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Exploring the Perceptions of Student-Athletes Leading Towards Physical Activity and Perceived Performance

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Abstract

Student-athletes perceived physical and psychological stability is a vital source of enhanced performance and physical activity. The current study, grounded in attribution theory, examines the effect of student-athletes' reported mental and physical health on their perceived performance and physical activity. Additionally, a unique construct, perceived physical self-concept, is also accessed as an Intervening mechanism between the study variables. A cross-sectional field survey was undertaken of 279 student-athletes enrolled in several Indonesian universities in the Bali area. Perceived psychological and physical health were found to be positively linked with perceived performance and physical activity. Additionally, these associations were found to be mediated by perceived physical self-concept. Further, future research directions, key policy insights, and theoretical and managerial implications for sports science scholars and policymakers are suggested.

Keywords: Perceived Psychological Health; Perceived Physical Health; Perceived Performance; Physical Activity; Perceived Physical Self-Concept; Attribution Theory; Studentthletes

1. Introduction

Sports activities in educational institutions support students' mental and physical well-being and help them grow healthy (Miller et al., 2021). In connection to that, universities and other higher education institutions promote sports competitions among students within institutes and across borders to develop higher levels of physical activity, a sense of achievement, enforce discipline, and build teamwork (Fox et al., 2010). Performance in sports activities is based on students' perceptions of higher achievement through more robust physical and sports activity (Simms et al., 2021). Additionally, sports activities motivate students to pursue academic goals, and students assess their performance based on their ability to satisfy the physical and cognitive demands of these goals (Johnston et al., 2021).

Physical activity is also a critical part of sports for student-athletes (Choi et al., 2021). It demands body movement that results in energy expenditures to sustain physical health and performance goals (Osipov et al., 2020). Athletes must have physical strength, speed, and endurance to depict the higher intensity of physical activities. Furthermore, to meet their institute and coaches/instructors' demands, students face physical and psychological pressures regarding performance anxiety, stress, injuries, and eating disorders. Students' reported psychological health significantly determines their perceived performance and physical activity. Psychological health is a mental function state that results in productive activities, fulfilling relationships with other people, and adapting to change. (Simms et al., 2021). Perceived psychological health is an important determinant of athletes' engagement in sports (Johnston et al., 2021). Whereas excessive mental pressure impacts the performance level of the athletes as standards in sports and maintaining academic performance pose much mental stress for student-athletes. Many universities require a minimum level of CGPA, physical weight, and physical activity from their athletes (Johnston et al., 2021), which leads to depression, anxiety, and substance use which affects overall perceived performance and physical activity.

Because athletics entails competitive running, jumping, throwing, and swimming, athletes must be physically fit to compete - (Parker et al., 2018). Most of the studies have focused on mental health, but focused investigations on the role of student-athletes perceived physical health are scarce in the literature. It relates to the physical perception of sports competence, physical strength, physical condition, body attractiveness and overall physical self-worth (Piko, 2000). The current study will advance by investigating the effect of perceived physical health on athletes' perceived performance and physical activity. Perceived physical self-concept is related to the perception of an individual's physical ability and appearance

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(Sánchez-Miguel et al., 2020). Previous research on self-concept focused on a general and global view of self (Klomsten et al., 2004). Whereas the physical dimension, which contributes to self-concept, was ignored for decades. It was recently introduced to formulate a fundamental part of the perceived self-concept in sports (Kim et al., 2020). There is a scarcity of studies that focus on the impact of student-athletes perceived physical self-concept on their physical activity and performance.

Moreover, to the best of the authors' knowledge, no study has investigated the mediating role of perceived physical self-concept of student-athletes in the association of their psychological and physical health with perceived performance and physical activity. Thus, based on the literature gap and the fact that physically active students have a higher level of physical and emotional self-concept (Kim et al., 2020), competitiveness increases due to increased perceived self-concept (Murray et al., 2021). Hence, making an advance, this study focused on investigating the role of perceived psychological health and physical health. Physical self-concept determines the student-athletes' perceived performance and physical activity.

Most previous research in analyzing student participation in athletics focused on motivation and goal orientation theories, but very few investigated attribution theory's role in determining student-athletes ' perceptions of their performance and physical activity. Attribution theory relates to how individuals explain the causes of success and failure based on behaviours caused due to situational or dispositional occurrences, and physical and psychological attributes (Antblad, 2020). Thus, anchored in attribution theory, the current study will contribute to the body of existing knowledge. In Indonesia, the Department of Youth and Sports (DISPORA) coordinates educational sports alongside the Department of Education and Culture (DISDIKBUD) (Ma'mun, 2019). Many international renowned school games, such as the 2019 Sea games, 2018 Asian Games and Asian Para games 2018, were held in recent years, where students from various colleges and universities participated in various sports activities and won prestigious awards (Triwiyanto & Prasojo, 2020). Therefore, it is timely and wise to investigate the factors and underlying mechanisms affecting Indonesian student-athletes' performance and physical activity. Hence, the current study context of Indonesia to explore students' perceptions of physical activity and Perceived Performance, which have not been studied before, is expected to advance the literature by providing empirical evidence in this cultural context. Thus, the current study is highly significant from student-athletes perspective with the following objectives.

1. To investigate the direct impact of student-athletes' psychological and physical health on their perceived performance and physical activity.
2. To investigate the direct impact of student-athletes' psychological and physical health on their perceived physical self-concept.
3. To investigate the direct impact of perceived physical self-concept on their perceived performance and physical activity.
4. To investigate the indirect impact of student-athletes' psychological and physical health on their perceived performance and physical activity via perceived physical self-concept as an underlying mechanism.

2. Literature Review and Theoretical Foundation of The Study

2.1. Theoretical Foundation

Attribution theory in sports psychology advocates that people attribute failure or success to causes likeability, determination, physical and mental strength (Antblad, 2020). This theory's three main characteristics are controlled, locus of control and stability (Graham & Folkes, 2014). Control refers to the psychological concept that individuals believe they are in command over situation and experiences; in the current study, it relates to perceived physical self-concept (Murray et al., 2021). Moreover, the internal locus of control depicts an athlete's feeling that they have control over the situation (Barry et al., 2018). At the same time, stability refers to whether an attribution or cause is considered unchangeable (Tamborini et al., 2018). In this context, a strong internal locus of control demonstrates that psychological and physical health result in a stable condition manifested through performance and physical activity.

2.2. Perceived Psychological Health, Perceived Physical Health, and Perceived Performance

A peaceful mind can help an athlete focus their energies toward achieving a set target goal. Stress and anxiety can do the opposite by leading to depression and other mental illnesses to decrease athletes' overall performance (Simms et al., 2021). Sports participation encompasses several cognitive-affective experiences with implications for athletes' well-being and psychological health (Wann, 2006). Moreover, perceived psychological health is essential in predicting the positive influence that enhances an athlete's development and performance (Barry et al., 2018). It has been linked to supportive social interactions and cooperative behaviours (Nedal & Alcoriza, 2018).

In contrast, psychological stress and anxiety can affect the athlete's immune response, which affects their overall

performance (Wann, 2006). The attribution theory suggests that the right coping mechanism can lead to a positive perception of an athlete's overall psychological health, leading to better performance levels. Hence based on literature and theory, it can be hypothesized that;

H1a: *There is a positive association between perceived psychological health and perceived performance.*

A student's total abilities, physical strength, and competency enable them to confront athletic obstacles successfully (Piko, 2000). Besides, enhanced well-being leads to increased motivations for best performance. Research shows that athletes face immense pressure to stay in shape by maintaining weight, endurance levels, and a healthy body (Parker et al., 2018). Additionally, Trudeau and Shephard (2008) show that participating in sports activities protects the body from various ailments, including diabetes, high cholesterol, and heart problems, and helps maintain healthy blood sugar levels, which results in athletes performing well. Additionally, perceived physical health has been associated with psychological, physical, and social well-being. - (Zobova et al., 2019). Literature shows that sports injuries and training rigor s contribute to failure to perform, but learning to deal with these drawbacks through proper fitness training and measures can help an athlete attribute success and performance (Yamamori, 2019). This depicts that when athletes are physically fit, they perform well. Therefore, based on the above arguments and literature review it is posited that;

H1b: *There is a positive association between perceived physical health and perceived performance.*

2.3. Perceived Psychological Health, Perceived Physical Health, and Physical Activity

Physical activity involves using body muscles that increase energy levels and capacity (Wilson et al., 2020). Human biology requires a certain amount of physical activity to maintain good health and well-being (Fox et al., 2010). Sports activities improve mood, concentration, sleep habits, and leadership skills and boost students' self-confidence (Zobova et al., 2019). An athlete requires emotional and mental stability to function progressively. Recent years have found elite athletes having drug abuse, burnout, and mental illness due to the inability to cope with the rising level of stress and pressure to meet high expectations (Simms et al., 2021), depicting the importance of psychological well-being in physical activity in supports.

Moreover, attribution theory suggests that the internal locus of control is related to emotional and mental well-being, which further determines the activity level of a supports person (Rejeski & Brawley, 1983). As a result, it is expected that athletic students' perceived psychological health will directly affect their physical activity. Thus, the following hypothesis is developed:

H2a: *There is a positive association between perceived psychological health and physical activity.*

Literature relates to students' physical well-being and active participation (Dishman et al., 2006). It also promotes the fundamental behaviours and skills necessary to engage in sports activity. Moreover, Fox et al. (2010) demonstrated that physical well-being is required for active engagement in physical activities like exercise, jumping, throwing, swimming, all these activities require physical strength. Students perceive their physical health as being able to exert the necessary energies to perform physical successfully and sports activities successfully (Piko, 2000). Various exercises require specific use of muscles like swimming uses arms and legs muscles; throwing requires arm muscle strength and shoulder balance (Osipov et al., 2020). Therefore, athletes need to be physically fit to perform these physical activities.

Furthermore, scholars related the competitiveness in physical sports with an athlete's physical activity (Yağar & Soysal, 2020). Whereas the currents study aims to examine the impact of athletes' physical health in determining physical activity based on the fact that athletes spend much time gaining proper body shapes through excessive exercise and developing physical strength to participate in sports activities actively. Hence, we can hypothesize that;

H2b: *There is a positive association between perceived physical health and physical activity.*

2.4. Perceived Psychological Health, Perceived Physical Health, and Perceived Physical Self-Concept

Emotional intelligence, such as self-concept, altruism, empathy, and understanding, is the necessary formulation of psychological health and well-being (Isohätälä et al., 2020). Increased team participation, collaboration, and interaction are all associated with perceived psychological wellness (Leisterer & Jekauc, 2019). Psychological health protects athletes from engaging in destructive behaviour and drug abuse. Besides, athletes' physical self-concept is related to an individual's self-image, self-esteem, and ideal self (Dishman et al., 2006). It is related to how well an athlete perceives their physical attractiveness and endurance to perform well (Kim et al., 2020).

Moreover, a study conducted by Lee et al. (2017) revealed that improved mental health leads to a robust physical self-concept, which helps boost self-confidence and motivates athletes to perform better. Thus, based on the literature review and attribution theory, which postulates that when

athletes perceive that they are healthy and can control the prevailing supports situation and pressure, they depict a higher perceived physical self-concept necessary for their performance. Thus, it is hypothesized that;

H3a: *There is a positive association between perceived psychological health and perceived physical self-concept.*

Physical health plays a vital role in achievement motives and is often related to improving physician engagement and overall satisfaction to align with one's ideal self (Osipov et al., 2020). Self-concept is highly subjective, and each person has their own unique set of characteristics associated with reaching the ideal self (Sadeghi et al., 2018). Therefore, it can vary a lot, but specific physical requirements are associated with each sports activity; therefore, student-athletes supplement a lot of time and energy to reach the ideal self-concept (Dishman et al., 2006). There have also been gender differences in literature regarding male athletes focusing on endurance and female athletes more on body fitness (Barry et al., 2018), depicting the importance of perceived physical health in devising the perceived physical self-concept. Moreover, as physical self-concept relates to athletes' physical appearance and abilitiathletes' physical appearance and abilities (Sánchez-Miguel et al., 2020), perceived physical health has a strong association with perceived physical self-concept. Hence based on the above arguments and literature review, it is hypothesized that;

H3b: *There is a positive association between perceived physical health and perceived physical self-concept.*

2.5. Perceived Physical Self-Concept Relationship with Perceived Performance

and Physical Activity

Physical strength and well-being help obtain a positive self-concept in athletes; they feel confident to participate, engage, and excel in achieving a higher performance level (Van Ryzin et al., 2009). Similarly, Klomsten et al. (2004) showed that a positive perception of one's physical self-concept functions as a motivating factor for reaching goals related to competitiveness and success in athletics. Additionally, students engage in aerobics, muscle-building cardio-related activity, and regular jogging to develop a positive physical self-image. Further, it relates to developing positive attributions and establishing an internal locus of control for student-athletes to develop the physical strengths necessary for success. (Timo et al., 2016). Literature supports that students with physical solid self-concept set higher performance standards and display a strong competence than their team members (Sawatsuk et al., 2018), which leads them to be highly engaged and committed to achieving desired performance. Hence, based on the attribution theory and literature support, it is hypothesized that;

H4a: *There is a positive association between perceived physical self-concept and perceived performance.*

Sports medical doctors encourage athletes to take certain supplements and avoid certain foods to achieve a strong physical self-concept to maintain furthercertain foods and achieve a strong physical self-concept to maintain a desirable physical activity level (Murray et al., 2021). Physical self-concept gives body satisfaction and improves the physical perceptions of athletes (Piko, 2000). Feeling comfortable in one's body determines the configuration of self-concept, especially during adolescence (Sánchez-Miguel et al., 2020), which further motivates the athletes to participate in different support competitions actively. Studies show that dissatisfaction with body image runs higher in females during adolescence, and hence they strive to obtain that ideal self-image that affects their physical sports activities (Luczak & Kalbag, 2018). Additionally, attribution theory suggests that controllable attributions for desirable outcomes may play a role in strengthening the link between physical self-concept and physical activity (Miller et al., 2021). Thus, based on the above arguments and attribution theory, it is hypothesized that;

H4b: *There is a positive association between perceived physical self-concept and physical activity.*

2.6. Mediation

2.6.1. Mediating Role of Perceived Physical Self-Concept Between Perceived Psychological and Physical Health with Perceived Performance

In today's world, social media promotes materialism and the sense of the ideal self through unrealistic body images and requirements, causing distress and anxiety among youth to achieve the perfect body shape (Dutta, 2020). According to research, psychological health of student-athletes is critical for attaining a specific degree of physical attractiveness or body image. (Osipov et al., 2020). Moreover, students strive to maintain perfect body images and increase their physical attractiveness by relying on sports. Besides, perceived physical self-concept is related to maintaining a performance level (Choi et al., 2021); and is affected by -athlete's psychological well-being, as they evaluate their self-worth based on this image (Kim et al., 2020). Simultaneously, psychological well-being directly affects athletes' performance levels (Wasike, 2017). Some studies advocated the perceived physical self-concept as an underlying mechanism to transmit self-appraisal, develop realistic goals, and establish a supportive environment for enhanced performance (Ramirez-Granizo et al., 2020).

However, there is a scarcity of research to explore the research gap regarding the mediatory role of perceived physical self-concept between student-athletes' perceived psychological health and perceived performance. Therefore, this study aims to advance the literature by proposing this intermediary mechanism tested in a comprehensive framework. Hence, based on the above arguments and attribution theory which states that athletes' perception of being healthy will allow them to perceive a higher level of locus of control in the form of high self-concept resulting in an enhanced performance. Thus, it is hypothesized that;

H5a: *Perceived physical self-concept mediates the association between perceived psychological health and performance.*

Exercise and sports activities have been associated with a healthy lifestyle for many years (Johnston et al., 2021). An active lifestyle that includes physical activity and energy expenditure achieves physical health and well-being to achieve positive physical strength. - (Van Ryzin et al., 2009). Moreover, a positive body image is supported by physical attractiveness, which is dependent on physical health (Ramirez-Granizo et al., 2020), as a healthy person feels confident and satisfied with his physical self-concept. Perceived physical self-concept determines how people think, act, and view themselves (Dutta, 2020). The researchers established a link between perceived physical self-concept and perceived competence, physical condition, physical attractiveness, and the strength required to achieve perceived performance levels (Timo et al., 2016). Whereas the current study intended to purpose based on attribution that athletes will display a higher level of perceived performance when they are physically fit, and the same will be transmitted through an internal locus of control in the form of perceived physical self-concept. Thus, the perceived self-concept is the underlying mechanism through which perceived physical health and perceived performance are linked. Thus, based on the above arguments and the attribution theory it is hypothesized that;

H5b: *Perceived physical self-concept mediates the association between perceived physical health and performance.*

2.6.2. Mediating Role of Perceived Physical Self-Concept Between Perceived Psychological and Physical Health with Physical Activity

Literature advocates that being physically active prevents the human body from illness, but the prevalence of mental health conditions such as anxiety can affect sports persons' mental well-being and psychological health (Bowyer & Kahne, 2020). Moreover, (Choi et al., 2021) demonstrated that sports's physical environment and psychological mechanisms affect physical self-concept formation. Whereas Trudeau and Shephard (2008) study results depicted that lifestyles also have a greater impact on humans' physical and mental well-being, as smartphones and digital apps hinder physical activity, which leads to inactivity, weight gain and stress resulting in a low physical self-concept. Research also indicates that athletes' psychological well-being is related to unrealistic expectations about physical appearance (Teng & Wang, 2020). On the other hand, research also shows that a positive self-image helps achieve a strong sense of physical endurance and a sense of being physically active (Dishman et al., 2006). As a result, it is critical that athletes, particularly students, receive the appropriate monitoring and assistance in order to maintain a healthy physical and psychological state. Thus, it is suggested, based on the foregoing considerations, a review of the research, and attribution theory, that perceived self-concept is the fundamental mechanism by which perceived psychological health is associated with physical exercise. As a result, it is suggested that;

H6a: *Perceived physical self-concept mediates the association between perceived psychological health and physical activity.*

Perceived physical health is related to the successful maintenance of body functions preventing illness and harm (Simms et al., 2021). -Physical strength and well-being play an effective role in maintaining competence and success in sports and are exhibited through strength, coordination, and flexibility (Murray et al., 2021). Previous research indicates that physical activity engagement helps maintain a healthy self-image in athletes (Kim et al., 2020). Moreover, following the attribution theory, physical health is related to an internal locus of control for maintaining stability for an ideal self-concept; therefore, time, energy and resources are invested in keeping it (Barry et al., 2018). Besides, physical self-concept is an essential determinant of athletes' physical activity (Dapp & Roebers, 2019). Previous research also associated motor abilities with physical self-concept and motor abilities with physical self-concept and activities (Simms et al., 2021). Whereas, based on the above literature and theory support, the current study argues that the perceived physical self-concept is the underlying mechanism through which physical health is linked to physical activity. Thus, it is posited that;

H6b: *Perceived physical self-concept mediates the association between perceived physical health and physical activity.*

2.7. Theoretical Framework of the Study

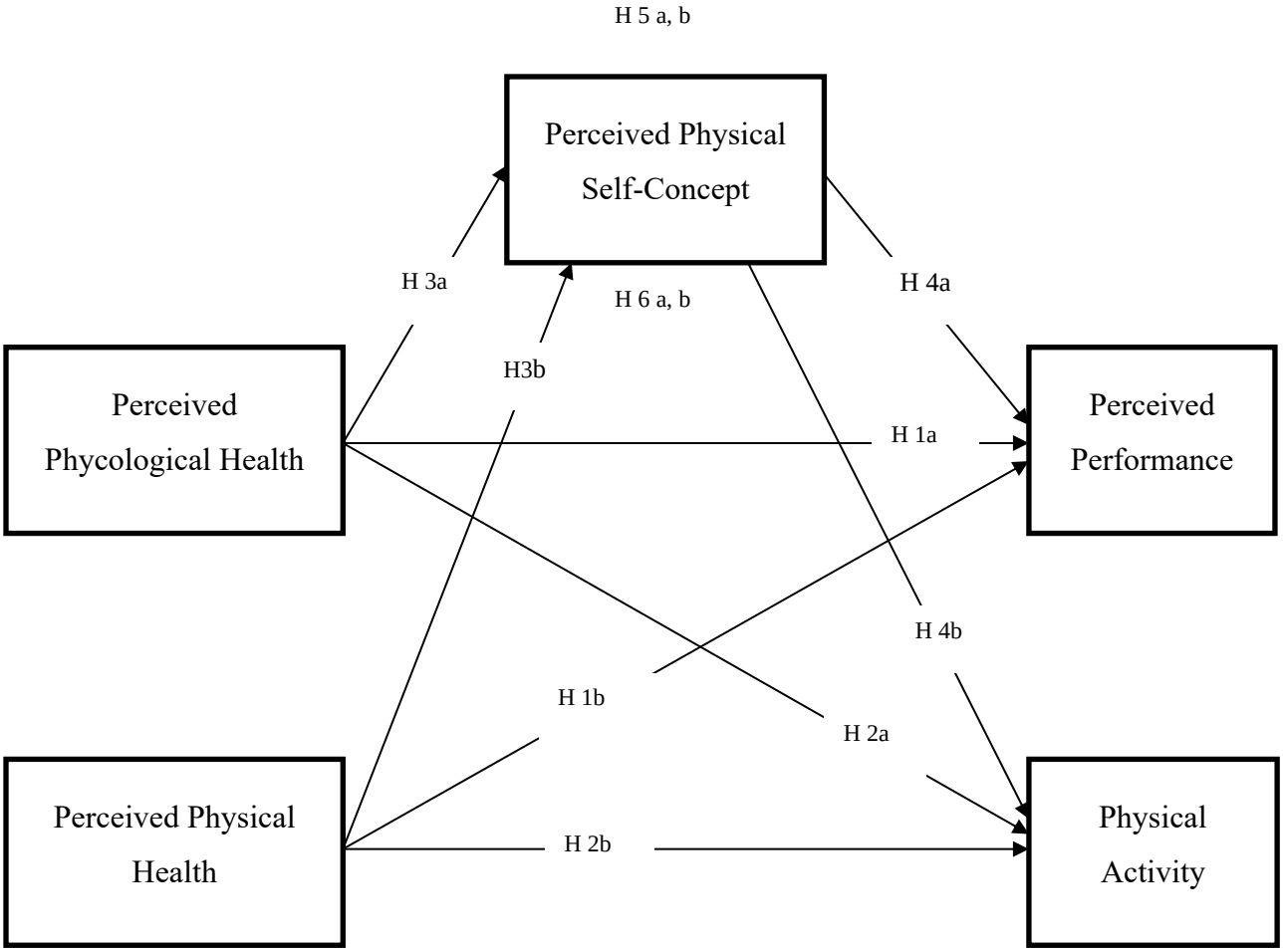


Figure 1: Theoretical Framework of the Study

3. Research Methodology

Primary data were collected via a quantitative field survey among student-athletes enrolled in several universities throughout the Indonesian province of Bali. The first stage was identifying universities with sports departments. Those universities' research ethics boards and management were then contacted to get official permission to collect data from the student-athletes. They were requested to permit researchers to contact the sports department heads and sked to provide the sports coaches' contact details. The authors received the contact/email address of 21 coaches from 7 public and private universities in Bali, providing sports training to student-athletes. After receiving the coaches' contact information in the second stage, researchers approached them. They briefed them about the purpose of conducting this study and were ensured about the anonymity of the respondents' information, that only aggregate results would be presented and published results would identify no student or institution, and that data would not be shared with any third party at any stage of the study. After gaining the coaches' willingness to cooperate, they were further requested to shortlist the student-athletes who can well understand English by checking students' English proficiency and sharing their email contacts list. As the survey language was English, the study adopted scales in the original form to avoid translation and back translation issues, which helped avoid response and common method biases. In the third stage, a google survey comprised of two parts, i.e., one related to the demographic characteristics of the students, including questions related to their age, gender, degree level, time spent on sports activities, and the number of years since taking part in different sports activities. The second part comprised 35 items related to the study variables sent to the student-athletes and the first part of the survey. Students were contacted through email to solicit their voluntary involvement, and all potential participants were assured of the privacy of their responses.

Three hundred seventy-three respondents were sent survey links over ten weeks, with 308 surveys returned. After rigorous examination, 29 responses were determined to be either incomplete or unengaged, and they were eliminated from the final data set, leaving 279 usable responses and a final response rate of 74.79%.

Measures of the Study

The *perceived physical self-concept* was measured using a subscale consisting of 6 items within the Physical Self-Description Questionnaire (PDSQ) by Marsh et al. (1994). The items included describing the physical admirations of how student-athletes felt about themselves and were assessed on a 7-point Likert scale ranging from 1=strongly disagree to 7=strongly agree. *Physical Activity* was operationalized as moderate to vigorous physical activity (MVPA) with two items (Prochaska et al., 2001; Sabiston & Crocker, 2008). Participants were asked sample questions such as: "How many days do you spend physically active for at least 30 minutes per day during a normal or typical week?" and "How many days in the last seven days were you physically active for at least 30 minutes every day?" Items were rated on a scale from 0 days to 7 days. *Perceived performance* participants have assessed usining sample items to indicate "how well they considered their own sporting performances to be over the past week" on a 7-point Likert scale, ranging from zero = very poor to 7 = excellent. Participants also rated on "how satisfied they were with their performance over the past week" by providing a number between 0 = unsatisfied and 7 = very satisfied. These perceived performance measures have been adapted from Arnold et al. (2018).

Additionally, *perceived psychological health* was measured using a 21-item scale adapted from the short-form Depression, Anxiety, and Stress Scale (DASS-21) (Antony et al., 1998). It was measured on a 7-point Likert response scale ranging from 0 = did not apply to 7= applied to me most of the time. Finally, perceived physical health was assessed using a self-reported questionnaire adapted from Fricker et al. (2005) regarding student-athletes fitness, and it specifically reported that they experienced described symptoms of chest infection (sputum, cough, chest congestion, etc.), upper respiratory infection (sore throat, runny nose, sneezing, etc.), headache, and flu during the preceding 31 days (chills, fever, aching joints, etc.). These were assessed using a 7-point severity Likert scale ranging from 1 = none to 7 = severe.

3.1. Respondents Characteristics.

Demographic characteristics of the respondents depicted that student-athletes playing different games participated in the survey. Out of 279 participants, 186 were males, and 93 were females. Participants' age ranged from 18 to 39 years, with a mean of 22.7 years (SD = 5.2). They were studying at different degree levels, i.e., Undergraduates, Graduates, Masters and PhD levels. Most of the participants (66.5%) depicted playing other games for 5-10 hours a day. The second primary class (28%) reported playing games for 3-5 hours a day, and the last class (5.5%) stated giving 1-3 hours to sports activities daily. The majority of the participants (59.6%) reported taking part in different games for more than 10-years. Besides, 24.3% and 13.7% played other games for 7 and 5 years, respectively. Simultaneously, only 2.4% reported that they started participating in various games for less than 5 years.

4. Data Analysis and Results

4.1. SPSS 25 was used to identify control variables and evaluate respondents' descriptive statistics and correlation statistics between research constructs. ANOVA analysis revealed that none of the demographic variables had a statistically significant effect on the dependent variables. As a result, no demographic variable was controlled in subsequent studies. Whereas SmartPLS3 was used to examine the postulated routes' reliabilities, validities, and factor loadings, among other properties. To test the stated hypotheses, we analyzed measurement and structural models.

4.2. Assessment of the Measurement Model

Confirmatory factor analysis was performed using SmartPLS3 to evaluate the measures' psychometric qualities, "Cronbach's α" and "composite reliability (CR)" were calculated to assess the reliability of measures as per directions provided by Henseler et al. (2009); Mansoor and Noor (2019). Table 2 depicts the reliability of all the reflective measures based on Cronbach's α (above 0.70) and CR values. Additionally, measures' "convergent and discriminant validity" was assessed. For student-athletes' perceived physical self-concept, three items, i.e., PPSYH4 and PPHYH9 and PPHYH18 with factor loadings less than 0.5, were excluded from the analysis as per instructions of Hair et al. (2012) based on their high impact on AVE and the reliability of the whole construct (Mansoor et al., 2020). For all other indicator variables, factor loadings were => 0.60 with significant loading of each item ($p < 0.01$) onto its underlying variable, and "average variance extracted" (AVE) of latent variables was above 0.50 for all study constructs, hence, "convergent validity" was considered established.

Table 1

Factor loadings, reliability, and validity

Constructs/indicators	Factor Loadings					AVE	CR	Cronbach's α
	1	2	3	4	5			
Perceived Psychological Health						0.539	0.903	0.828
PPSYH1	0.711							
PPSYH2	0.668							
PPSYH3	0.755							
PPSYH5	0.788							
PPSYH6	0.729							
PPSYH7	0.726							
PPSYH8	0.682							
PPSYH10	0.737							
PPSYH11	0.748							
PPSYH12	0.751							
PPSYH13	0.709							
PPSYH14	0.700							
PPSYH15	0.729							
PPSYH16	0.773							
PPSYH17	0.731							
PPSYH19	0.743							
PPSYH20	0.773							
PPSYH21	0.793							
Perceived Physical Health						0.540	0.823	0.800
PPHYH1		0.655						
PPHYH2		0.781						
PPHYH3		0.719						
PPHYH4		0.776						
Perceived Physical Self-Concept						0.527	0.870	0.767
PPSC1			0.663					
PPSC2			0.716					
PPSC3			0.727					
PPSC4			0.703					
PPSC5			0.748					
PPSC6			0.794					
Perceived Performance						0.506	0.672	0.716
PP1				0.715				
PP2				0.708				
Physical Activity						0.542	0.703	0.737
PA1					0.729			
PPA					0.743			

"Note: CR, composite reliability; AVE, average variance extracted."

While using SmartPLS3, the most appropriate measure of discriminate validity is Heterotrait-Monotrait (HTMT) ratio (Henseler et al., 2009; Mansoor et al., 2020). The HTMT ratio value should be less than 0.9, as depicted in Table 2 all values were less than 0.9 for the entire model.

Table 2

Heterotrait-Monotrait Ratio

Constructs	Mean	STD.	1	2	3	4	5
Perceived Psychological Health	6.12	0.89	**0.734**				
Perceived Physical Health	5.96	0.97	0.413	**0.735**			
Perceived Physical Self-Concept	5.98	0.93	0.321	0.434	**0.725**		
Perceived Performance	6.09	0.82	0.417	0.307	0.371	**0.711**	
Physical Activity	5.87	1.01	0.323	0.319	0.427	0.519	**0.736**

Note: *The square roots of AVEs of the constructs are shown in bold in diagonal.*

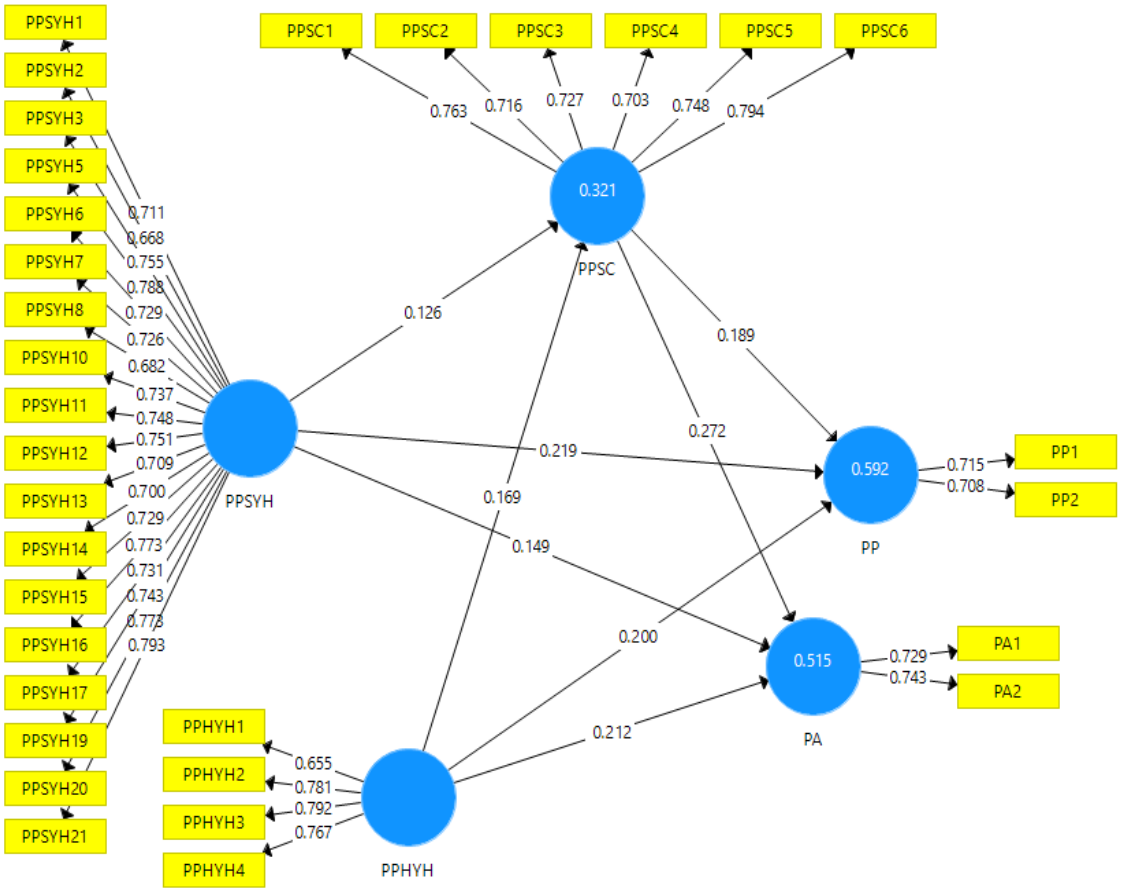


Figure 2: Full Measurement Model

4.3. Assessment of the Structural Model

The Bootstrapping technique was performed to assess the structural paths, and 500 sub-samples were used to test the hypothesized links. B-coefficient, *t*-value, and *p*-value were recorded to confirm the hypothesized relationships. Simultaneously, the Coefficient of Determination (R^2) was used to assess the model's overall model fitness or change. The results of the R^2 depicted a 59.2% change in the perceived performance and 51.5% in the physical activity due to all direct variables and mediating variables. R^2 values reflect good model fitness.

4.3.1. Direct hypothesis.

Table 3 depicts the results of the direct and indirect hypotheses. Results reveal a positive and significant association between *perceived psychological health (ß = .219***, t =5.562)* and *perceived physical health (ß = .200***, t =4.737)* with *perceived performance*. Similarly, results also showed a positive and significant association between *perceived psychological health (ß = .149**, t =3.043)* and *perceived physical health (ß = .212***, t =5.182)* with *physical activity*. Besides, results also depicted a positive and significant association of *perceived psychological health (ß = .126*, t =2.474)* and *perceived physical health (ß = .169**, t =3.697)* with *perceived physical self-concept*. Whereas, perceived *physical self-concept* was also positively and significantly related to *perceived performance* (ß = .189***, *t* = 4.593) and *physical activity* (ß = .272***, *t* = 6.786). Therefore, as shown in Table 3, hypothesis H1 a, b, H2 a, b, and H3 a, b and H4 a, b of the current study were supported by results.

4.3.2. Mediation Hypothesis

As shown in Table 3, the mediation hypotheses H5 a, b, and H6 a, b, were also supported. An indirect and positive effect of *perceived psychological health (ß = .121*, t =2.321)* and *perceived physical health (ß = .132**, t =2.974)* with *perceived performance* in the presence of *perceived physical self-concept* as a mediator was proved true. Likewise, the mediatory role of *perceived physical self-concept* proved in between the association of *perceived psychological health (ß = .177***, t =3.900)* and *perceived physical health (ß = .145**, t =3.012)* with *physical activity*. Further, results showed the non-zero value for the lower and upper limit confidence interval supporting the findings' significance level.

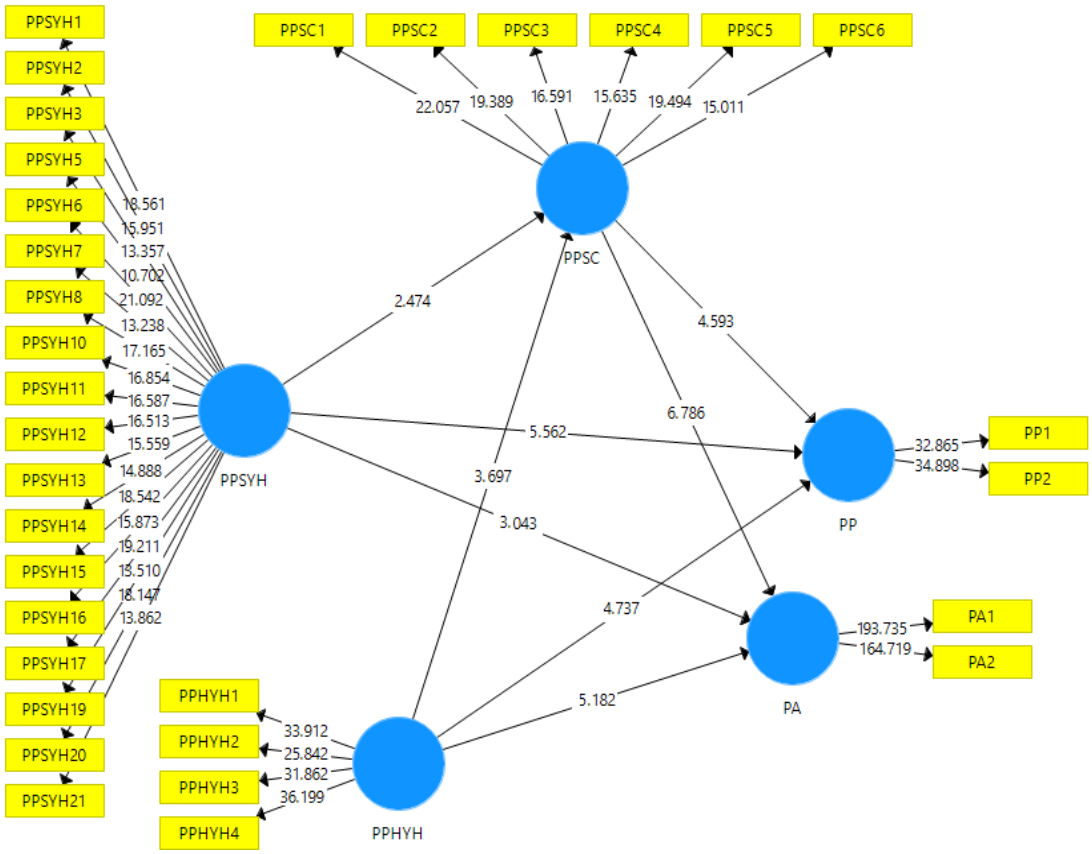
Table 3

Hypothesis Testing Results

	Hypotheses	Std. Beta	t-Value	p-values	Findings
H1a	PPSYH → PP	0.219	5.562	0.000	Supported
H1b	PPHYH → PP	0.200	4.737	0.000	Supported
H2a	PPSYH → PA	0.149	3.043	0.008	Supported
H2b	PPHYH → PA	0.212	5.182	0.000	Supported
H3a	PPSYH → PPSC	0.126	2.474	0.014	Supported
H3b	PPHYH → PPSC	0.169	3.697	0.003	Supported
H4a	PPSC → PP	0.189	4.593	0.000	Supported
H4b	PPSC → PA	0.272	6.786	0.000	Supported
H5b	PPSYH → PPSC → PP	0.121	2.321	0.019	Supported
H6a	PPHYH → PPSC → PP	0.132	2.974	0.010	Supported
H5b	PPSYH → PPSC → PA	0.177	3.900	0.000	Supported
H6a	PPHYH → PPSC → PA	0.145	3.012	0.005	Supported

Where: *PPSYH=Perceived Psychological Health; PPHYH= Perceived Physical Health; PPSC= Perceived Physical Self-Concept; PP= Perceived Performance; PA= Physical Activity*

Structural Model:



5. Discussion, Implications, Limitations, and Future Directions

This study investigated athletes' perceptions of physical activity and performance using attribution theory. The role of perceived physical health, psychological health, and perceived physical self-concept was explored. The study results revealed that athletes' psychological health was positively related to their perceived performance and physical activity. This is in line with Karimi and Sotoodeh (2019)'s findings, which depicted various stressors, i.e., personal demands like being the best, academic demands like the need to maintain education, fitness, and demanding training schedules, impact students' performance. These stressors can lead to increased stress and anxiety, affecting a person's mental well-being. At the same time, perceived psychological health is characterized by satisfaction with one's living, ability to cope with challenges, and adaptation to a changing environment. Therefore, it depends on how well an athlete copes with stressors from their background and shows mental well-being through improved performance and physical activity.

Additionally, the findings indicate that perceived physical health is favorably associated with athletes' perceived performance and physical activity. This suggests that if an athlete can maintain a healthy weight, muscle strength, and physical fitness, they may be able to perform at the appropriate level of physical activity (Vigoda-Gadot & Kapun, 2005). Moreover, an athlete will positively perceive their performance if they perceive the physical ability to do so; the perceived physical health provides athletes with a sense of command, and inner drive leads to a sense of competence to achieve the desired performance level.

Furthermore, the association of psychological and physical health with student-athletes' perceived performance and physical activity was positive and significant, depicting the importance of mental health in boosting self-confidence (Leisterer & Jekauc, 2019). That self-confidence reflects the perceived self-concept of a person. Likewise, physical fitness is proved to be an essential determinant of the perceived self-concept as it enhances the physical engagement of the athletes (Osipov et al., 2020) and is further aligned with their self-image.

Additionally, results demonstrated a positive correlation between student-athletes' perceived physical self-concept and perceived performance and physical activity, indicating that physical self-concept is a critical factor in determining a person's self-worth in terms of physical capabilities and attractiveness (Van Zyl & Rothmann, 2012). Thus, promoting a positive self-image can help athletes develop abilities and skills to achieve their desired performance and activities. Finally, the mediating role of perceived physical self-concept was explored, which revealed that a positive self-image could help promote physical and mental well-being and, in turn, increase the perceived performance and physical activity of an athleteincrease an athlete's perceived physical performance activity. As perceived, physical self-concept boosts confidence and satisfies self-worth, leading to positive feelings associated with physical and psychological health. Therefore, coaches and physical instructors should build positive self-images among athletes and provide resources and emotional support to attain that. Providing positive feedback regarding the athletes' performance increases their intrinsic motivation to engage more actively and effectively in sports activities (Weeldenburg et al., 2020).

Hence, the findings show that athletes evaluate their performance and physical activity based on their physical and mental health perceptions and their perceived physical self-concept. Besides focusing on their inner abilities and comparing them with external standards, athletes strive and cope with various challenges (Lee et al., 2017). As psychological well-being and physical health were attributed to the athletes; hence practices such as yoga, a healthy diet, and training can help fight stress and anxiety among athletes and make them physically fit to increase their performance and physical activity.

Theoretical Implications

The previous studies have focused on external factors affecting students' performance, whereas the current study is unique in evaluating students' perception of performance and physical activity; therefore, it has multiple theoretical contributions. Firstly, this research has explored the role of perceived performance and physical activity in one framework, which has not been studied together in past literature. Second, it adds to the body of knowledge by examining the effect of perceived physical and psychological health on student-athletes' perceptions of performance and physical activity. The combination of physical and psychological constructs in a unique framework is an advance to the body of knowledge, which paved the way for future researchers to focus on these factors for their influence on the athletes' other perceptions, attitudes, behaviours and preferences. Thirdly, this research investigated the mediating role of perceived physical self-concept, which serves as an intrinsic motivation for athletes to achieve a higher level of performance and exhibit competitiveness. This unique exploration has significantly contributed to answering many unanswered questions in literature positing to explore

the mechanism through which different factors influence the athletes' performance and physical activity.

Fourthly, this study focused on attribution theory to determine how athletes attribute their success and failure. Explaining the mediating of perceived physical self-concept is a significant theoretical advance by current research. Moreover, based on the internal locus of control, the findings suggest that athletes' emotional and physical capabilities should be analyzed, improved, and strengthened to be successful. Also, the competitiveness through team performance can be enhanced due to building an ideal self and then putting efforts into achieving it. This further constitutes the importance of physical and mental capabilities and energies to attain performance-related goals and increased participation in physical activities. Finally, the current study also advances our understanding of the athletes' challenges in terms of academic performance, coach and team expectations, training rigor, and level of mental and physical endurance required. This phenomenon identifies the need to cope through developing and improving physical capabilities like muscle strength, body shape, and endurance levels. Current research results can help achieve performance through completion time, success rates, and power output, as athletes' perceptions are subjective to their unique capabilities and perceived performance level.

Practical Implications

The current study assessed athletes' perceptions of physical activity and performance, which has many practical implications for policymakers; as universities and institutes promote sports and athletics among their students, they need to recognize how students feel about their physical and mental well-being. Firstly, this study highlights that students perceived physical health is critical in maintaining their physical activity. Hence universities, sports departments, coaches and managers should provide supportive programs and monitor students' health regarding physical appearance, body weight, illness, and diet intake to ensure that athletes maintain a healthy physical outlook and are not under the influence of any drugs or medicines. Secondly, this study focused on students' perceived psychological health and its impact on perceived performance and physical activity. Although physical activity has been related to mental illness and promoting a healthy lifestyle, this study points out that a student's perceived mental and emotional well-being can greatly impact his engagement in any physical activity. Therefore, universities and policymakers should hire counselors and psychiatrists to help athletes deal with anxiety, depression, substance abuse, and other physical and psychological factors that may affect their well-being.

Finally, this study introduces the role of perceived physical self-concept, which can help boost students' confidence and motivation to perform better. Hence institutes and managers can conduct workshops, seminars, conferences, and arrange meetings with celebrity sports athletes (whom students idealize and strive to become) to share their views and inspire the younger athletes to focus and develop their skills in a required way by developing high physical self-concept in them. The coaches and managers may use attribution theory to boost athletes' perceived physical self-concept by attributing them to top athletes nationally or internationally. So that when they resemble themselves with top athletes in the game, their self-image and perceived physical self-concept are enhanced. Based on this study's findings, this attribution is expected to result in athletes' better performance and physical activity.

Limitations and Future Research

This study focused on the student-athlete perspective, but there is no evidence on how coaches manage stressors and support students. Therefore, future studies can focus on coach-student relationships to determine how students' perceptions affect a coach's expectations and plans. Secondly, future studies may focus on the gender difference in performance achievement, physical activity perceptions, or perceived physical self-concept differences among male and female athletes. This study highlighted gender differences in perceived physical self-concept based on the literature but did not empirically investigate because one-way ANOVA results revealed no significant influence of gender on perceptions. Thirdly, this study focused on university and athlete students in the higher education sector; future studies can focus on elite and professional athletes at provincial and national levels and athlete students in colleges and primary level school education. Due to resource and time constraints, this study used a cross-sectional study design and emailing google survey. Future studies may conduct time lag research to assess the responses at different times for better causality. Future studies may also look for focus group and observation methods to adopt the triangulation technique that was not possible in the current study due to the Covid-19 scenario. Future scholars may also investigate the perceived physical self-concept and its role in the attribution of the actual performance of the athletes as well as the academic performance of student-athletes.

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