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Avoidance motivation and chinese physical education students' athletic performance: the longitudinal mediation effect of self-handicapping

Motivación de evitación y rendimiento atlético de los estudiantes chinos de educación física: el efecto de mediación longitudinal de la auto-obstaculización

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Abstract

This study explores the bidirectional relationship between avoidance motivation and athletic performance in physical education students and the longitudinal mediating role of self-handicapping. We seek to reveal the mechanisms through which avoidance motivation and self-handicapping influence athletic performance in physical education students, providing empirical support for the development of outstanding athletes and sports education professionals. A longitudinal study was conducted using a questionnaire survey method with 1,147 physical education students over two years, with assessments occurring once per year. Data were analyzed using structural equation modeling. Results: (1) Athletic performance at the first measurement (T1) significantly negatively predicted avoidance motivation at the third measurement (T3) ($\beta = -0.07$, $p < 0.05$). Avoidance motivation at T1 did not significantly predict athletic performance at T3 ($\beta = 0.004$, $p > 0.05$). (2) Path analysis revealed that self-handicapping plays a longitudinal mediating role in the bidirectional relationship between avoidance motivation and athletic performance. The model showed good fit indices ($\chi^2 = 53.514$, $df = 7$, $CFI = .988$, $TLI = .952$, $RMSEA = .076$, $SRMR = .024$). Therefore, the following conclusions are drawn: (1) Athletic performance significantly negatively predicts subsequent avoidance motivation in physical education students, while avoidance motivation does not significantly predict subsequent athletic performance. (2) Self-handicapping is a longitudinal mediator between athletic performance and avoidance motivation. Athletic performance can directly affect avoidance motivation and indirectly influence it through self-handicapping.

Keywords: developmental psychology, self-handicapping, cross-lagged analysis, longitudinal study

Resumen

Este estudio explora la relación bidireccional entre la motivación de evitación y el rendimiento atlético en estudiantes de educación física, y el papel mediador longitudinal de la auto-obstaculización. Buscamos revelar los mecanismos a través de los cuales la motivación de evitación y la auto-obstaculización influyen en el rendimiento atlético de los estudiantes de educación física, proporcionando apoyo empírico para el desarrollo de atletas destacados y profesionales de la educación deportiva. Se realizó un estudio longitudinal utilizando el método de encuesta por cuestionario con 1.147 estudiantes de educación física durante dos años, con evaluaciones que tuvieron lugar una vez al año. Los datos se analizaron utilizando modelos de ecuaciones estructurales. Los resultados muestran: (1) El rendimiento atlético en la primera medición (T1) predijo negativamente de manera significativa la motivación de evitación en la tercera medición (T3) ($\beta = -0.07$, $p < 0.05$). La motivación de evitación en T1 no predijo significativamente el rendimiento atlético en T3 ($\beta = 0.004$, $p > 0.05$). (2) El análisis de rutas reveló que la auto-obstaculización juega un papel mediador longitudinal en la relación bidireccional entre la motivación de evitación y el rendimiento atlético. El modelo mostró buenos índices de ajuste ($\chi^2 = 53.514$, $df = 7$, $CFI = .988$, $TLI = .952$, $RMSEA = .076$, $SRMR = .024$). Por lo tanto se concluye: (1) El rendimiento atlético predice negativamente de manera significativa la motivación de evitación subsecuente

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en los estudiantes de educación física, mientras que la motivación de evitación no predice significativamente el rendimiento atlético subsecuente. (2) La auto-obstaculización es un mediador longitudinal entre el rendimiento atlético y la motivación de evitación. El rendimiento atlético puede afectar directamente la motivación de evitación e influir indirectamente a través de la auto-obstaculización.

Palabras clave: psicología del desarrollo, auto-obstaculización, análisis de retardos cruzados, estudio longitudinal.

Introduction

Sports play a crucial role in individuals' physical health, psychological development, and social interactions (Teychenne et al., 2020). With the increasing societal focus on healthy lifestyles, physical education students must maintain their physical and psychological well-being as future educators and coaches, which impacts their future teaching credibility and influence (Yin et al., 2016). Recent research has extensively explored factors affecting individual athletic performance, with psychological factors such as avoidance motivation and self-handicapping gaining attention (Mostafavi et al., 2023). However, more exploration of the bidirectional relationship between these factors and their longitudinal mediating roles still needs to be explored. Therefore, it is necessary to conduct longitudinal studies to reveal further the complex dynamic relationships between avoidance motivation, self-handicapping, and athletic performance, providing a more targeted theoretical basis for psychological interventions in sports education.

Psychologists have developed the concept of motivation to reflect the underlying drives and energy behind human behavior (Ryan et al., 2021). Motivation drives individual behavior and is one of the fundamental assumptions in psychology (Acquah et al., 2021). Avoidance motivation is a subtype of motivation where individuals, when faced with challenges, difficulties, or uncomfortable situations, tend to engage in avoidance or evasion behaviors or strategies to alleviate discomfort (Elliot, 2008; Chen et al., 2023). This behavior often reflects individuals' fear of possible failure, pain, or anxiety, leading them to avoid challenges to prevent emotional discomfort (Esch, 2022). Avoidance motivation may manifest as procrastination, evasion of complex tasks, avoidance of competition, and expressions of self-doubt and negative emotions (Mofield et al., 2016). Due to an excessive preoccupation with potential losses,

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Individuals who avoid failure may exhibit avoidance behaviors in goal pursuit and experience higher shame following task failures (Ajzen & Kruglanski, 2019). One key area of research on avoidance motivation is educational psychology, where scholars have extensively studied its effects on academic and athletic performance (Claver et al., 2020). Numerous cross-sectional studies have shown that academic and athletic performance predicts subsequent avoidance motivation (Ajzen & Kruglanski, 2019; Mofield et al., 2016; Trigueros et al., 2020). Lonsdale, Hodge, and Rose (2008) introduced a questionnaire for measuring athletes' behavioral regulation and explored how avoidance and intrinsic motivation relate to athletes' self-regulation behaviors and performance. Their findings indicated that avoidance motivation negatively correlates with self-regulation and hurts athletic performance. Ntoumanis and Standage (2009) analyzed motivation in physical education classes from the perspective of self-determination theory, suggesting that avoidance motivation is related to external regulation and may affect individuals' engagement and performance in physical education. These studies indicate that avoidance motivation may negatively impact individuals' performance in sports, reducing their self-regulation and active engagement. Understanding the role of avoidance motivation in athletic performance helps develop educational and training strategies to promote positive sports participation and excellent performance.

Self-handicapping is a behavioral strategy individuals use to externalize the reasons for poor performance to avoid or mitigate the negative impact of failure (Urda & Midgley, 2001). It is also a self-protective strategy to attribute failure or poor performance to external factors before the outcome occurs so that personal self-esteem is not damaged, thereby highlighting one's achievements and value (Rhodewalt et al., 1984). Liu Lin (2010) found a negative correlation between self-handicapping and athletic performance. Tan Jiang (2021) reported that self-handicapping significantly negatively predicts students' interest in learning and athletic performance. Wang Weibing (2006) found that in athletic performance contexts, the level of self-reported self-handicapping among college tennis players is related to their performance, with lower self-handicapping levels associated with poorer performance. Ommundsen (2004) found different results, showing that self-handicapping levels significantly impact

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athletic performance. Harry Prapavessis (2003) studied the role of self-handicapping in predicting sports anxiety and performance, finding a negative correlation between self-handicapping and both sports anxiety and performance, with higher self-handicapping tendencies linked to more significant anxiety and poorer performance. These studies suggest that self-handicapping may negatively affect individuals' performance in sports by reducing their confidence, engagement, and performance levels. Shields and Bredemeier (1995), in their book **Character Development and Physical Activity**, discussed the relationship between character development and physical activity, including avoidance motivation and self-handicapping. The book emphasizes that both avoidance motivation and self-handicapping can negatively impact performance in sports. Based on this background, this study employs longitudinal data and cross-lagged model design to explore the reciprocal predictive relationships between avoidance motivation, self-handicapping, and athletic performance in physical education students. Therefore, the following hypotheses are proposed:

H1: Athletic performance significantly negatively predicts subsequent avoidance motivation in physical education students, while avoidance motivation does not significantly predict subsequent athletic performance.

H2: Self-handicapping significantly mediates between athletic performance and avoidance motivation.

Materials and Methods

Research Design

This study used a quantitative research design and a cross-sectional survey to explore the relationship between avoidance motivation and athletic performance. The study aimed to analyze the interactions among independent, dependent, and mediating variables at different time points to reveal potential causal relationships. Specifically, the study incorporated cross-lagged analysis techniques to systematically measure and analyze the research variables, ensuring the reliability and validity of the results.

Participants

Participants were students majoring in physical education from six universities: Zunyi Normal University, Guizhou Normal University, Guiyang University, Guizhou

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University, Guizhou Minzu University, and Tongren University, all from the 2020 cohort. At the first measurement (T1), 1,256 questionnaires were distributed with a 100% return rate. Questionnaires with severe missing data, abnormal response patterns, duplicates, or not meeting the research criteria (3.1%) were excluded, resulting in 1,147 valid questionnaires, representing a validity rate of 91.3%. Of these, 517 were female (45.1%) and 630 were male (54.9%). One year later, 94.33% (1,082) of the original participants took part in the second measurement (T2), and two years later, 85.4% (980) participated in the third measurement (T3). Independent samples t-tests were conducted to compare the scores on avoidance motivation, self-handicapping, and athletic performance between participants who completed all measurements and those who participated only in the first measurement. The results indicated no significant differences in avoidance motivation and self-handicapping ($t_s < 1.14$, $p_s > .05$); however, there was a difference in athletic performance ($t(2124) = -2.25$, $p < .05$), with participants having lower athletic performance at the first measurement. Given the large sample size, low attrition rate, and the differences observed in only a single variable, the study can reasonably estimate the longitudinal relationships between variables (Nguyen et al., 2018).

Testing Procedure

(1) Participant Recruitment and Informed Consent: Before starting the study, The research team contacted relevant teachers and classes in the universities' physical education departments. After obtaining their consent, the study's objectives, content, and potential impacts were explained to the students in detail. Informed consent was obtained from all participants, ensuring their voluntary participation.

(2) Grouping and Testing Arrangement: Class tested participants. To facilitate organization and management, testing was conducted three times over two years, each session spaced one year apart. The timing of the tests was carefully chosen to avoid the period of students' physical fitness tests and the surrounding two weeks, ensuring that the students' physical and mental states were relatively stable. Each test was scheduled about one month after the start of the summer vacation to avoid peak periods of study or other activities.

(3) Testing Content and Frequency: The first measurement (T1) and the third

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measurement (T3) focused on assessing avoidance motivation, self-handicapping, and athletic performance and measuring these variables aimed to evaluate how avoidance motivation and self-handicapping affect athletic performance and their interrelationships. The second measurement (T2) focused on measuring self-handicapping to analyze its potential mediating role between avoidance motivation and athletic performance.

(4) **Testing Tools and Implementation:** Online questionnaires were administered using the Wenjuanxing APP. This platform offers advantages such as ease of operation, management, and automatic data aggregation, facilitating the efficient collection of large amounts of data. Before each test, trained volunteers from the research team entered the class WeChat groups as the main testers responsible for conducting the testing. The main testers provided detailed instructions in the class groups before the formal testing to ensure that all students understood the testing process and requirements. Each test session lasted about 40 minutes, during which students completed the questionnaire. The online testing channel was closed immediately after completing the questionnaire to ensure data validity and fairness.

(5) **Data Collection and Control Measures:** Before testing, the main testers emphasized the importance of autonomy and authenticity in answering the questions to ensure that students completed the questionnaire independently, avoiding discussion or external interference. To maintain consistency in the testing environment, the research team strictly controlled the timing of the tests, choosing appropriate periods for data collection and minimizing external disruptions to ensure that students' conditions remained consistent across the three testing sessions.

(6) **Post-Test Data Processing and Privacy Protection:** After collecting the questionnaire data, the research team conducted initial data cleaning and screening to remove invalid data and ensure data quality. Throughout the study, strict privacy protection principles were followed, with all participant data anonymized to prevent the disclosure or misuse of personal information outside the scope of this research.

Tools

Avoidance Motivation

The Achievement Motivation Scale (AMS) was translated into Chinese by scholars Ye Renmin and Norwegian Hegtvet K.A. in 1988 and has since been revised for use

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with college and high school students. The scale consists of 30 items, with items 1-15 assessing approach motivation and 16-30 assessing avoidance motivation. Higher scores indicate more robust levels of this type of motivation. This study used only the avoidance motivation subscale, which includes 15 items. The validity of the avoidance motivation subscale was confirmed through review by two psychology experts, and its reliability, as measured with a sample of college students, yielded a Cronbach's alpha coefficient of 0.84.

Self-Handicapping

The "Self-Handicapping Scale for Sports," developed by Zhang Liwei in 2006, was used. This scale consists of 10 items and employs a 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree," with higher scores indicating a greater tendency for self-handicapping. The scale demonstrated a Cronbach's alpha coefficient of 0.727 in Zhang Liwei's research, and a principal component analysis revealed that all item factor loadings were above 0.5, indicating the high validity of the scale.

Athletic Performance

The latest revised "National Physical Fitness Standard for Students" (2015) is essential for evaluating students' overall quality, assessing school performance, and measuring educational development across regions. It applies to full-time primary and secondary school students, vocational school students, and college students. The mandatory tests for college students include the 50-meter dash, sit-and-reach test, standing long jump, pull-ups (male), sit-ups (female), 1000-meter run (male), and 800-meter run (female) (Ministry of Education of the People's Republic of China, 2014). Athletic performance was measured using the most recent comprehensive scores from these mandatory physical fitness tests during each questionnaire survey. Higher total scores indicate better athletic performance. The test results were standardized within each grade level at each school.

Ethics

This study adhered to the fundamental ethical research requirements and received approval from the Ethics Committee of Universiti Sains Malaysia, ensuring the research process met ethical standards. Before the study's commencement, all participants signed informed consent forms, clearly understood the purpose, process, and potential risks of

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the research, and agreed to participate voluntarily. The study maintained strict confidentiality regarding participants' personal information and protected privacy during data analysis.

Statistical Analysis

Common Method Bias Testing

Harman's single-factor test was used to check for common method bias across the three measurement waves. The results indicated that the number of factors with eigenvalues greater than 1 for the three measurements was 7, 6, and 6, respectively. The variance explained by the first factor was 7.35%, 6.48%, and 8.34%, all of which are below the 40% threshold. This suggests that common method bias was not significant across the three measurements.

Cross-Lagged Analysis

Cross-lagged analysis is a statistical method used to examine causal relationships between variables, particularly useful for assessing the reciprocal influence of two or more variables over time (Blau, 1964). In this study, a cross-lagged model was constructed based on correlation analysis. This model is a saturated model, meaning its parameter estimates correspond one-to-one with the covariance matrix elements, resulting in zero degrees of freedom. Therefore, model fit indices are not the primary focus. The study mainly concentrates on interpreting path coefficients to reveal the reciprocal effects between avoidance motivation and athletic performance (Steger & Gondoli, 2013).

Mediation Effect Testing

The study employed the Wald chi-square test to examine mediation effects. First, an unrestricted model was constructed, allowing all path coefficients between the independent variable, dependent variable, and mediator to be freely estimated, providing a comprehensive assessment of the mediation effect. Subsequently, a restricted model was constructed, assuming that the path coefficients for the mediation effect were zero, aiming to test the presence of the mediation effect. By comparing the chi-square values and degrees of freedom between the unrestricted and restricted models, the Wald chi-square test was used to assess the significance of the mediation effect and determine whether the mediator's role between the independent and

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dependent variables was significant.

Results

Descriptive Statistics and Correlation Analysis of Variables in Physical Education Students

The descriptive statistics and correlation analysis results for the variables are presented in (Table 1). Avoidance motivation, self-handicapping, and athletic performance were analyzed as dependent variables, with measurement time as the within-subject variable and gender as the between-subject variable. Repeated measures ANOVA revealed significant main effects of measurement time on avoidance motivation, self-handicapping, and athletic performance ($F(1,1002)=21.11, \eta^2=.02$; $F(2,980)=17.73, \eta^2=.04$; $F(1,1127)=32.56, \eta^2=.03, ps<.001$). Further post-hoc analysis indicated that avoidance motivation was significantly higher at T1 compared to T3, self-handicapping was significantly higher at T1 than at T2 and T3, and self-handicapping was higher at T3 compared to T2. Additionally, athletic performance was significantly higher at T1 than at T3. However, the main effect of gender was not significant. Further correlation analysis showed significant pairwise correlations between avoidance motivation, self-handicapping, and athletic performance, both simultaneously and across different time points.

Table 1 Mean, standard deviation, and correlation between all variables

variables	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
T1 Avoidance motivation	2.34	.86						
T3 Avoidance motivation	2.19	.82	.44***					
T1Self-handicapping	1.41	.25	.55***	.36***				
T2Self-handicapping	1.37	.25	.45***	.44***	.63***			
T3Self-handicapping	1.38	.25	.36***	.56***	.54***	.68***		
T1Athletic Performance	.00	.86	-.12***	-.12***	-.22***	-.17***	-.17***	
T3Athletic Performance	-.06	.86	-.10***	-.12***	-.21***	-.16***	-.21***	-.87***

Note: T1, T2, and T3 represent three measurement times respectively, *** $p<0.001$; ** $p<0.01$; * $p<0.05$; "1", "2", "3", "4", "5", "6" refer to the order of correlation coefficients between variables.

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Cross-Lagged Analysis of Avoidance Motivation and Athletic Performance in Physical Education Students

Based on the correlation analysis, a cross-lagged model was constructed to explore the bidirectional relationship between avoidance motivation and athletic performance.

(Figure 1) clearly shows that athletic performance at Time 1 (T1) significantly negatively predicted avoidance motivation at Time 3 (T3) ($\beta = -0.07$, $p < 0.05$). However, avoidance motivation at T1 did not significantly predict athletic performance at T3 ($\beta = 0.004$, $p > 0.05$). The model explained 19% of the variance in avoidance motivation at T3. This model helps understand the relationship between avoidance motivation and athletic performance, highlighting the impact of athletic performance on avoidance motivation.

A Wald chi-square test model, stratified by gender, was used to compare the variable relationships shown in Figure 1. First, a non-restricted model was established, indicating that the non-restricted model fit well for both males and females. Next, a restricted model was established, where the path coefficients for T1 athletic performance \rightarrow T3 avoidance motivation and T1 avoidance motivation \rightarrow T3 athletic performance were constrained to be equal. The comparison with the non-restricted model showed no significant differences (Wald $\chi^2(2) = 0.59$, Wald $\chi^2(2) = 1.13$, $ps > 0.05$). This indicates no significant gender differences in the path coefficients for the mutual prediction of athletic performance and avoidance motivation.

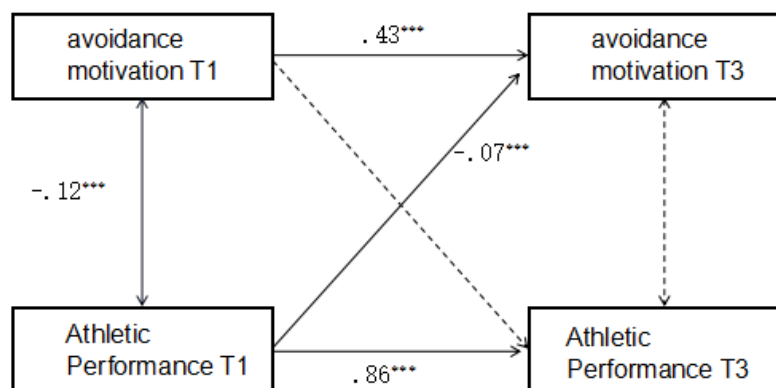


Figure 1 Cross-lagged model of the relationship between avoidance motivation and athletic Performance
 Note: Solid lines are significant paths, dashed lines are non-significant paths, and non-significant paths are uniformly not shown, the same below.

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The Mediating Role of Self-Handicapping in the Relationship Between Avoidance Motivation and Athletic Performance in Physical Education Students

Path analysis was used to examine the longitudinal mediation model of self-handicapping in the bidirectional relationship between avoidance motivation and athletic performance. The model fit indices were satisfactory: $\chi^2 = 53.514$, $df = 7$, $CFI = .988$, $TLI = .952$, $RMSEA = .076$, $SRMR = .024$. The specific results showed that athletic performance at Time 1 (T1) significantly predicted self-handicapping at Time 2 (T2) and self-handicapping at T2 predicted avoidance motivation at Time 3 (T3). Avoidance motivation at T1 significantly predicted self-handicapping at T2, but self-handicapping at T2 did not predict athletic performance at T3 (see Figure 2). Bootstrap analysis revealed that the 95% confidence interval for the mediating effect of self-handicapping at T2 between T1 athletic performance and T3 avoidance motivation was $[-0.029, -0.001]$, indicating a significant mediating role of self-handicapping at T2. This model explained 25% of the variance in avoidance motivation at T3. In contrast, the 95% confidence interval for the mediating effect of self-handicapping at T2 between T1 avoidance motivation and T3 athletic performance was $[-0.008, 0.000]$, suggesting that self-handicapping at T2 did not mediate the relationship between T1 avoidance motivation and T3 athletic performance.

A Wald chi-square test model was used to examine gender differences in the relationships depicted in (Figure 2). First, a non-restricted model was established, and it was found that the non-restricted model fit well for both males and females. Next, a restricted model was constructed by constraining the four mediation path coefficients in Figure 2 (T1 athletic performance \rightarrow T2 self-handicapping; T1 avoidance motivation \rightarrow T2 self-handicapping; T2 self-handicapping \rightarrow T3 athletic performance; T2 self-handicapping \rightarrow T3 avoidance motivation). The comparison between the restricted model and the non-restricted model showed no significant differences (gender: Wald $\chi^2(4) = 2.64$, $p > 0.05$). Furthermore, tests for gender differences in the two longitudinal mediation paths revealed no significant gender differences for either path (Wald $\chi^2(1) = 0.00$, $p > 0.05$; Wald $\chi^2(1) = 0.02$, $p > 0.05$).

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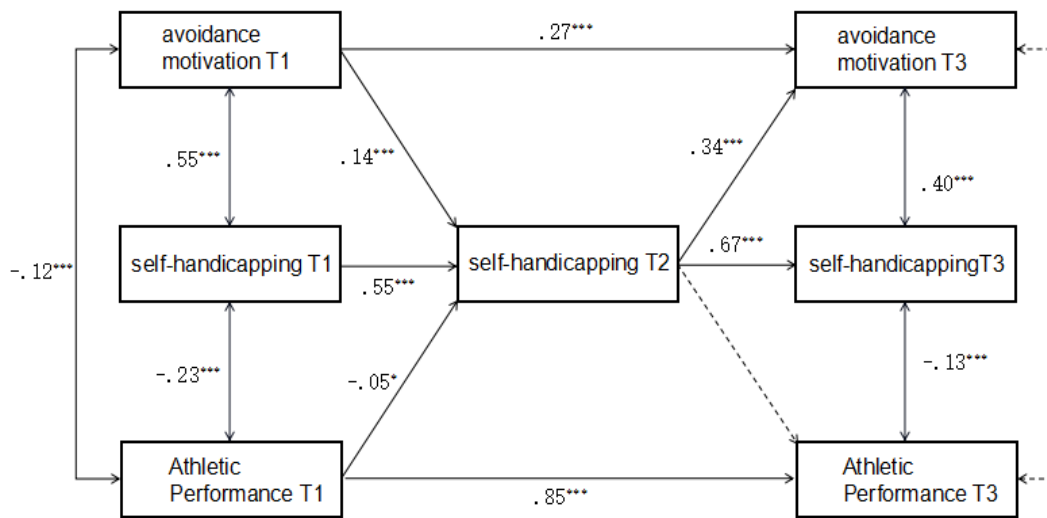


Figure 2 Longitudinal mediation model of the relationship between variables

Discussion

The Bidirectional Relationship Between Avoidance Motivation and Athletic Performance in Physical Education Students

This study found that athletic performance significantly negatively predicted subsequent avoidance motivation in physical education students. This result is consistent with Wang Junqi's (2020) study on college badminton players' performance and motivation. The reason behind this finding is that poor athletic performance can have emotional impacts on physical education students. Students may feel frustrated and disappointed due to poor performance, leading to avoidance. Since physical education students often start long-term professional sports training from a young age, their overall physical fitness is generally better than that of ordinary students, making competition in athletic performance more intense. Athletic performance reflects the final learning outcomes of physical education students and involves factors such as self-identity, social recognition, and personal confidence. When students face setbacks, they may question their abilities, leading to avoidance motivation to evade potential failure.

However, avoidance motivation did not significantly predict subsequent athletic performance. Avoidance motivation does not have a noticeable short-term effect on athletic performance because various factors influence performance, including skill level, training volume, and health status. Avoidance motivation primarily reflects an

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emotional and psychological state that directly affects individuals' attitudes towards participation, their level of engagement, and their enthusiasm, thus having a limited impact on athletic performance in the short term. Other factors, such as interest and team cooperation, also play significant roles in athletic performance.

Overall, athletic performance has a more direct and apparent impact on avoidance motivation, whereas avoidance motivation's effect on athletic performance is more complex and indirect. In real life, emotions, motivation, confidence, and personal attitudes intertwine to affect students' athletic performance and psychological state.

The Mediating Role of Self-Handicapping in the Relationship Between Avoidance Motivation and Athletic Performance in Physical Education Students

This study found that self-handicapping plays a longitudinal mediating role in the relationship between athletic performance and avoidance motivation in physical education students. Specifically, athletic performance can indirectly influence avoidance motivation through self-handicapping, but avoidance motivation does not indirectly affect athletic performance through self-handicapping. This expands understanding of the relationships between athletic performance, self-handicapping, and avoidance motivation. Poor athletic performance is an essential adverse learning event for physical education students and is a significant factor leading to self-handicapping behavior.

Athletic performance indirectly influences avoidance motivation through self-handicapping because poor performance triggers negative self-cognition and emotions, such as self-doubt, inferiority, and anxiety. These emotions lead individuals to negatively evaluate their abilities, resulting in self-handicapping behaviors, such as avoiding situations that cause discomfort or frustration, including sports. Avoidance of sports becomes a way to alleviate emotional discomfort, creating an indirect link between athletic performance and avoidance motivation. Avoidance motivation does not directly impact athletic performance because it primarily involves emotional and psychological states, while multiple factors influence performance. Avoidance motivation does not significantly affect performance because avoidance behaviors do not directly translate into actual actions. Additionally, athletic performance involves skills, training, health, and other factors, making the effect of avoidance motivation relatively weak.

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Due to multiple constraints on this mediation, avoidance motivation cannot indirectly affect athletic performance through self-handicapping. Self-handicapping behaviors provide short-term emotional relief but negatively impact skill improvement and active participation in the long term. However, the effect of self-handicapping does not directly manifest in athletic performance because performance is more influenced by other factors such as skill, training investment, and team cooperation. Moreover, the impact of self-handicapping on performance requires time to become apparent, extending beyond the scope of short-term studies.

In summary, avoidance motivation does not directly affect athletic performance due to its distance from actual athletic behavior, while various skills and factors influence performance. The interaction of time scales and multiple factors affects the indirect effect of self-handicapping on athletic performance. These findings highlight the complex relationship between psychological factors and athletic performance, emphasizing the need for further research to reveal underlying mechanisms.

Conclusion

(1) From T1 to T3, previous athletic performance significantly negatively predicted subsequent avoidance motivation in physical education students, whereas previous avoidance motivation did not significantly predict subsequent athletic performance.

(2) From T1 to T3, self-handicapping significantly mediates between athletic performance and avoidance motivation. Athletic performance can directly affect avoidance motivation in physical education students and indirectly influence it through self-handicapping.

Limitations and Future Research

The limitations of this study primarily include sample selection bias and the potential subjectivity of self-report data, which may restrict the generalizability and accuracy of the findings. Additionally, the short period of the study may only partially capture the long-term relationships between the variables. Future research should expand the sample size, increase the number of data collection points, and use more

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objective measurement tools to verify the stability and reliability of the results. Moreover, exploring additional moderating variables and mediating mechanisms will contribute to a deeper understanding of the research topic.

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