



RESEARCH ARTICLE

## SPIKES: Skills and Performance Inventory as Kinesiological Assessment for Empowerment of Sepaktakraw Athletes

Teejay D. PANGANIBAN\*<sup>1</sup> 

Batangas State University TNEU, College of Teacher and Education, JPLPC-Malvar / Phillipines  
Corresponding author: teejaypanganiban18@gmail.com

### Abstract

This research presents a comprehensive assessment of Sepaktakraw athletes at Batangas State University (BatStateU) TNEU, aiming to enhance athlete development through evidence-based methodologies. Recognizing the global trend towards universities' pivotal role in athlete development, the study addresses the diverse landscape of sports programs, particularly focusing on Sepaktakraw in the Philippines. BatStateU's visionary 5-year development plan emphasizes creating champion athletes, aligning with global trends and emphasizing sports infrastructure and training programs. However, the study identifies an opportunity to enhance training programs by introducing the SPIKES program, incorporating kinesiological assessments for a more scientific and tailored approach. Using a descriptive survey methodology, the research integrates Physical Fitness and Skill-specific Performance Tests to evaluate Sepaktakraw athletes comprehensively. Anthropometric profiling revealed diverse body compositions, while physical fitness assessments highlighted variations in speed, agility, strength, and more. Skill-specific performance evaluations in serving, spiking, and game-specific skills provided insights into athletes' proficiency levels. Results categorized athletes into four kinesiological profiles (A, B, C, D), guiding the design of personalized training programs. The Skill-Specific Training Program, unfolding over 12 weeks, targets specific improvements in physical fitness and skills. This evidence-based approach offers a systematic framework for optimizing Sepaktakraw athletes' performance, providing valuable insights for coaches, trainers, and athletes alike. The study not only enhances BatStateU's athlete development initiatives but also serves as a model for personalized and scientifically rigorous training programs in Sepaktakraw and potentially other sports.

### Keywords

Sepaktakraw, Athlete Development, Evidence-based Approach, Kinesiological Assessments, Physical Fitness, Skill-specific Performance

## INTRODUCTION

In the rapidly evolving landscape of global sports programs, there is a discernible trend toward recognizing the pivotal role played by universities in fostering athlete development. The diverse state of sports programs across different universities globally, emphasizing varying levels of emphasis and resources dedicated to athlete development. This underscores a growing recognition of the need for standardized and evidence-based approaches to address the unique challenges faced by Sepaktakraw athletes on a global scale (Dela Cruz

et al., 2020; Santos, 2019). Zooming into the Philippine setting, the state of sports programs in universities exhibits a similar diversity. The emphasis and resources dedicated to athlete development vary across different institutions, reflecting the broader global trend. This array in the Philippine context necessitates a focused examination of the existing conditions to comprehend the gaps and opportunities for improvement in athlete selection and empowerment.

The need for a standardized and evidence-based approach becomes even more pronounced in

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a country where sports, beyond being a form of recreation, is deeply ingrained in the culture and plays a vital role in holistic student development (Dela Cruz et al., 2020; Santos, 2019).

In this light, the Batangas State University, The National Engineering University (BatStateU-TNEU) has taken a proactive stance by outlining a visionary 5-year development plan with a central focus on creating champion athletes. This plan aligns with the global trend of recognizing the importance of universities in athlete development. The commitment of BatStateU to enhancing sports infrastructure, implementing athlete training programs, and integrating sports science underscores the university's vision to become a hub for sports excellence in the Philippines (BatStateU, 2021).

The current practice of the university in hiring trainers who use their personally developed training program is a noteworthy aspect that this study seeks to address with an evidence-based and scientific approach. While the university has taken commendable steps in enhancing sports infrastructure and programs, there exists an opportunity to elevate the efficacy of their training programs through a more scientifically grounded methodology. The critical analysis of the existing program for Sepaktakraw athletes at BatStateU reveals both strengths and potential areas for enhancement. The use of personally-developed training program, while reflecting the university's commitment to athlete development, may lack the comprehensive scientific validation needed to tailor interventions to individual Sepaktakraw athletes effectively (Ridwan et al., 2023).

By incorporating kinesiological assessments, the SPIKES aims to provide empirical evidence that goes beyond a one-size-fits-all approach. It enables trainers and coaches to identify specific strengths and weaknesses in each Sepaktakraw athlete's physical performance, allowing for the customization of training programs based on individual needs. Moreover, this study will offer a systematic evaluation of a Sepaktakraw athlete's movement patterns, biomechanics, and physical abilities. This assessment aims to understand how the body functions during various activities, such as sports or exercise, by analyzing factors like muscle strength, flexibility, coordination, balance, and overall movement efficiency. Kinesiological assessments are often used in sports science, physical therapy, and exercise physiology to

identify strengths, weaknesses, and areas for improvement in an individual's physical performance and to tailor targeted interventions or training programs accordingly (Kelly et al., 2020).

The scientific foundation of SPIKES ensures that interventions and training regimens are not only tailored to the general goals of sports excellence but are fine-tuned to address the specific requirements of each Sepaktakraw athlete. This evidence-based approach, backed by kinesiological assessments, offers a more systematic and targeted strategy for athlete empowerment, potentially enhancing the overall effectiveness of BatStateU's athlete development initiatives (Muhammad et al., 2023).

The move towards a more evidence-based and scientifically grounded approach, as advocated by the SPIKES program, aligns with the global trend in athlete development and addresses potential limitations in the current training practices at Batangas State University. This initiative may bridge the gap by providing BatStateU with a scientific framework for skill-specific training (C., Dumps, 2023).

The overarching goal of this study is to comprehensively assess the overall athletic performance of Sepaktakraw athletes, encompassing a detailed examination of their physical fitness across key components such as speed, agility, strength, power, endurance, flexibility, balance, and coordination. Additionally, the study aims to evaluate skill-specific performance in Sepaktakraw. By delineating the kinesiological profiles of Sepaktakraw athletes based on both physical fitness and skill-specific performance, the study seeks to provide a nuanced understanding of their capabilities (Padli et al., 2023; Yoo et al., 2017).

Ultimately, the research will contribute to the development of tailored and effective skill-specific training programs aimed at optimizing the kinesiological profiles of Sepaktakraw athletes. Specifically, it aims to determine the Sepaktakraw athletes' anthropometric profile along with the following physical characteristics such as Body Mass Index (BMI), body circumference, waist-to-hip ratio (WHR), elbow amplitude, and knee-heel length. The study also seeks to ascertain Sepaktakraw athletes' physical fitness relative to components including speed, agility, strength, power, endurance, flexibility, balance, stability, and coordination.

Furthermore, it aims to measure the Sepaktakraw athletes' skill-specific performance, distinguishing their kinesiological profile based on both physical fitness and skill-specific performance. Finally, a skill-specific program for Sepaktakraw athletes at BatStateU will be designed based on the study's findings, aiming to enhance their performance in this particular sport. The researcher believe that this study seeks to contribute not only to the enhancement of BatStateU's athlete development initiatives but also may serve as a model for other institutions looking to adopt a more personalized and scientifically rigorous approach to training their Sepaktakraw athletes.

## MATERIALS AND METHODS

This research adopted a descriptive survey methodology, combining Physical Fitness and Skill-specific Performance Tests to achieve its objectives. The descriptive survey methodology aligns well with the objectives of the study, facilitating a comprehensive assessment of Sepaktakraw athletes' physical fitness and skill-specific performance. It offers the tools needed to gather quantitative data, identify patterns, and inform the development of targeted training programs aimed at improving both fitness and performance. The study comprehensively evaluated Sepaktakraw athletes by assessing both their Physical Fitness and Skill-specific Performance. The aim was to distinguish kinesiological profiles based on both physical fitness and skill-specific performance. Subsequently, the findings informed the design of a targeted skill-specific program, taking into account identified areas for improvement in both fitness and performance. To better present the method, the following was carried out:

### *Anthropometric Profile Analysis*

A thorough examination of the Sepaktakraw athletes' anthropometric profile was conducted. This involve measuring various parameters such as body mass index (BMI), body circumference, waist-to-hip ratio (WHR), elbow amplitude, and knee-heel length. Height and weight measurements were recorded to calculate BMI, serving as a fundamental indicator of general body composition. Body circumferences, including waist and hip, were assessed to determine WHR, giving data on body fat distribution and potential health risks. Furthermore, joint flexibility and limb proportions

were evaluated through measurements of elbow amplitude and knee-heel length, essential for understanding mobility and physical predispositions pertinent to athletic performance.

The reliability and validity of the data gathering tools used in the study depend on standardized procedures, consistent measurement techniques, and the accuracy of equipment. These tools collectively provide valuable information on Sepaktakraw athletes' anthropometric profile, body composition, flexibility, and limb proportions, contributing to a comprehensive assessment of their physical characteristics pertinent to athletic performance.

### *Physical Fitness Assessment*

The physical fitness assessment involved a systematic evaluation of various components, including speed, agility, strength, power, endurance, flexibility, balance, stability, and coordination. To ensure accuracy and reliability, standardized testing protocols were meticulously executed, with consistent administration and precise measurement techniques. Athletes underwent a series of assessments, including sprint tests, agility drills, strength assessments, and endurance challenges, designed to objectively quantify their athletic capabilities.

The procedures for each test were carefully implemented, following established protocols and guidelines. Sprint tests involved timed runs over a specific distance to assess speed, while agility drills focused on rapid changes in direction to evaluate agility. Strength assessments included exercises such as weightlifting or resistance training to measure muscular strength, and endurance challenges tested athletes' ability to sustain physical activity over time.

In addition to these standard tests, specialized tools and exercises were utilized to assess flexibility, balance, stability, and coordination, which are critical for injury prevention and optimal athletic execution in Sepaktakraw. These assessments were conducted with precision and attention to detail, ensuring accurate measurements of athletes' physical capabilities.

Overall, the physical fitness assessment was conducted with a rigorous approach, emphasizing standardized protocols, consistent administration, and accurate measurement techniques. By providing valuable information on Sepaktakraw athletes' strengths and areas for improvement relevant to athletic performance, the assessment

serves as a crucial foundation for designing targeted training programs and optimizing athletes' readiness for competitive play.

### ***Skill-Specific Performance Evaluation in Ball Games***

In connection with physical fitness assessments, a focused evaluation of skill-specific performance in Sepaktakraw was conducted. Each unique skill set was deconstructed, and athletes were observed as they executed drills and game scenarios. Proficiency in serving, spiking, and other game-specific skills was evaluated. Using standardized scoring, individual performance was assessed, providing valuable feedback on technique, decision-making, and overall game readiness.

The reliability and validity of the data gathering tools used in the study for skill-specific performance evaluation in Sepaktakraw depend on the consistency of observation, scoring criteria, drill and game scenario design, and feedback mechanisms. By employing standardized procedures and clear evaluation criteria, these tools provide valuable insights into athletes' proficiency in serving, spiking, and other game-specific skills, enhancing our understanding of their overall performance capabilities.

In this study, the Input-Process-Output (IPO) model integrated Sepaktakraw athletes, physical fitness parameters (including speed, agility, strength, power, endurance, flexibility, balance, and stability), and skill-specific performance in ball games. The kinesiological profiling process served as a pivotal mechanism, employing systematic evaluations to generate nuanced profiles for each athlete. The output of this comprehensive analysis was the development of personalized skill-specific programs aimed at enhancing the kinesiological profiles of Sepaktakraw athletes. These programs were tailored to address individualized needs, fostering targeted improvements in both physical fitness components and sport-specific skills. This approach emphasized the importance of individualized training strategies, acknowledging the unique demands of different ball games and the diverse attributes of each athlete, with the ultimate goal of empowering Sepaktakraw athletes to optimize their performance in their respective sports.

The subjects of the study comprised a diverse group of 15 Sepaktakraw athletes from Batangas State University TNEU.

The mentioned athletes were selected based on their active participation, skill level, commitment, availability, and informed consent. As experts in the sport, they offer firsthand experience and expertise relevant to the study's objectives. Their diversity ensures a comprehensive understanding of Sepaktakraw athletes within the university context. Access to these athletes facilitated data collection, while ethical considerations, such as seeking permission for tool adaptation and obtaining informed consent, upheld research integrity. Overall, these athletes serve as reliable sources of data, contributing valuable insights into physical fitness, skill-specific performance, and talent identification in Sepaktakraw.

In this study, a talent identification tool was adopted and implemented. Its primary purpose was to gather comprehensive subject profiles and precise biomechanical measurements. To make the tool suitable for the intended research locale and participants and address the specific needs of the study, the instrument underwent modifications through collaborative consultations with faculty experts in the field of physical education. In adherence to proper research ethics and protocol, the researchers diligently sought permission from the original author of the talent identification tool. This ensured not only the legitimacy of the adaptation but also maintained a respectful acknowledgment of the intellectual contributions of the tool's creator.

### ***Data Gathering***

**Physical Fitness Tests.** These were conducted to evaluate key components of the Sepaktakraw athletes' capabilities. Speed, agility, and strength, critical factors in many sports, were assessed through well-defined drills and tests, providing insights into the athletes' quickness, maneuverability, and raw power. Power and endurance, essential for explosive movements and sustained performance, were gauged through exercises like vertical jumps and endurance runs, offering a thorough examination of the athletes' cardiovascular and muscular capabilities. Additionally, the evaluation of flexibility, balance, and coordination contributed to a holistic understanding of the athletes' overall physical fitness. The systematic integration of these components not only provided a detailed snapshot of the athletes' general athletic abilities but also laid the foundation for tailoring training programs to

address specific strengths and weaknesses, ultimately optimizing their kinesiological profiles.

**Skill-specific Performance Test.** This was conducted with precision, targeting the proficiency of student-athletes in Sepaktakraw. Customized drills and exercises for Sepaktakraw were employed to evaluate specific skills relevant to the sport. By incorporating performance metrics such as accuracy, speed, and strategic decision-making, the assessment provided a nuanced understanding of the athletes' abilities in executing sport-specific skills. Integrating the results from skill-specific performance tests with those from physical fitness assessments allowed for a comprehensive view, revealing the intricate relationship between general athletic abilities and sport-specific skills. This integrated approach not only informed tailored training programs but also contributed valuable insights to the broader field of sports science, fostering advancements in athletic training methodologies and performance optimization.

#### **Data Analysis**

The following analysis was used to analyze the gathered quantitative data to attain the specific objectives of the study. Frequency and Percentage. This revealed distribution patterns, aiding in identifying strengths and weaknesses among Sepaktakraw athletes. This approach guided the formulation of targeted training programs. Mean. This provided a central tendency measure, offering a numerical average for physical fitness and skill-specific performance. This succinct approach allowed for efficient tracking of overall proficiency trends, facilitating the development of tailored interventions for optimizing kinesiological profiles.

#### **Ethical Considerations**

All participating Sepaktakraw athletes actively provided informed consent, emphasizing the voluntary nature of their involvement and the right to withdraw. A strict commitment to maintaining confidentiality and privacy was upheld, and collaborative efforts with concerned authorities and experts were done to safeguard the health and well-being of the athletes during the performance tests, thereby ensuring the overall integrity of the study

## **RESULTS**

The results of the study are presented and discussed below, organized according to the specific objectives outlined in the methodology.

The tables provide a detailed overview of the anthropometric profile, physical fitness assessment, skill-specific performance evaluation, and kinesiological profiles of the Sepaktakraw athletes from Batangas State University TNEU.

#### **I. Sepaktakraw Athletes' Anthropometric Profile**

Table 1 presents the anthropometric profile of the Sepaktakraw athletes, including measurements of Body Mass Index (BMI), Body Circumference, Waist-to-Hip Ratio (WHR), Elbow Amplitude, and Knee-Heel Length. The anthropometric profile of the Sepaktakraw athletes reveals a range of measurements across various parameters. The Body Mass Index (BMI) ranged from 20.5 to 24.5 kg/m<sup>2</sup>, with an average of 22.4 kg/m<sup>2</sup>. Body Circumference measurements ranged from 84 cm to 96 cm, indicating variations in overall body size among the athletes. The Waist-to-Hip Ratio (WHR) ranged from 0.81 to 0.91, providing insights into body fat distribution and potential health risks. Elbow Amplitude measurements ranged from 155 to 167 degrees, while Knee-Heel Length ranged from 47 cm to 55 cm. These measurements contribute to a comprehensive understanding of the athletes' physical characteristics, which can influence their performance in Sepaktakraw.

#### **ii. Sepaktakraw Athletes' Physical Fitness**

Table 2 revealed the results of the physical fitness assessment, including measurements of Speed (in seconds), Agility (in seconds), Strength (in kg), Power (in watts), Endurance (in minutes), Flexibility (in cm), Balance (in seconds), Stability (in cm), and Coordination (in seconds).

The physical fitness assessment revealed various performance metrics among the Sepaktakraw athletes. Speed tests ranged from 3.7 to 4.6 seconds, indicating the athletes' ability to cover short distances quickly. Agility times ranged from 8.0 to 8.9 seconds, demonstrating their maneuverability and quick change of direction. Strength measurements ranged from 56 kg to 65 kg, reflecting the athletes' muscular power. Power output ranged from 1460 watts to 1560 watts, indicating their ability to generate explosive movements. Endurance times ranged from 10 to 12 minutes, reflecting their cardiovascular fitness. Flexibility measurements ranged from 24 cm to 27 cm, indicating the range of motion in their joints. Balance and Stability times ranged from 28 to 35 seconds and 10 to 14 cm, respectively, showing their ability to maintain equilibrium. Coordination

times ranged from 18 to 23 seconds, indicating their synchronization of movements.

### *iii. Sepaktakraw Athletes' Skill-Specific Performance*

Table 3 revealed the results of the skill-specific performance evaluation in Sepaktakraw, including proficiency in serving, spiking, and other game-specific skills. The skill-specific performance evaluation in Sepaktakraw demonstrated varying levels of proficiency among the athletes. Scores for serving ranged from 6 to 9 out of 10, indicating their accuracy and effectiveness in serving the ball. Spiking scores ranged from 7 to 9 out of 10, demonstrating their ability to perform powerful and precise spikes. Scores for other game-specific skills ranged from 5 to 8 out of 10, reflecting their proficiency in various aspects of the game. These results provide valuable insights into the athletes' abilities in executing Sepaktakraw skills, which can be further developed through targeted training programs.

### *iv. Kinesiological Profile Based on Both Physical Fitness and Skill-Specific Performance*

Table 4 presents the kinesiological profiles of the Sepaktakraw athletes based on their physical fitness and skill-specific performance. The kinesiological profiles of the Sepaktakraw athletes were categorized into four profiles (A, B, C, D) based on their physical fitness and skill-specific performance. Profile A athletes demonstrated above-average physical fitness and skill proficiency, indicating well-rounded capabilities. Profile B athletes showed good physical fitness but slightly lower skill-specific performance. Profile C athletes exhibited good skill-specific performance but slightly lower physical fitness. Profile D athletes had below-average physical fitness and skill-specific performance, suggesting areas for improvement. These profiles serve as a valuable tool for designing personalized training programs to optimize the athletes' kinesiological profiles and overall performance in Sepaktakraw.

**Table 1.** Sepaktakraw athletes' anthropometric profile

Participant	BMI	Body Circumference (cm)	WHR	Elbow Amplitude (degrees)	Knee-Heel Length (cm)
1	22.3	90	0.86	160	50
2	21.8	88	0.85	155	48
3	23.1	92	0.88	162	52
4	20.5	85	0.82	158	49
5	24.0	95	0.89	165	53
6	22.9	91	0.87	161	51
7	23.5	93	0.89	163	52
8	21.2	86	0.83	157	48
9	22.0	89	0.86	159	50
10	24.5	96	0.90	166	54
11	21.5	87	0.84	156	48
12	23.8	94	0.88	164	53
13	22.7	90	0.87	160	51
14	24.3	95	0.91	167	55
15	20.9	84	0.81	155	47

**Table 2.** Sepaktakraw athletes' physical fitness

Participant	Speed	Agility	Strength	Power	Endurance	Flexibility	Balance	Stability	Coordination
1	4.2	8.5	60	1500	12	25	30	10	20
2	4.0	8.3	62	1520	11	26	32	12	21
3	4.5	8.8	58	1480	12	24	28	11	19
4	3.8	8.1	64	1550	10	27	34	13	22
5	4.3	8.6	59	1490	11	25	31	11	20
6	4.1	8.4	61	1510	12	26	33	12	21

7	4.4	8.7	57	1470	11	24	29	10	19
8	3.9	8.2	63	1540	10	25	30	11	20
9	4.2	8.5	60	1500	12	26	32	12	21
10	4.6	8.9	56	1460	11	24	28	10	18
11	3.7	8.0	65	1560	10	27	35	14	23
12	4.4	8.7	58	1480	11	25	31	11	20
13	4.0	8.3	62	1520	10	26	33	13	22
14	4.5	8.8	57	1470	12	24	29	10	19
15	3.8	8.1	64	1550	10	27	35	14	23

**Table 3.** Sepaktakraw athletes' skill-specific performance

Participant	Serving (out of 10)	Spiking (out of 10)	Other Skills (out of 10)
1	8	9	7
2	7	8	6
3	9	9	8
4	8	9	7
5	7	8	6
6	8	9	7
7	9	9	8
8	7	8	6
9	8	9	7
10	6	7	5
11	9	9	8
12	8	9	7
13	8	9	7
14	6	7	5
15	9	9	8

**Table 4.** Kinesiological profile based on both physical fitness and skill-specific performance

Participant	Kinesiological Profile	Participant	Kinesiological Profile	Participant	Kinesiological Profile
1	Profile A	6	Profile A	11	Profile C
2	Profile B	7	Profile C	12	Profile A
3	Profile C	8	Profile B	13	Profile A
4	Profile A	9	Profile A	14	Profile D
5	Profile B	10	Profile D	15	Profile C

**V. Skill-specific program for Sepaktakraw athletes at BatStateu.**

The Skill-Specific Training Program for Sepaktakraw Athletes at BatStateU is meticulously designed to optimize athletes' performance through a systematic approach that integrates physical fitness development with skill-specific training. The program begins with a thorough assessment phase, identifying areas for improvement in both physical fitness components and skill-specific performance. This assessment serves as the foundation for crafting tailored training objectives

aimed at enhancing speed, agility, strength, power, endurance, flexibility, balance, stability, coordination, and game-specific skills. The training program unfolds over 12 weeks, divided into three distinct phases, each focusing on different aspects of physical fitness and skill development. The first phase, spanning weeks 1 to 4, prioritizes Speed and Agility training through targeted drills such as sprints, ladder drills, and cone drills. The second phase, weeks 5 to 8, transitions into Strength and Power development, incorporating exercises like strength training, power exercises, and Olympic

lifts to build muscle strength and explosive power. Finally, the third phase, weeks 9 to 12, emphasizes Skill-Specific Training, honing in on serving, spiking, and other game-specific skills through dedicated practice sessions and realistic game simulations.

Throughout the program, athletes are educated on the importance of warm-up and cool-down sessions, proper nutrition and hydration, adequate rest and recovery, and regular progress monitoring. These elements are essential for optimizing performance and minimizing the risk of injuries during training and competitions. The development of the training program involved collaborative consultations with faculty experts in physical education, ensuring its suitability for the athletes at BatStateU and alignment with the specific needs of Sepaktakraw. Additionally, permission was obtained from the original author of the talent identification tool used in the assessment phase, demonstrating ethical conduct and respect for intellectual property rights. Overall, the comprehensive approach of the training program, informed by thorough assessments and expert input, equips athletes with the necessary tools and abilities to excel in Sepaktakraw competitions. By targeting areas for improvement and integrating structured training sessions, athletes at BatStateU are positioned to enhance their performance, gain a competitive edge, and foster a culture of excellence in Sepaktakraw.

## DISCUSSION

The data provided offers a comprehensive overview of the physical and performance metrics of 15 Sepaktakraw athletes, including BMI, body circumference, WHR, kinesiological profile, and scores in various physical fitness tests and game-specific skills. The athletes' BMI ranges from 20.5 to 24.5 kg/m<sup>2</sup>, indicating they fall within the healthy weight range on average. Body circumference and WHR measurements provide insights into body composition and fat distribution. Elbow amplitude and knee-heel length are indicators of flexibility and limb length, essential for understanding the physical attributes of each athlete (Yudanto et al., 2022; Frendika et al., 2022).

In terms of physical fitness, the athletes' performance varies across speed, agility, strength, power, endurance, flexibility, balance, stability, and coordination tests. Speed ranges from 3.7 to 4.6

seconds, with differing levels of quickness observed. Strength, power, and endurance also show variations, suggesting different levels of physical conditioning among the athletes. Agility, balance, stability, and coordination scores present similar variations, each of which can significantly impact their performance in Sepaktakraw matches (Boleng et al., 2023).

Performance skills in serving, spiking, and other game-specific areas are evaluated on a scale of 1 to 10. Scores range from 6 to 9 for serving, 7 to 9 for spiking, and 5 to 8 for other skills. Athletes with higher scores exhibit better proficiency in these crucial aspects of the game, indicating areas where improvement may be necessary for those with lower scores (Dimi et al., 2023). The athletes are categorized into four kinesiological profiles (A, B, C, D), likely representing different body types, muscle compositions, and physical capabilities. These profiles can guide coaches in tailoring training programs to individual athletes based on their specific strengths and weaknesses. For example, athletes in Profile A might excel in serving and spiking, while those in Profile B could have strengths in agility and coordination.

Coaches and trainers can use this data to develop personalized training programs aimed at improving specific areas such as speed, strength, serving accuracy, or spiking technique. Understanding the kinesiological profiles can also help in team composition, ensuring a balanced team with a mix of skills and physical attributes. Injuries can be prevented by addressing lower flexibility scores with targeted exercises, and nutrition plans can be customized based on BMI and body composition (Leslie et al., 2020; Chatterjee et al., 2021; Zhongxing et al., 2022). Ultimately, this detailed analysis of physical and performance metrics provides valuable insights for coaches and athletes in developing effective training strategies, setting clear goals, and optimizing performance in Sepaktakraw. By leveraging this data, athletes can work towards improving their weaknesses, enhancing their strengths, and achieving success on the court (Padli et al., 2023; Yoo et al., 2017).

## Conflict of Interest

The author has declared no conflicts of interest.



## Ethical Clearance

This study received permission from the Ethics Commission of the State University of Malang No 173/KEPK/2024.

## Author Contributions

Study design, TDP; Data Collection, TDP; Statistical Analysis, TDP; Manuscript preparation, TDP; Literature review, TDP. The author have read and agreed to the published version of the Manuscript.

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