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THROWING BODY MECHANICS AND WELL-BEING AMONG DISCUS THROWING STUDENTS

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Abstract

This study investigated body mechanics, psychological well-being, and discus throw performance of 154 university students enrolled in a Physical Education (PE) course at a university in China during the first semester of AY 2023–2024. A nonrandomized selection process was employed to ensure that participants met predetermined criteria, including enrollment in a PE course involving discus throwing, absence of health conditions, and a minimum trial throw of 20 meters. The majority of participants were male, aged between 18 and 21 years, and comprised sophomores from various schools within the university. A descriptive analysis of students' throwing body mechanics revealed a proficient performance level based on the assessed indicators: holding the discus (advanced), approach (proficient), throwing (proficient), and follow-through motion (proficient). Students exhibited moderate agreement with statements related to psychological well-being dimensions, indicating room for improvement. The discus throws performance of students demonstrated good performance but with notable variability among individual performances.

A correlational analysis revealed significant associations between throwing body mechanics and discus throw performance, psychological well-being, and discus throw performance, and throwing body mechanics and psychological well-being.

These findings underscore the importance of holistic approaches to student development, emphasizing both physical and psychological aspects. Targeted interventions aimed at enhancing throwing techniques and promoting psychological well-being could optimize discus throw performance and overall student well-being. This study provides valuable insights for educators and practitioners seeking to

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optimize athletic performance and holistic student development in university settings.

1. Introduction

Introduced in Ancient Greece as early as 708 BC, the discus throw is one of the most popular track and field events. It is a sport in which an individual throws a heavy disc (the discus) as far as possible. It is a complex movement that requires a combination of physical strength, technique, coordination, and body mechanics.

Several studies have investigated how variables like angle, velocity, and body positioning affect discus throw performance. Similarly, numerous studies have revealed the significance of well-being and mental health in optimizing athlete potential and promoting holistic health. However, the relationship among all these important variables remains to be fully explored, particularly concerning non-athletes.

Considering physical education students performing discus throws as part of their course, what is the relationship between their discus throw performance and their well-being? How do body mechanics affect throwing performance? Exploring these questions could help uncover more innovative ways to maximize student potential and encourage healthy lifestyles.

1.1. Background of the study

Apart from well-being, which is a psychological component, it is commonly acknowledged that the interaction between athletes and their body mechanics when throwing has a significant influence on their overall performance (Frossard, 2012). Body mechanics encompasses various parameters, including the movement patterns, coordination, and biomechanical principles involved in executing an effective discus throw. Proper body mechanics optimize energy transfer, generate power, and ensure efficient energy transfer.

Numerous studies have been conducted to investigate the body mechanics, techniques, and technical tasks associated with discus throwing, with the aim of optimizing athletes' performance and overall success in sports. More specifically, biomechanical analyses have been conducted in recent years, focusing on different parameters, such as kinematic and kinetic variables like release angle, speed, and body positioning, which affect performance. Frossard et al. (2012) examined foot and body positioning and found that these two characteristics are essential mechanics in discus throwing. Tangkudung (2015) examined the relationship between arm muscle explosive power, body core flexibility, achievement motivation, and discus throw skill and found that there was a positive relationship among the variables. Maeda (2018) focused on hip-shoulder and shoulder arm separation angles. Hirose et al. (2017) analyzed the load characteristics of the discus, and (Maeda 2021) also examined motion factors like angle and velocity in discus throwing.

However, these studies have predominantly focused on athletes, highlighting the need for further exploration of throwing body mechanics in the context of non-athlete learning and discus throwing. There is a need for more evidence about the relationship among throwing body mechanics, psychological well-being, and discus throw performance.

A discus throw can be performed in a standing position, but better performance can be achieved when the discus is thrown following a turn. Detailed analysis of the throwing technique allows us to divide the discus throw into five phases: preparation—a double support phase; entry—a single support phase on the left foot; airborne phase (after the left foot breaks contact with the support); transition—a single support phase on the right foot (which ends as the left foot touches the ground) and delivery—a double support phase, which ends at release of the discus (Shestakov, 2019).

Well-being has gained increasing recognition as a significant global public health concern, according to Motevalli (2022). Eren and Kilic (2017) pointed out that recent research has shifted its focus from solely addressing the

absence of psychiatric conditions like anxiety, depression, and schizophrenia. Instead, there is a growing emphasis on psychological well-being, which encompasses broader aspects such as happiness, pleasure, positivity, pain avoidance, and overall well-being. Moreover, the literature has emphasized the importance of exploring factors that contribute to the well-being and sports performance of young athletes (Oliveira, 2022). The following describes several studies related to well-being and sports.

Athletes, despite their role as sport performers, are fundamental human beings whose physical, mental, and social well-being directly impacts their overall health (Giles et al., 2020). The well-being and mental health of athletes are crucial for their development and performance (Schinke et al., 2018). By and large, studying well-being in sports is of great importance because it offers valuable insights into the factors that contribute to athletes' holistic health, satisfaction, and overall quality of life, thereby influencing their performance and success in sports. Furthermore, understanding the relationship between well-being and sports can guide the development of interventions and strategies that support athletes' well-being and foster their long-term physical and psychological well-being.

1.2. Statement of the problem

This research explored body mechanics and well-being in the context of discus throwing in physical education classes. Specifically, it aims to answer the following questions:

1. What is the level of psychological well-being of students learning the discus throw?
2. How did the students perform in the discus throw?
3. Is there a significant relationship between throwing body mechanics and discus throw performance in students?
4. Is there a significant relationship between psychological well-being and discus throw performance?
5. Is there a significant relationship between throwing body mechanics and students' psychological well-being?

1.3. Significance of the study

This study aimed to contribute to the existing body of knowledge by investigating the relationships among discus throw performance, well-being, and body mechanics among students performing discus throwing as part of their course. The findings are expected to benefit these stakeholders:

Students and student-athletes: Understanding proper techniques and body mechanics can improve students' performance and increase their chances of success in physical education classes or competitions. Furthermore, knowledge about the relationship between discus throw and well-being can help students and athletes maintain optimal physical and mental health, leading to a better overall sporting experience.

Physical education instructors, coaches, and trainers*:* Physical education instructors, coaches, and trainers play a vital role in the development and training of students and athletes in sport, specifically discus throw. This study on body mechanics and well-being will provide valuable insights that instructors, trainers, and coaches can use to refine training programs, design effective exercise regimens, and prevent injuries. Moreover, the knowledge gained from this study can help coaches better support athletes under guidance and maximize their potential.

Sports institutions and organizations: Athletic associations and other sports institutions and organizations can benefit from research on discus throw, body mechanics, and overall well-being. The findings of this study can inform the development of training and injury prevention strategies and contribute to the overall growth and success of discus throw as a sport.

***Academic institutions and future researchers*:** This research is expected to contribute to body mechanics, performance optimization, and well-being. It can also provide a foundation for further research and innovation in these areas.

1.4. Scope and delimitation

The study focused on discus throws as the chosen athletic event and examined how performance in this sport relates to student well-being and body mechanics. The study involved students at a university in China performing discus throws as part of their PE course.

Data were collected during the first semester of AY 2023–2024. Additionally, the data relied on self-report measures of psychological well-being; thus, there are likely limitations related to self-reporting as biases and subjectivity may be present. Psychological well-being touches on autonomy, environmental mastery, personal growth, positive relationships with others, purpose in life, and self-acceptance. Furthermore, throwing body mechanics was observed and scored using an observational protocol; thus, observer subjectivity may be present. The system had four indicators—holding, approach, throwing, and following through motion. The discus throw performance in this study is referred to the distance reached when the discus is thrown in the field; it does not include the accuracy of the throw or the technique of the thrower.

1.5. Theoretical framework

This study uses Ryff's six-factor model of psychological well-being with a few modifications. This model provides a comprehensive theoretical framework for investigating the positive functioning of individuals—adolescents or adults. The model proposes that psychological well-being is best assessed by six core components: self-acceptance, positive relationships with others, autonomy, environmental mastery, personal growth, and purpose. According to the Scholarly Community Encyclopedia (2023), each criterion in the Ryff Inventory provides a specific definition, example statement, and measure as follows:

***Autonomy*:** High scores suggest that individuals can rely on themselves to fulfill their goals, regardless of external assistance. A corresponding example statement would be "I have confidence in my opinions, even if they are contrary to the consensus."

***Environmental Mastery*:** High scores indicate respondents' capacity to adjust to different situations and take advantage of opportunities. A proficient individual in this area will have the ability to control his/her life and work toward his/her own goals "In general, I feel I am in charge of the situation in which I live."

***Personal Growth*:** High scores indicate that respondents embrace new experiences, notice their own evolution, and value self-improvement. An example of this is as follows: "I think it is important to have new experiences that challenge how you think about yourself and the world."

***Positive Relations with Others*:** High scores indicate that the individual is involved in relationships that are characterized by mutual understanding, close connection, and love. An example statement for this criterion is "People would describe me as a giving person, willing to share my time with others."

***Purpose in Life*:** High scores reflect respondents' focus on their ambitions and belief that life has significance. An example of this criterion is "Some people wander aimlessly through life, but I am not one of them."

***Self-Acceptance*:** High scores reflect the respondent's positive attitude about himself or herself. An example statement for this criterion is "I like most aspects of my personality."

In addition, this study uses Jarver's model (2014) to assess one's body movement and coordination during discus throw. The model provides an assessment rubric in which a set of evaluation criteria is composed of relevant theories ranging from grasping the discus to the further stages after the throw (Jarver, 2014), which have been corroborated by past studies (Sinulingga, 2018). The process is done in four steps: the student gets ready sideways,

circles the disc in a certain attitude, gets into a prefix attitude, throws the disc, and finally releases it from the hand. After this, the student has three chances to throw the disc, and failure is indicated if the thrower is outside the predetermined area or the disc does not land on a specified sector.

2. Methodology

This chapter presents the research method used in this study.

2.1. Research locale

Changsha University of Science and Technology is a multi-disciplinary university focusing on engineering, with coordinated development of engineering, science, management, economics, literature, law, philosophy, art, and other disciplines, with undergraduate and graduate education as its main body, and with post-doctoral research mobile stations, doctoral degree awarding rights, and master's promotion rights.

The school is an advanced grassroots party organization in China, a national university under the "Central and Western University Basic Capacity Construction Project," one of the first batch of "Top 50 National Universities with Typical Experience in Innovation and Entrepreneurship," a "Domestic First Class University Construction University" (Class A) in Hunan Province, a model unit for civilization in Hunan Province, and a demonstration school for Hunan Province's rule of law schools.

2.2. Sample and sampling technique

The researcher considered students currently enrolled in physical education classes at Changsha University of Science and Technology, his home university, during the first semester of AY 2023-2024. There were nine PE classes that the researcher was handling, with an estimated 35-40 students per class. These PE students came from different schools within the university: the School of Mathematics, School of Hydraulic Engineering, School of Economics and Management, and School of Engineering.

A nonrandomized selection with prespecified inclusion and exclusion criteria was used to recruit participants in this study. To qualify, students had to meet the following requirements: (1) be currently enrolled in a PE course that included discus throwing during the data collection period, (2) have no existing health conditions, and (3) pass the screening trial by throwing the discus at least 20 meters in the field.

2.3. Data gathering procedure

The researcher submitted a formal request to Changsha University of Science and Technology to obtain permission to conduct the study. Once approval was obtained, the researcher personally communicated with potential participants regarding their anticipated involvement in the data collection process. The participants then underwent a screening process to ensure they met the predetermined criteria. this research occurred during the first semester of AY 2023-2024.

The PWBS questionnaire was transformed into an electronic version using the Google Forms platform. Subsequently, the researcher administered the PWBS questionnaire to the eligible participants.

Separately, a designated performance day was scheduled to evaluate the participants' throwing body mechanics (movement and coordination) and their discus throw performance. The assessment of throwing body mechanics was conducted by a researcher or discus throw observer using the electronic Body Mechanics Assessment Rubric (BMAR) tool. The process for assessing the throwing body mechanics involved four steps: the student got ready sideways, circle-holding the disc in a certain attitude, got into a prefix attitude, threw the disc, and finally released it from the hand. This was carefully observed before the three discus throw attempts.

Each student had three attempts to throw the discus, and any failure was noted if the thrower landed outside of the predetermined area or if the discus did not land within the specified sector. The distance achieved in each discus throw (in feet and inches) was measured, scored, and recorded using an electronic scoring sheet. For the

discus throw performance of the students, the best score (longest distance thrown) achieved from the three attempts was considered. All data were aggregated, summarized, and analyzed for final output.

2.4. Statistical analysis

The researcher used SPSS version 26 to conduct descriptive analysis to examine the distribution, central tendency, and variability of the variables; calculated correlation coefficients to assess the strength and direction of the relationships among discus throw performance, well-being, and body mechanics; and explored any potential patterns or trends in the data.

In summary, the researcher employed the following statistical tools and treatments based on the research questions:

RQ 1: Throwing body mechanics (TBM)	Mean and standard deviation
RQ 2: Psychological wellbeing (PWB)	Mean and standard deviation
RQ 3: Discus Throw performance (DTP)	Mean and standard deviation
RQ 4: Relationship between TBM and DTP:	Pearson r
RQ 5: Relationship between PWB and DTP	Pearson r
RQ 6: Relationship between TBM and PWB	Pearson r

Using a significance level of 0.05, the analysis of the hypotheses was carried out, and the findings were interpreted in light of the research questions and objectives. Students' scores for the three variables were made unidirectional for correlational analysis to facilitate interpretation. That is, their scores from the PWB Scale were reverse-coded so that "high" scores would correspond to higher values on the scale of 1 to 8, mirroring the scale system of the two other variables. The observed relationships between the variables were explored, and the type of relationship (positive, negative, or non-significant) was determined. Potential explanations that may explain the relationships between the variables were also considered.

3. Results and analysis

This section presents the results of the collected, analyzed, and interpreted data according to the problem statements.

Psychological Well-being of Student Discus Throwers

This study relied on self-reported measures of psychological well-being (PWB) using the Psychological Well-Being Scale (PWBS). The PWBS questionnaire was transformed into an electronic version using the Google Forms platform. Subsequently, the researcher administered the PWBS questionnaire to the eligible participants. The PWBS includes six aspects: autonomy, environmental mastery, personal growth, positive relationships with others, purpose in life, and self-acceptance.

Overall Psychological Well-being

Table 1 underlines students' overall scores on the psychological well-being scale, indicating the six subscales and their corresponding statistical summaries.

Table 1.

Students' Self-acceptance Subscale Scores

Subscale	Mean Score	Standard Deviation	Qualitative Description	Rank
Autonomy	3.01	1.64	a little agree	1

Environmental Mastery	3.46	1.77	a little agree	5
Personal Growth	3.19	1.90	a little agree	2
Positive Relations with Others	3.23	1.81	a little agree	3
Purpose in Life	3.46	1.72	a little agree	6
Self-acceptance	3.29	1.68	a little agree	4
Average	3.27		a little agree	

Legend: 1.00–1.50 strongly agree; 1.51–2.50 somewhat agree; 2.51–3.50 little agree; 3.51–4.50 neither agree nor disagree; 4.51–5.50 little disagree; 5.51–6.50 somewhat disagree; 6.51–7.00 strongly disagree

The analysis of student participants' scores on various subscales of psychological well-being provides valuable insights into their overall psychological health and adjustment. The average mean score across all subscales was 3.27, with a standard deviation ranging from 1.64 to 1.90, indicating a moderate level of psychological well-being. Although all subscales received a response of "a little agree" from the students, it is evident that students believe they have autonomy in their lives, as indicated by their highest mean score. They also strongly value self-growth, followed by positive relationships with others, self-acceptance, and environmental mastery. On the other hand, their sense of purpose in life received the lowest mean score.

Across the individual subscales, students tended to express a moderate level of agreement with statements related to different aspects of psychological well-being. Specifically, they reported a moderate level of agreement with statements related to autonomy (M = 3.01), environmental mastery (M = 3.46), personal growth (M = 3.19), positive relations with others (M = 3.23), purpose in life (M = 3.46), and self-acceptance (M = 3.29).

Students generally reported a moderate level of agreement with statements related to different aspects of their psychological well-being. They felt they had some degree of autonomy, control over their environment, personal growth, positive relationships, a sense of purpose, and self-acceptance. However, the responses indicate that students do not strongly endorse these aspects of well-being, suggesting room for improvement in various areas.

Overall, although the student participants demonstrated a moderate level of psychological well-being, there may be areas where interventions and support services could be targeted to enhance specific aspects of well-being, such as promoting autonomy, fostering positive relationships, and facilitating personal growth. This insight underscores the importance of holistic approaches to student well-being that address multiple dimensions of psychological health and functioning.

As mentioned by Fruchart (2020), the findings of this study can aid health educators and health promotion specialists in developing individual sports programs that promote feelings of well-being. Additionally, it suggests the necessity for educators to consider individuals and the importance of the feeling of competence, affiliation, autonomy, and vitality in promoting sports to fight ill-being. This is consistent with Haan et al.'s (2021) study, which emphasizes the importance of proactive engagement with professional athletes, coaches, trainers, and sports councils. Engagement is essential for promoting understanding and awareness, optimizing processes, and providing consistent training, psychosocial support and occupational therapy programs. These efforts are crucial for maintaining the health and well-being of athletes while reducing their occupational stress.

Discus Throwing Performance

The discus throw performance was solely based on the distance achieved when the discus was thrown in the field, excluding considerations of throw accuracy and the technique of the thrower. A designated performance day was scheduled for discus throw.

Each student had three attempts to throw the discus, and any failure was noted if the thrower landed outside of the predetermined area or if the discus did not land within the specified sector. The distance achieved in each discus throw (in meters) was measured, scored, and recorded using a spreadsheet. For the discus throw

performance of the students, the best score (longest distance thrown) achieved from the three attempts was considered. To qualitatively describe discus throw performance among students, the following matrix for throw performance in PE classes was used.

Scores (Distance in Meters)	**Qualitative Description**
Above 40	Elite
36.01–40.00	Excellent
32.01–36.00	Excellent
28.01–32.00	Good
24.01–28.00	Average
20.01–24.00	Below Average
Below 20	Unsatisfactory

Table 2 presents the students' mean scores and other summary measures from their discus throw performance.

Table 2.

Students' Discus Throw Performance Scores

	N	Minimum	Maximum	Mean	Std. Deviation
Discus Throwing Performance	154	21.35	35.88	29.39	2.90

As shown in Table 2, the descriptive analysis of discus throw performance revealed the students' mean score of 29.39 meters (*SD* = 2.90), which was within the "Good" category. This suggests that, on average, discus throw performance is good. However, the range of scores extends from "Below Average" to "Excellent," which indicates several performance levels among students. The standard deviation of 2.90 meters indicates that there is moderate variability in the students' performances. This suggests that while the mean performance is "Good," there are considerable differences among individual students' performances, with some students achieving scores that are significantly higher or lower than the mean.

Differing from other prior studies in terms of participants, the findings of the study offer a unique perspective by investigating the discus throw performance of non-elite discus throwers, specifically Chinese students. Most previous research has focused on athletes ranging from advanced to elite levels. For instance, Frossard's studies (2012 & 2014) involved elite discus throwers at the 2002 IPC Athletics World Championships, while Kollias (2012) investigated techniques used by elite male discus throwers. Maeda's research compared the performances of world elite and Japanese discus throwers.

This study is particularly significant because it addresses the performance of students aspiring to become elite discus throwers, highlighting substantial room for improvement. This approach not only expands the scope of discus throwing research and provides valuable insights for coaches and trainers working with non-elite athletes. By focusing on these demographics, the study underscores the importance of tailored training programs that can help aspire athletes realize their potential and progress toward elite performance.

Relationship between body mechanics and discus throw performance

Table 3 presents the results of the correlation analysis conducted between the pair of variables: throwing body mechanics and discus throw performance.

Table 3.

Correlation between Students' Body Mechanics and Discus Throw Performance

Variables		Throwing Body Mechanics	Discus Throwing Performance	Interpretation	Decision H_0
Throwing Body Mechanics	Pearson Correlation	1	0.458*	Significant	Reject
	Sig. (2-tailed)		0.000		
	N	154	154		
Discus Throwing Performance	Pearson Correlation	0.458*	1	Significant	Reject
	Sig. (2-tailed)	0.000			
	N	154	154		
*. Correlation was significant at the 0.05 level (2-tailed).					

Using Pearson correlation analysis, the results revealed a significant positive relationship between throwing body mechanics and discus throw performance (r = .458, p < .05). The null hypothesis was rejected at a significance level of 5%. Hence, there is sufficient evidence to conclude that there is a significant relationship between discus throw performance and throwing body mechanics among students. Specifically, the finding indicates a moderate positive correlation between the students' proficiency in throwing body mechanics and their discus throw performance scores.

Throwing body mechanics play a crucial role in optimizing the execution of discus throws. Proficiency in throwing body mechanics, including holding the discus, approaching, throwing, and following through, is essential for generating power and accuracy in the throw. The significant, moderately positive correlation suggests that students who exhibit better throwing body mechanics tend to achieve higher discus throw performance scores. The findings of this study are related to those of Tangkudung et al. (2015), who demonstrated that explosive power in the arm muscles, a key biomechanical parameter, significantly enhances discus throwing skills. However, this study's approach to evaluating discus throw performance using four specific throwing indicators differs somewhat from the parameters used in previous studies. For example, Chen (2021) examined motion (velocity) for correcting the jumping throwing technique, while Maeda et al. (2020) investigated motion factors such as weight shift, velocity acquisition, leg sweeping, hip and shoulder rotations, trunk twisting and untwisting, and velocity acquisition and extension of the knees, all of which directly or indirectly influence the velocities achieved by various body segments.

Additionally, Alhumaid and Atta (2022) analyzed the kinematic and kinetic characteristics of discus throwing at the Paralympic Games for the F33 category. Despite these differences, all of these studies converge on one point: these biomechanical parameters positively impact the performance of discus throwers.

Relationship between Psychological Well-being and disc throw performance

Table 4 shows the results of the correlation analysis conducted between the pair of variables: psychological well-being and discus throw performance.

Table 4.

Correlation between Students' Psychological Well-being and Discus Throw Performance

Variables		Psychological Well-being	Discus Throwing Performance	Interpretation	Decision H_0
Psychological Well-being	Pearson Correlation	1	0.716*	Significant	Reject
	Sig. (2-tailed)		0.000		
	N	154	154		
Discus Throwing Performance	Pearson Correlation	0.716*	1	Significant	Reject
	Sig. (2-tailed)	0.000			
	N	154	154		
*. Correlation was significant at the 0.05 level (2-tailed).					

Using Pearson correlation analysis, the results revealed a strong positive relationship between psychological well-being and discus throw performance (r = .716, p < .05). The null hypothesis was rejected at a significance level of 5%. Hence, there is sufficient evidence to conclude that there is a significant relationship between discus throw performance and the psychological well-being of students. Specifically, the finding indicates that students with higher levels of psychological well-being tend to exhibit better discus throwing scores.

The strong positive relationship found in this study between well-being and sports performance, such as discus throwing, aligns with literature indicating that one's sports performance is influenced by their psychological well-being. One possible explanation for the strong correlation observed in this study is the role of psychological factors in facilitating effective skill execution and technique refinement. Students who experience higher levels of psychological well-being may be better equipped to overcome performance obstacles, adapt to changing conditions, and maintain consistency in their throwing mechanics.

As noted by Schinke et al. (2018, cited in Oleviera, 2022), well-being and mental health are key components of the development and performance of athletes. As Fruchart (2020) confirmed, a positive relationship between sport and well-being has been established in young people and adults of all ages. Oliveira (2022) reported that athletes with higher levels of social safety tend to exhibit higher psychological well-being and perceived performance, which can be attributed to lower levels of self-criticism.

In addition, positive psychological states such as confidence, motivation, and focus enhance athletes' ability to perform optimally under pressure. In the context of discus throwing, psychological well-being may contribute to improved concentration, reduced anxiety, and increased resilience, all critical factors for successful discus throwing. These findings underscore the critical role psychological well-being plays in enhancing sports performance. Coaches, trainers, and athletes themselves should prioritize their well-being in addition to rigid physical training.

Relationship between Throwing Body Mechanics and Psychological Well-being

Table 5 presents the results of the correlation analysis conducted between the pair of variables: psychological well-being and throwing body mechanics.

Table 5.

Correlation between Students' Psychological Well-being and Their Throwing Body Mechanics

Variables		Psychological Well-being	Throwing Body Mechanics	Interpretation	Decision H_0
Psychological Well-being	Pearson Correlation	1	0.673*	Significant	Reject

	Sig. (2-tailed)		0.000		
	N	154	154		
Throwing Body Mechanics	Pearson Correlation	0.673*	1	Significant	Reject
	Sig. (2-tailed)	0.000			
	N	154	154		
*. Correlation was significant at the 0.05 level (2-tailed).					

Using the Pearson correlation analysis, the results revealed a significant positive relationship between psychological well-being and throwing body mechanics ($r = .673$, $p < .05$). The null hypothesis was rejected at a significance level of 5%. Hence, there is enough evidence to conclude that there is a significant relationship between throwing body mechanics and the psychological well-being of students. Specifically, the finding indicates that students with higher levels of psychological well-being tend to exhibit better proficiency in throwing body mechanics.

The connection between psychological factors and physical performance has been extensively studied in sport psychology. Psychological well-being encompasses aspects such as confidence, focus, and emotional resilience, all of which can influence an athlete's ability to execute complex motor skills effectively. In the context of throwing body mechanics, positive psychological states may lead to improved coordination, precision, and fluidity in movement.

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