

ORIGINAL ARTICLE

The interplay between perfectionism, perceived stress, and self-confidence in competitive athletes: indirect pathways and total unique effects

Weronika A. Mazur^{1 · A,B,C,D,E,F}, Wojciech Waleriańczyk ^{2 · A,C,D,E,F}, Julia Karbowska ^{2 · B,F},
Bogdan Zawadzki ^{1 · E}

1: Faculty of Psychology, University of Warsaw, Warsaw, Poland

2: Department of Social Sciences, Institute of Sport – National Research Institute, Warsaw, Poland

BACKGROUND

Although perfectionistic strivings and concerns show distinct associations with athletes' psychological functioning, no study has estimated their total unique effects on perceived stress and self-confidence. Moreover, it remains untested whether perceived stress serves as a pathway linking perfectionism to athletes' self-confidence. We aimed to a) estimate the total unique effects of perfectionism on perceived stress and self-confidence, and b) test the indirect effects of both perfectionism dimensions on self-confidence via perceived stress.

PARTICIPANTS AND PROCEDURE

A total of 214 Polish athletes (98 female, 116 male; age range 14-30; $M = 18.94$, $SD = 2.90$) from individual and team sports, competing at diverse sport levels, completed online questionnaires assessing perfectionism, perceived stress, and self-confidence. Total unique effects were estimated and path analyses were conducted using structural equation modeling with bootstrapped confidence intervals.

RESULTS

Total unique effects of perfectionism were relatively large for perceived stress and small to medium for self-confidence.

Perfectionistic concerns positively predicted perceived stress and negatively predicted self-confidence, whereas perfectionistic strivings showed no significant effect on stress and positively predicted confidence. The indirect effect of perfectionistic concerns on self-confidence via perceived stress was significant ($B = -0.15$, 95% CI $[-0.289, -0.053]$). Perfectionistic strivings showed no indirect effect ($B = -0.01$, 95% CI $[-0.097, 0.053]$).

CONCLUSIONS

The findings suggest perceived stress as a potential pathway linking perfectionistic concerns to reduced self-confidence, contributing 21% of its total effect. Perfectionistic strivings appear to enhance confidence independently of perceived stress. Longitudinal research is needed to confirm the direction and stability of these pathways.

KEY WORDS

sport; perceived stress; self-confidence; perfectionism; athlete

CORRESPONDING AUTHOR – Wojciech Waleriańczyk, Ph.D., Department of Social Sciences, Institute of Sport – National Research Institute, 2/16 Trylogii Str., 01-982 Warsaw, Poland, e-mail: wojciech.walerianczyk@insp.pl

AUTHORS' CONTRIBUTION – A: Study design · B: Data collection · C: Statistical analysis · D: Data interpretation · E: Manuscript preparation · F: Literature search · G: Funds collection

TO CITE THIS ARTICLE – Mazur, W. A., Waleriańczyk, W., Karbowska, J., & Zawadzki, B. (2026). The interplay between perfectionism, perceived stress, and self-confidence in competitive athletes: indirect pathways and total unique effects. *Current Issues in Personality Psychology*.

RECEIVED 12.02.2026 · REVIEWED 15.03.2026 · ACCEPTED 20.05.2026 · ONLINE PUBLICATION 05.08.2026



BACKGROUND

Self-confidence – an athlete’s belief in their ability to perform successfully under competitive conditions – is recognized as one of the most important psychological factors of successful athletes (Rees et al., 2016). Research consistently shows that it is associated with enhanced focus and higher performance effectiveness among other adaptive outcomes (Vealey & Chase, 2008). Consequently, athletes, coaches, and sport psychologists have long sought to identify individual dispositions that can predict self-confidence and interventions that can elevate it. Self-confidence, however, is not a fully fixed characteristic – it fluctuates, in response to situational demands, feedback, and, most importantly, how stressful events are appraised (Vealey, 2001). One personality trait that is associated with both stress appraisal and self-confidence is perfectionism (Hill et al., 2018). This raises the question of whether perfectionism may indirectly undermine athletes’ self-confidence through its association with elevated perceived stress, and what the overall (i.e., total unique) effect of perfectionism on self-confidence is.

PERFECTIONISM

Perfectionism is a multidimensional personality trait characterized by exceedingly high performance standards accompanied by overly critical self-evaluation, and is best described with two higher-order dimensions: perfectionistic strivings and perfectionistic concerns (Hill et al., 2024). Perfectionistic strivings capture the pursuit of stringent, self-imposed standards and self-critical tendencies. Perfectionistic concerns, in turn, capture preoccupation with mistakes and imperfections, the perception of imposed high standards and negative evaluations from others, and dependence on external validation for self-worth (Hewitt & Flett, 1991). As such, perfectionistic concerns are consistently associated with maladaptive and negative outcomes, including higher levels of distress, athlete burnout, and mental health symptoms (Hill et al., 2018), while perfectionistic strivings show a mix of negative (e.g., higher anxiety symptoms; Smith et al., 2018) and positive outcomes (e.g., superior sport performance; Waleriańczyk, 2025).

PERFECTIONISM AND SELF-CONFIDENCE

Previous research indicates that perfectionistic strivings are associated with greater self-confidence, while perfectionistic concerns are negatively related to self-confidence (Mouratidis & Michou, 2011). As evidenced by meta-analytical data, the effect sizes for the strivings-confidence relationship are smaller

compared to the concerns-confidence relationship (Hill et al., 2018). However, these estimates do not account for the high intercorrelation of perfectionistic strivings and concerns. Consequently, they cannot determine whether the overall effect of perfectionism on self-confidence is neutral, adaptive, or maladaptive. This limitation is addressed by the recently introduced total unique effects (TUE) approach, which calculates the summed standardized coefficients for both dimensions, revealing perfectionism’s net impact (Hill et al., 2021). When both dimensions show effects in opposite directions – as is usually the case for self-confidence – the TUE shows to what extent they cancel each other and which dimension dominates. Conversely, when the effects are in the same direction, the TUE illustrates the full magnitude of the joint effects.

Importantly, most prior studies have relied on zero-order correlations or have controlled for only one perfectionism dimension at a time, which cannot disentangle the overlapping variance of perfectionistic strivings and concerns. This is a notable limitation, as the two dimensions are typically highly intercorrelated (Hill et al., 2024), and their unique and joint contributions to outcomes such as self-confidence remain obscured when examined separately. The TUE approach addresses this gap by summing the standardized regression coefficients of both dimensions from a simultaneous regression, producing a single index of perfectionism’s net effect on a given outcome (Hill et al., 2021). Its practical utility has recently been illustrated in research on athlete motivation, where TUE were small for autonomous motivation, as the two dimensions of perfectionism exerted opposing effects, and large for controlled motivation, where the effects of perfectionistic strivings and concerns aligned (Karbowska et al., 2026). To date, this approach has not been applied to self-confidence or perceived stress in athletes.

The link between perfectionism and self-confidence can be better understood through the lens of Vealey’s (2001) seminal sport confidence model. Vealey defined sport confidence as an athlete’s belief in their ability to perform a specific task successfully under competitive conditions, emphasizing that it is dynamically shaped by internal (e.g., self-evaluation, emotional responses) and external factors (e.g., competitive pressure, feedback). Notably, several of these factors align with features of perfectionism, particularly with the excessive self-criticism, self-worth contingent upon achievement, and the need for external validation – all important components of perfectionistic concerns (Flett & Hewitt, 2002). These links are further evidenced by studies showing that both perfectionistic strivings and concerns are associated with more critical evaluations of one’s own performance in competition (Waleriańczyk et al., 2023) and that athletes whose self-esteem depends on external vali-

dation tend to experience heightened anxiety and diminished belief in their abilities (Koivula et al., 2002).

PERCEIVED STRESS AS A LINKING PROCESS

Crucially, confidence is not merely a response to objective success or failure; it is filtered through cognitive appraisal (Vealey & Chase, 2008). This points to stress appraisal as a potential pathway through which perfectionism and confidence are linked. In the cognitive-transactional model (Lazarus & Folkman, 1984), stress is a subjective experience arising from the appraisal of demands as threatening relative to one's coping resources. Perfectionistic concerns are consistently associated with such threat appraisals: athletes high in concerns interpret competitive situations as threatening, ruminate over mistakes, and doubt their ability to meet expectations (Hill et al., 2010). The pattern for perfectionistic strivings, however, appears more complex, as on one hand, perfectionistic strivings include a component of self-criticism. On the other hand, with their task-oriented focus, perfectionistic strivings might help interpret situations as motivating rather than threatening (Koivula et al., 2002).

Perceived stress has already been established as a mediator in the relationship between perfectionism and several maladaptive outcomes. For example, it mediates the relationship between perfectionistic concerns and athlete burnout (Olsson et al., 2022) and the relationship between perfectionistic concerns and psychological well-being (Chang, 2006). Given that perfectionistic concerns contribute to higher levels of perceived stress and that stress, in turn, is associated with lower self-confidence, perceived stress may represent one of the pathways through which perfectionism erodes athletes' confidence. Two lines of evidence suggest that this may be the case. First, perfectionistic concerns are consistently associated with higher perceived stress, driven by threat appraisal and self-critical cognitions (Hill et al., 2010).

Second, perceived stress is negatively related to self-confidence, as threat appraisal has been shown to diminish athletes' belief in their abilities (Morais et al., 2025; Vealey & Chase, 2008). By contrast, if perfectionistic strivings do not elevate perceived stress, then their positive association with self-confidence would reflect a direct effect rather than one operating through stress.

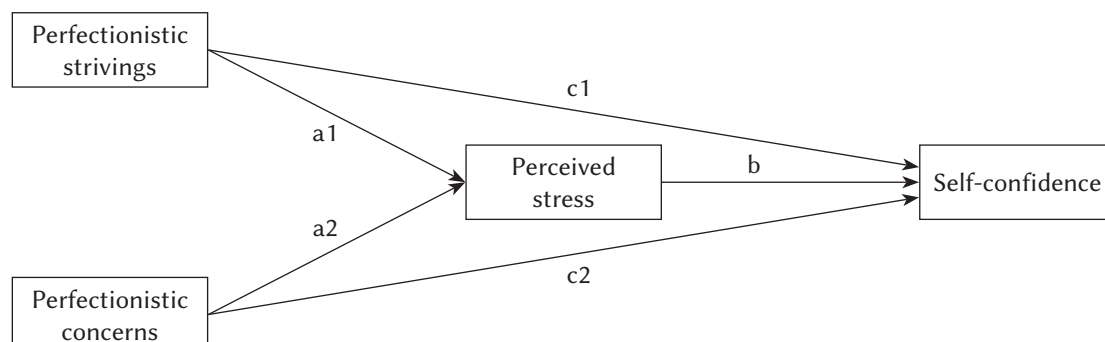
Although perceived stress has been tested as a mediator between perfectionism and burnout (Olsson et al., 2022) and between perfectionism and well-being (Chang, 2006), these findings cannot be directly extrapolated to self-confidence. Self-confidence in sport has distinct theoretical antecedents that are rooted in mastery experiences, social comparison, and cognitive appraisal of competitive demands (Vealey, 2001), and the mechanisms linking perfectionism to confidence may therefore differ from those operating for burnout or well-being. To date, no study has tested whether perceived stress serves as a pathway linking perfectionism to self-confidence in athletes, nor has the total unique effect of perfectionism on these outcomes been estimated.

PRESENT STUDY

In the present study, we aimed to estimate 1) the total unique effects of perfectionism on perceived stress and self-confidence, and 2) the indirect effects of perfectionistic strivings and concerns on self-confidence via perceived stress in a diverse group of athletes (Figure 1). We expected that 1) the total unique effects of perfectionism would be positive and relatively large for perceived stress, and negative and small to medium for self-confidence and that the relative contribution would be higher for perfectionistic concerns in both cases, and 2) the indirect effect of perfectionistic concerns on self-confidence via perceived stress would be significant and negative, while the indirect effect of perfectionistic strivings would not be significant.

Figure 1

Conceptual model of the hypothesized relationships between perfectionism, perceived stress and self-confidence



PARTICIPANTS AND PROCEDURE

PARTICIPANTS

The study involved 214 Polish athletes (98 female, 116 male; age range 14-30; $M = 18.94$, $SD = 2.90$) competing regularly at regional, national, or international levels. For benchmarking purposes, based on Fritz and Mackinnon (2007), a sample size of 148 would be sufficient to detect small-to-medium effects for the bias-corrected bootstrap test of mediation with .80 power. The age range of 14-30 years reflects the developmental span during which athletes enter structured competitive environments, a range typical for competitive sport psychology samples (e.g., McKay et al., 2022). All participants were athletes recruited from training facilities in Poland, resulting in a culturally homogeneous sample. The questionnaires were completed online on the Qualtrics platform. To ensure high quality of data, following prior arrangements with coaches, the researchers visited training facilities and provided athletes who consented to participate with an online link to the questionnaires. The study was approved by the Ethics Committee at the Faculty of Psychology, University of Warsaw.

Among the participants, 104 athletes practiced individual sports such as Kyokushin karate, fencing, or track and field, while 110 participants were engaged in team sports, including football, volleyball, and basketball. Based on the Participant Classification Framework (McKay et al., 2022), which provides a unified framework for assessing athletes' level of sport advancement, 62 athletes represented Tier 2 (athletes who compete at the regional level with limited possibilities for skills development), 57 Tier 3 (athletes who are competing at the national level, having structured and personalized training), and 95 Tier 4 (athletes competing at the international level).

MEASURES

Perfectionism. Perfectionism was assessed using a multi-measure approach – a standard practice shown to increase reliability and validity (Stoeber & Madigan, 2016). Selected subscales from the Multidimensional Perfectionism Scale-2 (S-MPS-2; Gotwals & Dunn, 2009) and the Performance Perfectionism Scale-Sport (PPS-S; Hill et al., 2016) were combined to create higher-order indicators of perfectionistic strivings and perfectionistic concerns (Hill et al., 2024; Stoeber & Madigan, 2016). Perfectionistic strivings were calculated as the standardized sum of scores from the personal standards subscale from S-MPS-2 and the self-oriented performance perfectionism subscale from PPS-S. Perfectionistic concerns were derived from the concern over mistakes and doubts about actions subscales from S-MPS-2,

together with the socially prescribed performance perfectionism subscale from PPS-S. Both Polish versions of the S-MPS-2 and PPS-S have demonstrated satisfactory reliability and validity (Waleriańczyk et al., 2022).

Perceived stress. Perceived stress was assessed using the 10-item version of the Perceived Stress Scale (PSS-10; Cohen et al., 1983) in the Polish adaptation by Juczyński and Ogińska-Bulik (2009), a widely used measure designed to evaluate the degree to which individuals appraise situations in their lives as stressful. The PSS was originally developed as a 14-item measure, and was shortened based on the factor analysis to a 10-item version, which has since become the most widely used form. The PSS items refer to subjective experiences of tension, overload, and coping with daily problems and personal events. Participants indicated how often they felt a certain way during the past month on a five-point Likert scale, ranging from 0 (*never*) to 4 (*very often*). The PSS captures the cognitive and emotional appraisal of stress, rather than objective exposure to stressors, making it suitable for examining the psychological experience of stress in athletes. The Polish version of the PSS has demonstrated satisfactory reliability and validity in sport and non-sport populations (Juczyński & Ogińska-Bulik, 2009).

Athletes' self-confidence. Athletes' self-confidence level was assessed using the Self-Confidence subscale from the Revised Competitive State Anxiety Inventory-2 (CSAI-2R; Cox et al., 2003) in the Polish adaptation (Borek-Chudek, 2019). The subscale consisted of five statements rated on a four-point Likert scale ranging from 1 (*not at all*) to 4 (*very much*), with athletes instructed to answer in line with how they usually feel during competitions. The Polish version of the CSAI-2R has demonstrated satisfactory reliability and validity (Borek-Chudek, 2019).

ANALYTICAL STRATEGY

First, we conducted a set of preliminary analyses to identify and remove outliers and inspect the internal consistencies of the scales. Next, we calculated bivariate correlations between perfectionism, perceived stress, and self-confidence. Subsequently, following Hill et al. (2021), we calculated the TUE of perfectionism and the relative weights to determine the overall effect of perfectionism and the relative contribution of each dimension to perceived stress and self-confidence. Finally, path analysis was conducted to test the indirect effects of perfectionistic strivings and concerns on self-confidence via perceived stress. The path model was estimated using observed (composite) variables rather than latent variables; scale scores were computed as means of the respective items. Both dimensions of perfectionism were in-

cluded as simultaneous predictors, allowing estimation of their unique direct and indirect effects while controlling for their shared variance. Indirect effects were tested using bias-corrected bootstrap confidence intervals with 5,000 resamples. All analyses were conducted using R version 4.3.0 with the lavaan package.

RESULTS

PRELIMINARY ANALYSES

Before the main analyses, we screened for missing data and for participants who failed the attention check (e.g., “In this question, select ‘I disagree’”), but none were found. One univariate outlier (based on $|z| > 3.29$) and no multivariate outliers were found. Next, we calculated McDonald’s ω to determine the internal consistency for all variables in the study (Table 1).

DESCRIPTIVE STATISTICS AND CORRELATIONS

The internal consistencies were above .80 (McDonald’s ω) for all variables, indicating satisfactory reliability (Table 1). Perfectionistic strivings showed a positive correlation with perceived stress and no significant correlation with self-confidence. Perfectionistic concerns were positively related to perceived stress and negatively to self-confidence. The two dimensions of perfectionism showed the expected high intercorrelation.

tionistic concerns were positively related to perceived stress and negatively to self-confidence. The two dimensions of perfectionism showed the expected high intercorrelation.

TOTAL UNIQUE EFFECTS OF PERFECTIONISM

For self-confidence, the TUE was significant, negative, and small-to-medium (TUE = $-.228$), indicating that, overall, perfectionism was associated with lower self-confidence. Relative weight analysis revealed that perfectionistic concerns were a dominant predictor, accounting for 64.5% of the explained variance, whereas perfectionistic strivings explained 35.5%.

For perceived stress, the total unique effect of perfectionism was significant, positive, and large (TUE = $.521$). Relative weight analysis indicated that perfectionistic concerns were again a dominant predictor, accounting for 94.1% of the explained variance, while the contribution of perfectionistic strivings was minimal (5.9%).

PATH ANALYSIS

The results of the path analysis are presented in Table 2 and Figure 2. The model accounted for 25.7%

Table 1

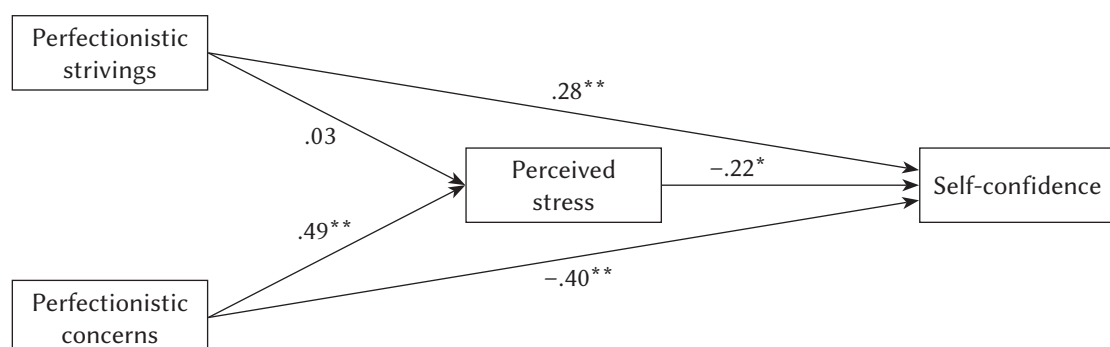
Descriptive statistics, reliability, and correlations

Variable	<i>M</i>	<i>SD</i>	ω	1	2	3	4
1. Perfectionistic strivings	−0.04	1.67	.83	–			
2. Perfectionistic concerns	−0.01	2.24	.90	.54**	–		
3. Perceived stress	2.96	0.71	.86	.29**	.51**	–	
4. Self-confidence	14.31	3.21	.89	.01	−.36**	−.34**	–

Note. $N = 214$; ω – McDonald’s omega; ** $p < .001$.

Figure 2

Standardized coefficients for the paths from the conceptual model based on structural equation modelling



Note. * $p < .01$, ** $p < .001$.

Table 2*Path coefficients, standard errors, and confidence intervals for perfectionism, perceived stress, and self-confidence*

Paths	B	SE	β	95% CI
Effects on perceived stress				
PS $\rightarrow$ perceived stress (a1)	0.01	.03	.03	[−.053, .080]
PC $\rightarrow$ perceived stress (a2)	0.15**	.02	.49	[.106, .200]
Direct effects on self-confidence				
PS $\rightarrow$ self-confidence (c1)	0.55**	.14	.28	[.264, .837]
PC $\rightarrow$ self-confidence (c2)	−0.57**	.12	−.40	[−.793, −.352]
Perceived stress $\rightarrow$ self-confidence (b)	−1.00*	.33	−.22	[−1.624, −.329]
Indirect effects				
PS $\rightarrow$ perceived stress $\rightarrow$ self-confidence	−0.01	.04		[−.097, .053]
PC $\rightarrow$ perceived stress $\rightarrow$ self-confidence	−0.15†	.06		[−.289, −.053]
Total effects				
PS $\rightarrow$ self-confidence	0.54**	.14		[.255, .824]
PC $\rightarrow$ self-confidence	−0.73**	.11		[−.950, −.511]

Note. $N = 214$; PS – perfectionistic strivings; PC – perfectionistic concerns; B – unstandardized coefficient; β – standardized coefficient. 95% CIs based on 5,000 bootstrap samples. * $p < .01$, ** $p < .001$; †95% CI excludes zero.

of the variance in perceived stress and 21.8% of the variance in self-confidence. Because the main model with all paths freely estimated is just-identified ($df = 0$), fit indices are not informative for this specification. However, since the path from perfectionistic strivings to perceived stress was nonsignificant, we estimated a trimmed model excluding this path ($df = 1$). The trimmed model demonstrated excellent fit to the data, $\chi^2(1) = 0.19$, $p = .660$, RMSEA = .00 (90% CI [.00, .14]), CFI = 1.00, NNFI = 1.03, SRMR = .007 (see Table S1 in Supplementary materials for full model output).

DIRECT EFFECTS ON PERCEIVED STRESS

Perfectionistic concerns were a significant positive predictor of perceived stress ($\beta = .49$, $p < .001$), indicating that athletes with higher levels of perfectionistic concerns experienced significantly more stress. Perfectionistic strivings, in contrast, were not significantly related to perceived stress ($\beta = .03$, $p > .05$).

DIRECT EFFECTS ON SELF-CONFIDENCE

Perfectionistic strivings were a significant positive predictor of self-confidence ($\beta = .28$, $p < .001$). Perfectionistic concerns were negatively related to self-confidence ($\beta = −.40$, $p < .001$). Perceived stress was a significant negative predictor of self-confidence ($\beta = −.22$, $p < .01$).

INDIRECT EFFECTS

The indirect effect of perfectionistic concerns on self-confidence via perceived stress was significant and negative ($B = −0.15$, 95% CI [−0.289, −0.053]). The indirect effect of perfectionistic strivings was not significant ($B = −0.01$, 95% CI [−0.097, 0.053]). These results indicate that perceived stress functions as a pathway linking perfectionistic concerns, but not perfectionistic strivings, to reduced self-confidence.

TOTAL EFFECTS

The analysis of total effects confirmed the negative relation of perfectionistic concerns to self-confidence, with 21.2% of this effect accounted for by the indirect pathway through perceived stress. Furthermore, the analysis of total effects confirmed the positive relation of perfectionistic strivings to self-confidence, with a caveat that this effect was entirely direct.

DISCUSSION

This study examined the total unique effects of perfectionism on perceived stress and self-confidence, and tested whether perceived stress may function as a pathway linking perfectionism to self-confidence. The total unique effect of perfectionism was large and positive for perceived stress and small-to-medium and negative for self-confidence, with perfectionistic

concerns being the dominant dimension for both outcomes. Furthermore, path analyses revealed that the indirect pathway through perceived stress accounted for 21% of the perfectionistic concerns' total negative effect on self-confidence. In contrast, the effects of perfectionistic strivings on self-confidence were positive and entirely direct.

TOTAL UNIQUE EFFECTS OF PERFECTIONISM ON PERCEIVED STRESS AND SELF-CONFIDENCE

The total unique effects analysis revealed distinct patterns for perceived stress and self-confidence. For perceived stress, the effects of both dimensions were in the same direction, resulting in a large total unique effect ($TUE = .52$). For self-confidence, these effects operated in opposing directions; the positive effects of perfectionistic strivings were offset by the negative effects of perfectionistic concerns, resulting in a small-to-medium negative effect ($TUE = -.22$). These analyses provide a clear illustration that even though in sport, perfectionism is still frequently positioned as an adaptive characteristic (Rees et al., 2016), its overall effects on crucial components of optimal athletic functioning appear to be predominantly negative. This aligns with research outside of sport, where the overall impact of perfectionism has been shown to be maladaptive in relation to burnout, depression, anxiety, and other outcomes (Hill et al., 2021).

DIRECT AND INDIRECT EFFECTS OF PERFECTIONISM ON SELF-CONFIDENCE

The findings suggest that the net effect of perfectionism on self-confidence is negative and driven mainly by perfectionistic concerns. We now turn to the potential mechanism underlying this association. The observed pathway linking perfectionistic concerns to self-confidence via perceived stress aligns with broader theoretical frameworks, such as the stress process model (Hewitt & Flett, 2002). The central premise of this model is that perfectionism is accompanied by several mechanisms linked to stress generation, anticipation, perpetuation, and enhancement. In the current study, these mechanisms appear to be confined to the dimension of perfectionistic concerns, which was associated with lower self-confidence not only directly, but also indirectly through higher perceived stress. Athletes high in perfectionistic concerns tend to generate stressful events through self-defeating cognitions – they fixate on mistakes, doubt their actions, and are preoccupied with the discrepancies between their expectations and outcomes (Flett et al., 2020). These cognitive patterns create chronic stress, which, in turn, erodes athletes' self-confidence. Vivid examples of this process are

provided by qualitative studies of perfectionistic footballers who report cycles of anxiety, self-criticism, rumination, and a fixation on negatives (Donachie et al., 2025). Notably, as perceived stress accounted for 21% of the total effect of perfectionistic concerns on self-confidence, other mechanisms also contribute substantially to this association. Indeed, recent research has shown that perfectionism interacts with self-efficacy in predicting anxiety and depression (Kozłowska & Kutty-Pachecka, 2023) suggesting that beliefs about one's coping capacity may represent an additional pathway through which perfectionism influences psychological outcomes in performance contexts.

Perceived stress appears less important for the perfectionistic strivings-confidence relationship. We found no evidence for an indirect effect through this pathway, while the direct effect of perfectionistic strivings on self-confidence was positive. This suggests that other mechanisms must underlie the strivings-confidence relationship. Previous research points to motivational processes (e.g., more intrinsic motivation; Madigan et al., 2016) and a higher tendency to reach the flow state (Blachowska et al., 2023) as potential explanations of these findings. Importantly, these positive effects of perfectionistic strivings should not be taken as evidence that perfectionism enhances self-confidence. They emerge only after controlling for perfectionistic concerns, and the two dimensions typically coexist (Hill et al., 2024). The negative TUE highlights that, in reality, the detrimental effects of concerns may outweigh any benefits of strivings. In other words, perfectionistic athletes tend to report lower levels of self-confidence than athletes who are not perfectionistic – the positive residual effect of perfectionistic strivings does not reverse the negative effects of perfectionistic concerns.

LIMITATIONS, STRENGTHS, AND FUTURE DIRECTIONS

Despite the significant findings, this study has several limitations. First, the correlational design does not allow for determining the direction of causality between the examined variables. Furthermore, cross-sectional mediation models can produce biased estimates of the effect sizes, compared to truly longitudinal mediation effects (Maxwell & Cole, 2007). Importantly, mediation analysis assumes a specific causal ordering among variables; however, the cross-sectional design does not allow for establishing temporal precedence. Therefore, the observed indirect effects should be interpreted as associative rather than causal, and future longitudinal or experimental studies are needed to verify the proposed pathways. Longitudinal reexamination of the effects from the current study is warranted and would be worthwhile. Second, while the

use of a multi-measure approach to assessing perfectionism is an important strength of the study, which enhances construct validity, all measures are self-descriptive. Another limitation of the present study is that no age-based analyses were conducted, despite the relatively broad age range of participants. Given that adolescents and adults may differ in psychological functioning and the development of sport-related confidence, future research should examine potential age-related differences in the relationships between perfectionism, perceived stress, and self-confidence. Future studies could also benefit from incorporating multi-method assessments (e.g., physiological indicators of stress, coach ratings) to triangulate self-reported data. Additionally, exploring other potential mediating and moderating variables, such as coping strategies, motivational climate, or social support, may provide deeper insights into the mechanisms linking perfectionism, stress, and confidence in sport.

Another limitation concerns the cultural homogeneity of the sample. All participants were Polish athletes, and Poland is characterized by relatively high individualism (Hofstede, 2016). Research suggests that cultural orientation may influence the expression and consequences of perfectionism; for instance, perfectionistic tendencies and their associations with stress and self-evaluation may differ between individualistic and collectivist cultures. Similarly, the appraisal of stress and the sources of self-confidence may be shaped by cultural values and social norms. Therefore, the generalizability of the present findings to athletes from different cultural backgrounds should be examined in future cross-cultural research.

CONCLUSIONS

The findings suggest that the overall effect of perfectionism on self-confidence is negative and driven mainly by perfectionistic concerns. Perceived stress appears to be one pathway through which concerns may be linked to lower confidence, while the positive effects of strivings operate independently of perceived stress. These findings highlight the importance of addressing perfectionism and stress appraisal in athletes struggling with self-confidence. In particular, interventions targeting the cognitive appraisal of competitive situations may be especially beneficial. Cognitive-behavioral approaches, including acceptance and commitment therapy, have shown promise in reducing perfectionism and perfectionistic cognitions in athletes (Watson et al., 2024), suggesting that interventions targeting perfectionistic concerns may, in turn, help in attenuating perceived stress and strengthening self-confidence.

Supplementary materials are available on the journal's website.

DISCLOSURES

This research received no external funding. The study was approved by the Ethics Committee at the Faculty of Psychology, University of Warsaw (Approval No. 1/12/2018).

The authors declare no conflict of interest.

REFERENCES

- Blachowska, A., Waleriańczyk, W., & Stolarski, M. (2023). Striving for a perfect flow: Testing the 2 × 2 model of perfectionism in trail runners. *Personality and Individual Differences*, 212, 112278. <https://doi.org/10.1016/j.paid.2023.112278>
- Borek-Chudek, D. (2019). Metody do badania cechy lęku w sporcie i emocji we współzawodnictwie sportowym – przykłady polskich adaptacji skal SCAT i CSAI-2R Martensa [Methods for examining anxiety traits in sport and emotions in sports competition – examples of Polish adaptations of Martens' SCAT and CSAI-2R scales]. In M. Guskowska, Z. Gazdowska, & N. Koperska (Eds.), *Narzędzia pomiaru w psychologii sportu* [Measurement tools in sports psychology] (pp. 5–15). AWF Warszawa.
- Chang, E. C. (2006). Perfectionism and dimensions of psychological well-being in a college student sample: a test of a stress-mediation model. *Journal of Social and Clinical Psychology*, 25, 1001–1022. <https://doi.org/10.1521/jscp.2006.25.9.1001>
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24, 385–396.
- Cox, R. H., Martens, M. P., & Russell, W. D. (2003). Measuring anxiety in athletics: The Revised Competitive State Anxiety Inventory-2. *Journal of Sport & Exercise Psychology*, 25, 519–533. <https://doi.org/10.1123/jsep.25.4.519>
- Donachie, T. C., Mallinson-Howard, S. H., Hill, A. P., & Tamminen, K. A. (2025). Exploring how soccer players with perfectionism navigate challenges in talent pathways. *Journal of Sport & Exercise Psychology*, 47, 90–101. <https://doi.org/10.1123/jsep.2024-0166>
- Flett, G. L., & Hewitt, P. L. (2002). Perfectionism and maladjustment: an overview of theoretical, definitional, and treatment issues. In G. L. Flett & P. L. Hewitt (Eds.), *Perfectionism: Theory, research, and treatment* (pp. 5–31). American Psychological Association.
- Flett, G. L., Hewitt, P. L., & Nepon, T. (2020). The Self-Generated Stress Scale: Development, psychometric features, and associations with perfectionism, self-criticism, and distress. *Journal of Psychoeducational Assessment*, 38, 69–83. <https://doi.org/10.1177/0734282919879542>

- Fritz, M. S., & Mackinnon, D. P. (2007). Required sample size to detect the mediated effect. *Psychological Science*, 18, 233–239. <https://doi.org/10.1111/j.1467-9280.2007.01882.x>
- Gotwals, J. K., & Dunn, J. G. H. (2009). A multi-method multi-analytic approach to establishing internal construct validity evidence: The Sport Multidimensional Perfectionism Scale 2. *Measurement in Physical Education and Exercise Science*, 13, 71–92. <https://doi.org/10.1080/10913670902812663>
- Hewitt, P. L., & Flett, G. L. (1991). Perfectionism in the self and social contexts: Conceptualization, assessment, and association with psychopathology. *Journal of Personality and Social Psychology*, 60, 456–470. <https://doi.org/10.1037/0022-3514.60.3.456>
- Hewitt, P. L., & Flett, G. L. (2002). Perfectionism and stress processes in psychopathology. In G. L. Flett & P. L. Hewitt (Eds.), *Perfectionism: Theory, research, and treatment* (pp. 255–284). American Psychological Association.
- Hill, A. P., Appleton, P. R., & Mallinson, S. H. (2016). Development and initial validation of the Performance Perfectionism Scale for sport (PPS-S). *Journal of Psychoeducational Assessment*, 34, 653–669. <https://doi.org/10.1177/0734282916651354>
- Hill, A. P., Hall, H. K., & Appleton, P. R. (2010). Perfectionism and athlete burnout in junior elite athletes: The mediating role of coping tendencies. *Anxiety, Stress, and Coping*, 23, 415–430. <https://doi.org/10.1080/10615800903330966>
- Hill, A. P., Madigan, D. J., Curran, T., Jowett, G. E., & Rumbold, J. L. (2024). Exploring and evaluating the two-factor model of perfectionism in sport. *Journal of Psychoeducational Assessment*, 42, 612–634. <https://doi.org/10.1177/07342829241231149>
- Hill, A. P., Madigan, D. J., & Olamaie, M. (2021). Combined effects, total unique effects and relative weights of perfectionism. *Personality and Individual Differences*, 183, 111136. <https://doi.org/10.1016/j.paid.2021.111136>
- Hill, A. P., Mallinson-Howard, S. H., & Jowett, G. E. (2018). Multidimensional perfectionism in sport: a meta-analytical review. *Sport, Exercise, and Performance Psychology*, 7, 235–270. <https://doi.org/10.1037/spy0000125>
- Hofstede, G. (2016). *Culture's consequences* (2nd ed.). SAGE Publications.
- Juczyński, Z., & Ogińska-Bulik, N. (2009). *Narzędzia pomiaru stresu i radzenia sobie ze stresem*. Pracownia Testów Psychologicznych PTP.
- Karbowska, J., Waleriańczyk, W., Mazur, W., & Stolarski, M. (2026). Perfectionism and motivation in sport: Interactive and total unique effects. *Personality and Individual Differences*, 258, 113814. <https://doi.org/10.1016/j.paid.2026.113814>
- Koivula, N., Hassmén, P., & Fallby, J. (2002). Self-esteem and perfectionism in elite athletes: effects on competitive anxiety and self-confidence. *Personality and Individual Differences*, 32, 865–875. [https://doi.org/10.1016/S0191-8869\(01\)00092-7](https://doi.org/10.1016/S0191-8869(01)00092-7)
- Kozłowska, M. A., & Kutty-Pachecka, M. (2023). When perfectionists adopt health behaviors: Perfectionism and self-efficacy as determinants of health behavior, anxiety and depression. *Current Issues in Personality Psychology*, 11, 326–338. <https://doi.org/10.5114/cipp/156145>
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer.
- Madigan, D. J., Stoeber, J., & Passfield, L. (2016). Motivation mediates the perfectionism-burnout relationship: a three-wave longitudinal study with junior athletes. *Journal of Sport & Exercise Psychology*, 38, 341–354. <https://doi.org/10.1123/jsep.2015-0238>
- Maxwell, S. E., & Cole, D. A. (2007). Bias in cross-sectional analyses of longitudinal mediation. *Psychological Methods*, 12, 23–44. <https://doi.org/10.1037/1082-989X.12.1.23>
- McKay, A. K. A., Stellingwerff, T., Smith, E. S., Martin, D. T., Mujika, I., Goosey-Tolfrey, V. L., Sheppard, J., & Burke, L. M. (2022). Defining training and performance caliber: a participant classification framework. *International Journal of Sports Physiology and Performance*, 17, 317–331. <https://doi.org/10.1123/ijsp.2021-0451>
- Morais, C., Simões, C., Gomes, A. R., & Gonçalves, B. M. (2025). Stressors and expected performance of soccer athletes: The role of sport confidence and cognitive appraisal. *Journal of Clinical Sport Psychology*, 19, 1–21. <https://doi.org/10.1123/jcsp.2022-0046>
- Mouratidis, A., & Michou, A. (2011). Perfectionism, self-determined motivation, and coping among adolescent athletes. *Psychology of Sport and Exercise*, 12, 355–367. <https://doi.org/10.1016/j.psychsport.2011.03.006>
- Olsson, L. F., Grugan, M. C., Martin, J. N., & Madigan, D. J. (2022). Perfectionism and burnout in athletes: The mediating role of perceived stress. *Journal of Clinical Sport Psychology*, 16, 55–74. <https://doi.org/10.1123/jcsp.2021-0030>
- Rees, T., Hardy, L., Güllich, A., Abernethy, B., Côté, J., Woodman, T., Montgomery, H., Laing, S., & Warr, C. (2016). The great British medalists project: a review of current knowledge on the development of the world's best sporting talent. *Sports Medicine*, 46, 1041–1058. <https://doi.org/10.1007/s40279-016-0476-2>
- Smith, M. M., Vidovic, V., Sherry, S. B., Stewart, S. H., & Saklofske, D. H. (2018). Are perfectionism dimensions risk factors for anxiety symptoms? A meta-analysis of 11 longitudinal studies. *Anxiety, Stress, and Coping*, 31, 4–20. <https://doi.org/10.1080/10615806.2017.1384466>
- Stoeber, J., & Madigan, D. J. (2016). Measuring perfectionism in sport, dance, and exercise: Review, critique, and recommendations. In A. P. Hill (Ed.),

- The psychology of perfectionism in sport, dance and exercise* (pp. 31–55). Routledge.
- Vealey, R. S. (2001). Understanding and enhancing self-confidence in athletes. In R. N. Singer, H. A. Hausenblas, & C. M. Janelle (Eds.), *Handbook of sport psychology* (pp. 550–565). Wiley.
- Vealey, R. S., & Chase, M. A. (2008). Self-confidence in sport: Conceptual and research advances. In T. S. Horn (Ed.), *Advances in sport psychology* (pp. 65–97). Human Kinetics.
- Waleriańczyk, W. (2025). Perfectionism, performance, and goal-related variables in running competitions: a three-sample examination in a systematic self-replication framework. *Sport, Exercise, and Performance Psychology*, 14, 522–539. <https://doi.org/10.1037/spy0000389>
- Waleriańczyk, W., Hill, A. P., & Stolarski, M. (2022). A re-examination of the 2x2 model of perfectionism, burnout, and engagement in sports. *Psychology of Sport and Exercise*, 61, 102190. <https://doi.org/10.1016/j.psychsport.2022.102190>
- Waleriańczyk, W., Hill, A. P., & Stolarski, M. (2023). A conditional process model of perfectionism, goal-realization, and post-competition mood. *Psychology of Sport and Exercise*, 69, 102511. <https://doi.org/10.1016/j.psychsport.2023.102511>
- Watson, D. R., Hill, A. P., Madigan, D. J., & Donachie, T. C. (2024). Effectiveness of an online acceptance and commitment therapy programme for perfectionism in soccer players: a randomized control trial. *Sport, Exercise, and Performance Psychology*, 13, 5–22. <https://doi.org/10.1037/spy0000333>