. Therefore, the total of the summed SCS subscale scores was calculated and used for the present analysis.

2.1.3. Maladaptive shame-coping styles

The Compass of Shame Scale (CoSS; Elison et al., 2006) is comprised of a series of 12 general shame-eliciting scenarios, each followed by four statements describing possible reactions to the situation. Each possible reaction corresponds to one of the four maladaptive shame–coping styles—Withdrawal (WD), Avoidance (AV), Attack Self (AS), Attack Other (AO). Items are rated on a 5-point Likert-type scale: 0 (never), 1 (seldom), 2 (sometimes), 3 (often), and 4 (almost always). For example, in response to the stem, "When I feel rejected by someone" the following responses include: (a) I avoid them (WD), (b) I soothe myself with distractions (AV), (c) I brood over my flaws (AS), and (d) I get angry with them (AO). The CoSS is not an ipsative scale, and therefore, participants are asked to respond by indicating the frequency with which they would use each of the four possible reactions. Previous evidence of construct validity and internal consistency for the CoSS has been demonstrated (Elison et al., 2006; Elison and Partridge, 2012). In the current study, coefficient alphas for CoSS subscales were: Attack Self = 0.96, Withdrawal = 0.94, Attack Other = 0.94, Avoidance= 0.90. CoSS

subscale item scores were summed to create a total score for each subscale.

2.1.4. Physical activity behavior

The Leisure-Time Exercise Questionnaire (LTEQ; Godin and Shephard, 1985) is a self-report measure of physical activity behavior. Participants are asked to report the number of times they engaged in strenuous (e.g., running), moderate (e.g., easy bicycling), and light physical activity (e.g., easy walking) for more than 15 min at a time during the past seven days. Weekly frequencies of strenuous, moderate, and light activity are then multiplied by nine, five, and three, respectively, and summed to obtain an overall weekly activity score, which is then compared to the Leisure Score Index (LSI). The LSI is interpreted as ≥24 units = active, 14–23 units = moderately active, and <14 units = insufficiently active. The LTEQ has demonstrated evidence of validity and reliability among adults (Godin and Shephard, 1985; Jacobs et al., 1993). Total weekly activity scores were calculated and used for this study.

2.2. Data analysis

Data were analyzed with SPSS (Version 21.0; IBM Corporation, 2012) and Mplus (Version 8.0; Muthén and Muthén, 2017) using complete data on the variables of interest. Following data screening, descriptive statistics, bivariate correlations, Cronbach's alpha coefficients, and independent samples *t*-tests were computed for the study variables. All tests were two-sided with a significance level of $p < 0.05$ and all indicators were treated as continuous.

We examined the factor structure of the PASS using confirmatory factor analysis (CFA) with Maximum Likelihood Robust (MLR) estimation, considering its ability to provide standard errors and a chi-square statistic that are robust to non-normality. For model identification purposes, latent variances were fixed to 1.00. Unless otherwise specified, all indicator residuals in the model were uncorrelated (by default in Mplus). As the χ^2 test tends to over-reject models with large samples (Kline, 2023), model fit was estimated with the Root Mean Square Error of Approximation (RMSEA) and its 90% confidence interval (CI), the Comparative Fit Index (CFI), and the Tucker-Lewis Index (TLI), based on the following recommendations by Hu and Bentler (1999): RMSEA ≤ 0.06, CFI ≥ 0.95, TLI ≥ 0.95. In addition, localized goodness-of-fit was assessed using modification indices (Sörbom, 1989), representing estimates of the decrease in overall χ^2 if a fixed parameter was freely estimated (i.e., improved model fit) and standardized expected parameter change (EPC) values, representing an estimate of the change in a fixed parameter if freely estimated.

A parallel indirect effects model with bootstrapping (Hayes, 2009) was utilized to investigate the total, direct and indirect effects of physical activity shame on physical activity via self-compassion and four maladaptive shame-coping styles. Bootstrapping is a resampling procedure that makes no assumptions of normality about the sampling distribution. As there are no fit statistics to report for a saturated model, only the significance and magnitude of paths were examined. The significance of effects was tested using 95% confidence intervals based on 10,000 bootstrap samples; an effect was deemed significant when confidence intervals of the estimate did not contain zero.

3. Results and discussion

3.1. Descriptive statistics

The CFA of the correlated 4-factor model structure of the PASS demonstrated excellent fit statistics (Robust χ^2 = 278.253 (98), $p < 0.001$; RMSEA = 0.060, 90% CI [0.051, 0.068]; CFI = 0.968; TLI = 0.961), and strong factor loadings ranging from 0.81 to 0.92, all statistically significant at $p < 0.001$. Reliability estimation indicated adequate internal consistency (i.e., alpha coefficients ≥ 0.70; Cronbach, 1951) for the overall PASS (0.97) and PASS subscales (Emotional Pain = 0.93, Feeling Inadequate = 0.92, Feeling Powerless = 0.92, Desire to Escape = 0.92). These results, combined with the high intercorrelations among the subscales (r = 0.84–0.87), supported the utility of total PASS scores, which were calculated and used for the present analysis.

Means, standard deviations, ranges, and bivariate correlations for the primary study variables are summarized in **Table 1**. As predicted, physical activity shame was negatively associated with both self-compassion (H_1) and physical activity (H_2), and positively associated with maladaptive shame-coping styles in descending order of magnitude from internalized to externalized forms of shame coping (H_3). In a similar predicted pattern of descending order, self-compassion was negatively associated with maladaptive shame-coping styles (H_4). As expected, self-compassion was also positively associated with physical activity (H_5). Estimated correlations between maladaptive shame-coping styles and physical activity revealed non-significant associations. Overall, moderate to strong correlations were found among CoSS subscales, statistically significant at $p < 0.01$.

Table 1. Descriptive statistics and bivariate correlations.

Variable	1	2	3	4	5	6	7
1. PASS Total	1.0						
2. SCS Total	−0.63**	1.0					
3. CoSS–AS	0.72**	−0.72**	1.0				
4. CoSS–WD	0.72**	−0.62**	0.86**	1.0			
5. CoSS–AO	0.56**	−0.48**	0.64**	0.67**	1.0		
6. CoSS–AV	0.39**	−0.20**	0.51**	0.59**	0.63**	1.0	
7. LTEQ	−0.12**	0.13**	−0.04	−0.07	−0.03	−0.01	1.0
M	35.60	80.73	21.38	21.31	13.59	18.96	33.37
SD	16.27	19.50	12.11	11.47	9.50	8.16	26.96
Range	16–80	26–130	0–48	0–48	0-46	0–45	0–146

Note. N = 519. Abbreviations: PASS = Physical Activity Shame Scale; SCS = Self-Compassion Scale; CoSS = Compass of Shame Scale; AS = Attack Self subscale; WD = Withdrawal subscale; AO = Attack Other subscale; AV = Avoidance subscale; LTEQ = Leisure-Time Exercise Questionnaire; *M* = mean; *SD* = standard deviation. **$p < 0.01$.

3.2. Indirect effects

Standardized pathways for the indirect effects model are illustrated in **Figure 1.**

Unstandardized parameter estimates, significance, standard errors, and 95% confidence intervals for indirect effects analysis are summarized in **Table 2**. In the full model, physical activity shame was positively associated with all four maladaptive shame-coping styles and negatively associated with self-compassion. Furthermore, after controlling for physical activity shame, both self-compassion and Attack Self

were significant correlates of physical activity. In support of our hypotheses, specific indirect effects were found via self-compassion (H_6) and Attack Self (H_7). Contrary to our expectations, Withdrawal (H_8) did not emerge as a significant intervening variable in this model. After controlling for all intervening pathways, there was no evidence that the variance in physical activity behavior was explained by physical activity shame (c' pathway); however, when combining direct and indirect effects (c pathway), physical activity shame was a significant and negative correlate of physical activity. Overall, the indirect effects model explained a small proportion of the variance in physical activity ($R^2 = 0.034$, $p < 0.05$).

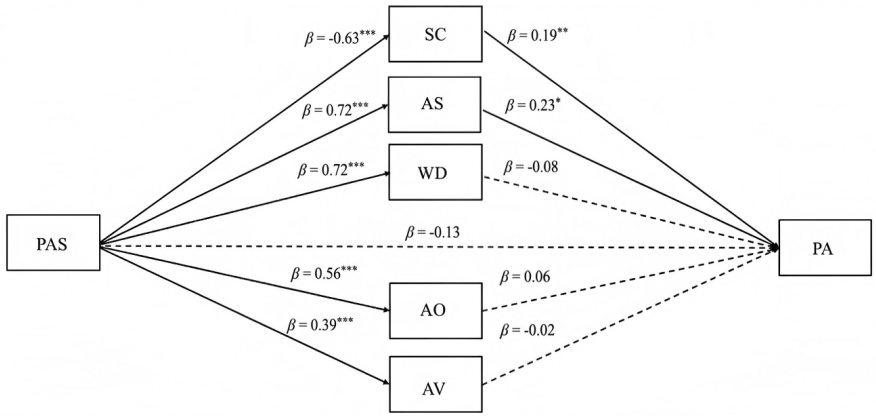

Figure 1. Standardized path diagram for indirect effects model linking physical activity, shame and physical activity through self-compassion and maladaptive shame-coping styles.
Note: PAS = physical activity shame; SC = self-compassion; AS = attack self; WD = withdrawal; AO = attack other; AV = avoidance; PA = physical activity. Nonsignificant pathways ($p < 0.05$) denoted by dashed arrows. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Table 2. Summary of indirect effects analysis.

Effect	*PE*	*SE*	95% CI
Effect of IV on M (a pathways)			
PAS → SC	−0.755***	0.043	[−0.838, −0.670]
PAS → AS	0.533***	0.022	[0.489, 0.576]
PAS → WD	0.504***	0.020	[0.464, 0.544]
PAS → AO	0.328***	0.024	[0.281, 0.377]
PAS → AV	0.196***	0.024	[0.149, 0.243]
Effect of M on DV (b pathways)			
SC → PA	0.260**	0.094	[0.071, 0.441]
AS → PA	0.502*	0.226	[0.062, 0.941]
WD → PA	−0.195	0.221	[−0.628, 0.232]
AO → PA	0.164	0.199	[−0.227, 0.553]
AV → PA	−0.074	0.117	[−0.494, 0.336]
Specific indirect effects (a × b pathways)			
PAS → SC → PA	−0.196**	0.073	[−0.339, −0.053]
PAS → AS → PA	0.268*	0.122	[0.033, 0.508]
PAS →WD → PA	−0.098	0.112	[−0.316, 0.116]
PAS → AO → PA	0.054	0.066	[−0.074, 0.185]
PAS → AV → PA	−0.014	0.042	[−0.100, 0.067]
Total indirect effects (∑ a × b pathways)	0.012	0.090	[−0.162, 0.198]

Table 2. *Cont.*

Effect	*PE*	*SE*	95% CI
Direct effect of IV on DV (c' pathway)	−0.207	0.117	[−0.442, 0.019]
Total effect (c = c' + ∑ a × b pathways)	−0.195**	0.073	[−0.332, −0.050]

Note: Abbreviations: *PE* = unstandardized bootstrapped parameter estimate; *SE* = standard error; CI = confidence interval; IV = independent variable; M = intervening variable; DV = dependent variable; PAS = physical activity shame; SC = self-compassion AS = Attack Self; WD = withdrawal; AO = attack other; AV = avoidance; PA = physical activity. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

3.3. Mean differences

Independent samples *t*-tests and Cohen's *d* effect size statistics were used to examine significant gender differences among all study variables. As shown in **Table 3**, a significant difference in levels of physical activity shame was observed, with women reporting higher PASS scores than men. Additionally, women reported significantly higher Attack Self, Withdrawal, and Attack Other scores than men. Although women were also slightly more likely to engage in Avoidance coping than men, the difference was not statistically significant. Significant gender differences were also observed in self-compassion, with men reporting higher SCS scores than women. Finally, the difference in self-reported physical activity between women and men was neither statistically significant, nor meaningful in terms of magnitude.

Table 3. Mean differences among study variables by gender.

	Females (*n* = 269)		Males (*n* = 250)				
Study variables	***M***	***SD***	***M***	***SD***	***t*(517)**	***p***	***d***
PASS Total	38.28	15.84	32.72	16.26	3.94	<0.001	0.35
SCS Total	77.67	20.39	84.03	17.97	−3.76	<0.001	−0.31
CoSS–AS	23.87	11.99	18.70	11.67	4.97	<0.001	0.44
CoSS–WD	23.90	11.12	18.53	11.15	5.47	<0.001	0.48
CoSS–AO	14.65	9.51	12.44	9.37	2.66	0.008	0.23
CoSS–AV	19.48	8.04	18.41	8.27	1.49	0.136	0.13
LTEQ	32.48	25.62	34.32	28.36	−0.78	0.438	−0.07

Note: Abbreviations: PASS = Physical Activity Shame Scale; SCS = Self-Compassion Scale; CoSS = Compass of Shame Scale; AS = Attack Self subscale; WD = Withdrawal subscale; AO = Attack Other subscale; AV = Avoidance subscale; LTEQ = Leisure-Time Exercise Questionnaire; *M* = mean; SD = standard deviation; *t* = independent *t*-test statistic; *p* = *p*-value; *d* = Cohen's *d* effect size statistic.

4. Discussion

The purpose of the current study was twofold. First, to evaluate the psychometric properties of the PASS (Rogers et al., 2026), a newly developed measure of physical activity shame. Second, to investigate the multidimensional construct of physical activity shame, as measured by the PASS, and its associations with physical activity, self-compassion, and four maladaptive shame-coping styles.

Our results provided additional support for the PASS as a psychometrically sound measure of physical activity shame. The hypothesized correlated 4-factor structure demonstrated excellent model fit to the data with significantly high factor loadings on each intended subscale. Internal consistency was demonstrated by high alpha coefficients for the PASS subscales and total scores. Furthermore, correlations between the PASS and other study variables were all significant and in the predicted directions, providing further evidence of construct validity.

In the current study, the hypothesized negative association between physical activity shame and self-compassion was supported and consistent with previous studies, such as Albertson et al. (2015) and Woods and Proeve (2014). This finding was not surprising considering the underlying nature of each construct. Shame is a highly negative and emotionally painful experience of devaluation in response to perceived flaws, failures, and shortcomings that are attributed to one's global self (Lewis, 1992). In contrast, self-compassion is a kind, understanding, and nonjudgmental response toward oneself during times of emotional pain and suffering (Neff, 2003). Furthermore, unlike shame, self-compassion completely eliminates the process of self-evaluation because it is not based on performance, measuring up, or comparisons to self or others (Neff, 2023). This finding offers support for self-compassion as a potential buffer against shame related to physical activity; individuals higher in self-compassion may be better equipped to regulate the emotional experience of shame (i.e., shame resilience) and respond in more adaptive ways.

In a pattern of descending order, we found negative associations between self-compassion and maladaptive coping styles. As predicted, self-compassion was more strongly related to internalized shame-coping styles. In addition to mirroring the magnitude of associations found between shame and maladaptive coping styles, these results also speak to the underlying mechanisms by which one copes with shame. Maladaptive coping is defined by defense, characterized by attempts to magnify, reduce, or deny the experience of shame, without ever addressing the actual source (Nathanson, 1992). Adaptive coping, on the other hand, is defined by acceptance—identifying the source of shame, taking steps to lessen the emotional pain, and even preventing the experience of shame. As an adaptive shame-coping strategy, self-compassion not only provides the emotional safety to accept personal flaws, failure, and shortcomings, but also the clarity to recognize and change maladaptive patterns of thought, feeling, and behavior (Neff, 2003). Based on these findings, we contend that individuals higher in self-compassion may be more likely to respond to negative emotional experiences, such as shame, with patience and nonjudgment (self-kindness), connection and understanding (common humanity), and balanced awareness (mindfulness), verses self-devaluation and criticism (Attack Self), isolation (Withdrawal), anger and hostility (Attack Other), or emotional suppression and escape (Avoidance).

Consistent with Elison et al. (2006), we also found positive associations between physical activity shame and maladaptive coping styles in a descending order of magnitude from internalized to externalized styles. These results make theoretical and practical sense. Shame is unlikely to have the same impact for individuals who willingly acknowledge and accept shame's message, versus those who reject shame's message by projecting it onto others or denying it altogether (Elison and Partridge, 2012). As expected, shame was more highly correlated with Attack Self and Withdrawal—the two coping styles characterized by a high degree of shame-consciousness and internalization. These results suggest that individuals who experience higher levels of shame related to physical activity may be more vulnerable to intrapunative behaviors and/or social isolation.

With regard to physical activity, we found a negative association with physical

activity shame comparable to that of other studies examining shame in the physical domain (Castonguay et al., 2015; Rogers and Ebbeck, 2016; Smith et al., 2024). We also found a significant and positive link between physical activity behavior and self-compassion. Together, these findings point to shame as a potential barrier to physical activity, and to self-compassion as a potential resource that may promote increased levels of physical activity. Although negative associations between physical activity and maladaptive shame-coping styles were observed, they were neither high nor significant. One plausible explanation is that generalized maladaptive shame coping was assessed in the current study, which may not have adequately captured maladaptive shame coping in the context of physical activity or its association with physical activity. As such, our results may have been different with the use of a domain-specific measure of shame-coping styles.

Results from our indirect effects model revealed physical activity shame as a significant correlate of self-compassion and all four maladaptive shame-coping styles. Furthermore, after controlling for physical activity shame, both self-compassion and Attack Self emerged as significant and positive correlates of physical activity. As hypothesized, there was a specific indirect effect of physical activity shame on physical activity through self-compassion, suggesting that, on average, greater shame leads to decreased self-compassion, which in turn leads to decreased physical activity. This finding is supported by previous research suggesting that self-compassionate people are more effective at self-regulating health behaviors (Neff, 2023), better able to cope with negative emotions and experiences in the physical domain (Mosewich et al., 2011), and more likely to engage in health-promoting behaviors (Carter et al., 2023).

As hypothesized, there was also a specific indirect effect of physical activity shame on physical activity via Attack Self, suggesting that, on average, greater shame leads to increased intrapunitive behaviors, which then lead to increased physical activity. At first glance, this finding may seem counterintuitive. However, considering that the primary motivation with Attack Self is to control the experience of shame and win the acceptance of others, and the subsequent action tendency is to prevent reoccurrence by change, conformity, deference, or self-depreciation (Nathanson, 1992), it is plausible that in response to shame, individuals who favor the Attack Self coping style may engage in more physical activity. In such cases, increases in physical activity may reflect attempts to control shame by changing one's body, appearance, or fitness level, to win others' approval or acceptance, to "punish" oneself for failures or mistakes, and, at the extreme, a sign of a serious obsessive exercise disorder. This illustrates the varying degrees of maladaptation that exist within each shame-coping style (Elison et al., 2006).

Inconsistent with our hypothesis, we found no evidence of a specific indirect effect of physical activity shame on physical activity via Withdrawal. This finding may be due, in part, to the high degree of shame consciousness and internalization shared by Withdrawal and Attack Self, and the subsequent lack of discrimination frequently found between these two shame-coping styles (Elison et al., 2006). This finding could also be related to the motivation and action tendencies unique to Withdrawal, which are to limit shame exposure or minimize shame by pulling away from others. From

this, we might infer that withdrawing in response to physical activity shame would, in turn, decrease levels of physical activity. However, it could be that individuals who withdraw choose to exercise in private, switch sports, adopt a different form of exercise, or are physically active or inactive for reasons other than shame related to physical activity—all of which may have no significant impact on levels of physical activity. To complicate matters further, maladaptive coping styles often follow one another or are employed in tandem, even among internalized and externalized styles (Elison et al., 2014). To illustrate, following a shaming event (e.g., fouling out of a game), an athlete may immediately internalize shame by withdrawing and/or engaging in self-blame. However, within seconds, minutes or hours, the same athlete may externalize shame by lashing out at coaches, teammates or referees. As a whole, these findings may further explain the non-significant correlations we found between maladaptive coping styles and physical activity, as well as the relatively small number of significant direct and indirect pathways associated with physical activity in the current model.

Overall, our proposed model provided only partial support for the direct and indirect correlations with physical activity, with a relatively small proportion of variance in physical activity explained ($R^2 \approx 0.03$). Due to the complex nature of physical activity behavior, these findings may have more to do with the potential influence of other variables (i.e., confounding, epiphenomenal) not included in our model, such as age (Chen et al., 2023), maladaptive perfectionism (Elison and Partridge, 2012), motivational regulations (Viveiros et al., 2025), attachment styles (Lewis, 1971), or exercise identity (Flora et al., 2012). For example, it could be that maladaptive coping styles may have more of an impact on physical activity levels for younger adults, or that exercise identity plays a much larger role in understanding physical activity (Cardinal and Cardinal, 1997). It could also be that the manner (i.e., subjective measure) in which physical activity was assessed in the current study played a role in our results (Sallis and Saelens, 2000). Therefore, based on the current findings, the direct and indirect associations among the current study variables warrant further investigation.

Consistent with previous studies (Else-Quest et al., 2012; Reilly et al., 2014; Woods and Proeve, 2014), women in the current study reported significantly higher levels of physical activity shame than men. In support of these findings, it is Lewis' (1971) belief that shame is more characteristic of women because women are socialized to be caregivers and to value interpersonal relationships, and therefore, in order to preserve relationships, tend to direct anger and aggression inward rather than toward others. Moreover, Else-Quest et al. (2012) posited that gender differences in shame are magnified by culturally enforced gender roles and expectations, such that women are more likely to acknowledge and internalize the experience of shame, while men are socialized to externalize it (Gross and Hanson, 2000). It has also been suggested that gender differences in shame may be mediated by how women are socialized to process emotions as compared to men (Brophy and Kurger, 2013). Specifically, through feminine gender role socialization, women generally express more emotion and experience specific emotions more intensely than men. In contrast, masculine gender role socialization limits emotional expression; men are often socialized to deny or avoid vulnerable emotions, such as shame, which creates a shame "phobia" in men

that undercuts their ability to acknowledge and express shame (Reilly et al., 2014).

In the present investigation, men scored significantly higher in self-compassion than women, a finding that has been consistently reported in the literature (McDonald and Kanske, 2023; Neff, 2003; Reilly et al., 2014; Woods and Proeve, 2014). For example, Neff (2003) investigated gender differences in self-compassion using a total SCS score and subscale scores. Her results showed that overall, women scored lower in self-compassion than men. At the subscale level, women scored higher than men in self-judgment, isolation, and overidentification and lower in mindfulness; however, women also scored higher in self-kindness and common humanity. In another study, Reilly et al. (2014) reported that higher levels of self-compassion in men were more related to lower levels of shame regardless of high or low levels of masculine norm adherence. Moreover, Else-Quest et al. (2012) suggested that specific domains, with their own unique gender stereotypes, may be a potential moderator of gender differences. Based on these findings, perhaps women experience lower levels of self-compassion because they are more vulnerable to the negative self-evaluations and self-criticism characteristic of shame, and to the gender expectations that define their physical activity environments. Considering the average age of men in the current sample (M_{age} = 51.55 years), another possible explanation for this finding is that levels of self-compassion in men may be influenced by age; older men may be less driven by typical masculine norms, roles, and stereotypes, and thus may be more likely to express more "feminine" emotions, such as self-compassion.

Our results also revealed significant gender differences in maladaptive responses to shame. Women scored higher in both Attack Self and Withdrawal, similar to previous findings by Elison et al. (2006) and Partridge and Wiggins (2008). These results align well with the notion that women are more likely to adopt internalized shame-coping styles. With this, Partridge and Elison (2010) asserted that because of the mentality that currently defines many sport environments (i.e., physical power to dominate others), men are even more unlikely to acknowledge or internalize the experience of shame. Interestingly, women in the current study also scored higher than men in both externalized shame-coping styles, although the difference in Avoidance scores was neither significant nor high in magnitude. In regard to these findings, it is important to remember that of the few studies that have examined gender differences in maladaptive shame-coping styles, each has focused exclusively on competitive athletes and this is the first study to examine these gender differences in the general population. Therefore, more research is warranted.

Limitations

Several limitations and recommendations should be considered when interpreting these findings. First, due to the inherent subjectivity in self-reporting, the ability of participants to accurately self-assess, particularly highly negative emotions, may be limited. This underlies one of the major challenges to the assessment of shame and maladaptive shame coping—asking individuals to self-report on something they either want to keep from consciousness or that is outside of their conscious awareness (Yelsma et al., 2002). For example, in the present study, subscale mean comparisons showed Attack Other as the lowest endorsed coping style by over five points, followed by

Avoidance. Considering that both represent externalized forms of maladaptive shame coping and that attacking others would be the least socially desirable response, we cannot rule out the possibility of score suppression or responder bias. We recommend that future studies using the CoSS also test associations using similar constructs that tap into externalization of negative emotions (e.g., addiction, narcissism, denial, anger, aggression).

Second, we used a cross-sectional study design with a predominantly White, non-Hispanic sample of participants, which may limit the generalizability of our findings and the conclusions that can be made about associations and directionality. Future research should test associations among study variables utilizing experimental and longitudinal study designs with more racially and culturally-diverse samples. These associations could also be examined with alternative models (e.g., latent variable modeling) and by gender.

Finally, in the present study, we administered measures that assess generalized maladaptive shame-coping styles and self-compassion. We also examined all constructs of interest with total scores. Our findings may have been strengthened by using measures tailored to the physical domain and investigating associations at the subscale level.

5. Conclusion

Results from this study provide further support for the psychometric soundness of the PASS, currently the only measure designed to assess the phenomenology of shame within a broad range of physical activity experiences. This study also adds to existing knowledge by offering insight into the mechanisms by which shame and shame coping operate in the physical domain. Moreover, to our knowledge, this was the first study to explore how self-compassion relates, both directly and indirectly, to physical activity shame, maladaptive shame coping, and physical activity. Understanding the factors that influence physical activity motivation and behavior is essential to effectively promote physical activity participation and adherence, increase overall health and fitness, and reduce the negative health-related outcomes associated with physical inactivity. As such, we believe programs and interventions that teach the principles of self-compassion may be instrumental in helping individuals identify and adaptively cope with shame over a broad range of physical activity-related experiences (i.e, body, appearance, fitness, skills, injury, performance), and, therefore, could be useful for practitioners in a variety of exercise, sports, and rehabilitation settings. Overall, our findings underscore the importance of adaptive shame coping in the physical domain, and the viability of self-compassion as a potential buffer against shame and a healthy alternative to maladaptive shame coping.

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