



BASIC VOLLEYBALL TECHNICAL SKILLS FOR STUDENTS: VALIDITY AND RELIABILITY

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Authors' Contribution: A – Study design; B – Data collection; C – Statistical analysis; D – Manuscript Preparation; E – Funds Collection

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Accepted for Publication: September 13, 2023

Published: October 30, 2023

DOI: 10.17309/tmfv.2023.5.13

Abstract

Study purpose. The goal of this project is to provide a basic volleyball skill exam for Universitas Muhammadiyah Surakarta students enrolled in the Sports Education study program.

Materials and methods. This work employed experimental techniques. They are testing the reliability and validity of fundamental volleyball skills for students between 18 and 24. For objectivity and validity, personal correlations are employed in data analysis, while reliability coefficients between classes are used in data analysis for reliability. The population and sample consisted of 114 students studying sports education in the first and third semesters, including 64 males and 50 females.

Results. The validity value, $r = 0.653$, was highly significant. Additionally, the researcher's score with tester 1's assistance is $r = 0.759$, with tester 2's assistance is $r = 0.651$, and the correlation coefficient between the results of assistant testers one and two is a high $r = 0.686$. The objectivity value of the result score for the volleyball skill instrument was $r = 0.787$ for the researcher and examiner one and $r = 0.705$ for examiner two. The correlation coefficient between assistant examiners one and two was high at $r = 0.706$. The motion reliability score for volleyball skills was high ($r = 0.652$). The volleyball skill reliability score had a very high result score of $r = 0.872$.

Conclusions. Based on the study findings, it is clear that the accuracy test of fundamental skills is highly effective and efficient and merits being used as a benchmark instrument to assess the skills of volleyball. To improve volleyball playing abilities, further research involving various factors, including social environment, psychosocial factors, and physical condition factors by student characteristics, is necessary. However, caution is required due to the small sample sizes used in this study and the need to consider other variables.

Keywords: the validity, reliability tests, volleyball batteries.

Introduction

The volleyball sport's regulations state that each team can play the ball one to two times before it crosses the net, but three times is the maximum. A one-handed serve that sends the ball over the net initiates plays (Oliinyk et al., 2021). Before the ball touches the ground, leaves the pitch, or is mishandled by a player, it can be played once more (Hu et

al., 2022; Muharram et al., 2023; Soytürk, 2019; Yudasmara & Fadhli, 2018). According to the regulations, volleyball games start with a service technique. This method can be accepted by a forearm pass technique (forearm pass) or overhead passing technique (overhead pass), fed by forearm pass or overhead pass techniques, followed by a punch (technic spike), and finally a block (technic block) (Dewanti et al., 2023). According to Nasrulloh, players in this game must jump vertically while spiking and blocking to make contact with the ball from a height of their choosing (Nasrulloh et al., 2021).

Volleyball requires roughly 10-12 years of sportsman coaching to achieve maximum or perfect outcomes. Learning

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volleyball critical motion abilities of primary school pupils through effective and efficient game-centered strategies is the conclusion of Samsudin's research (Samsudin et al., 2021). The principles of sports coaching, in Bomp's opinion, start at the multilateral level, the specialization stage, and the pinnacle stage of achievement (Bompa & Buzzichelli, 2019). The emphasis of the multilateral/novice stage, which starts with volleyball at the age of 11–12, is on preparation for introducing numerous sports. The specialization stage, which occurs between the ages of 14 and 15, emphasizes the choice of a specific subject that is actively pursued and has the potential for peak performance, such as volleyball. Athletes play volleyball at the peak of their abilities, typically between the ages of 20 and 25.

How to judge a player's talent during a game and selecting a good volleyball player are two challenges that coaches must overcome (Indrakasih et al., 2022). To plan training for athlete progress, coaches must have the proper guidance and resources (Budiarti et al., 2019). The measuring process is crucial because it enables the trainer to assess the training plan's effectiveness (Juditya et al., 2020). Based on the evaluation findings, numerous initiatives and improvements will be undertaken to enhance the training program's quality (Lima et al., 2021). Additionally, the coach can only analyze volleyball skills using the tools already used for student assessment, not the actual movements. Due to age and talent discrepancies, senior volleyball players cannot be evaluated using student skill assessments.

For coaches, professors, and physical education teachers to use volleyball skill instruments to evaluate and choose future volleyball players, it was essential to determine whether they accurately assessed the abilities and skills of volleyball players aged 18 to 24. The application also aims to assist volleyball coaches, lecturers, and physical education teachers in evaluating players' skills and appropriate moves. Volleyball skill instruments minimize the usage of tools and human resources, and their execution indications are more by the caliber of volleyball skills, such as serve, pass, block, and smash.

Materials and methods

Study participants

The research conducted experimental research to create a product of fundamental volleyball playing abilities for students between 18 and 24. According to Sugiyono's explanation, experimentation is a quantitative research approach used with experiments that meet the criteria of effectiveness, quality, or the same. This is done to ensure the influence of independent variables on dependent variables (results) under controlled circumstances (Sugiyono, 2017).

Study organization

This study used a pre-test and post-test to evaluate the validity and reliability of the fundamental volleyball skills of students between 18 and 23. The fundamental volleyball tactics of serving, forearm pass, overhand Pass, smashing, and blocking are used as test materials. Between January and March 2023, a purposeful sampling technique was used to gather samples with male and female gender characteristics

criteria tailored to the requirements of the Universitas Muhammadiyah Surakarta Indonesia, students who were the focus of the current study. 64 males and 50 females were included in the 114 students chosen to participate in the current experiment. Students majoring in sports education at the Universitas Muhammadiyah Surakarta in the first and third semesters made up the population and sample for this study. The accuracy of volleyball sports techniques, including serve, underpass, overpass, smash, and block, is assessed based on the characteristics examined. The data was gathered using assessments that examined the precision of fundamental volleyball techniques: (1) Forearm pass: Students pass to the wall for one minute. The score is determined by the touch of the ball on the predetermined target with the position to make a bottom pass behind the line (a distance of 3 meters from the target wall) with a target height of 2.5 meters and the Scoring according to the touch of the ball in the target area of 1.2 and 3 with a target distance of 30 cm each; (2) Top Pass: For one minute, the students make top passes to the wall. (3) Top and bottom serve: Students perform ten upper serves, scoring based on the ball's fall on a predetermined target. The score is given according to the touch of the ball to the predetermined target with the position to perform a bottom pass behind the line (a distance of 3 meters from the target wall) with a target height of 3.5 meters and a Score according to the touch of the ball in the target area of 1.2 and 3 with a target distance of 30 cm each. The rating is based on the touch of the ball in the target area of 1, 2, 3, 4, and 5 with a size of 2.5 meters with a value of 2; the size of the line with a distance of 5 meters is given a value of 1, and 3 and line sizes with the princess 2.24 meters. The position to serve behind the line (9 meters from the target) has been used to determine the ball's fall in the target area. With an assessment based on the touch of the ball in the target area of 1, 2, 3, and 4 with a size of 3 meters can be a value of 2, the size of the line with a distance of 4.5 meters is given a value of 1, and 3. The size of 4.24 meters, the score is given according to the ball's fall in the target area that has been set with a position to smash behind the attack line (a distance of 3 meters from the target). The chance was presented ten times. The ball's descent to a predetermined target determines the score. The rating is given according to the touch of the ball in the target area of 1, 2, 3, and 4 with the provision that it can be scored four if the ball falls on the target line 2 0.75 meters, and can be three if the ball falls on the target size of 1 me. The position to block behind the attack line (3 meters from the target) has a net height of 2.43 meters, and the princess has a height of 2.24 meters. Each test's implementation and intended results can be summed up as follows;

Overhand Pass

Equipment: Ball, note, and target wall

Implementation steps: (1) Students may attempt two passes before taking the test; (2) Students complete the top pass for one minute; (3) Position for the top fitting is behind the line, three meters from the target wall.

Rating: (1) Assessment based on when the ball touches the target area; (2) if the ball is lost, the first throw to the target is not given a score; (3) Off-target ball touches are

given a value of 0; (4) If the ball touches precisely on the target line, the score obtained is the highest; and (5) The value obtained is the total score of 1 minute of overhand Pass executed.

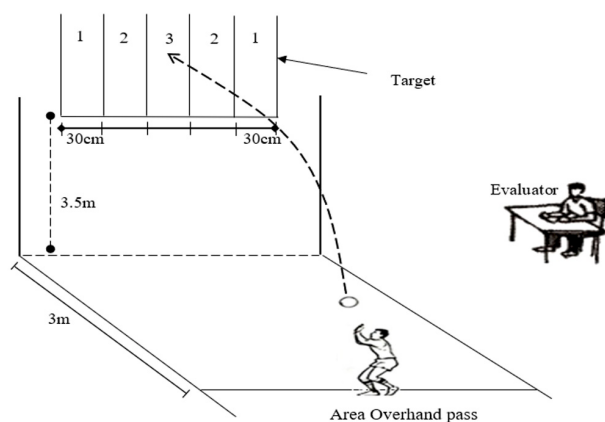


Fig. 1 Overhand Pass

Forearm pass

Equipment: Ball, note, and target wall

Implementation steps: (1) Students may attempt two passes before taking the test; (2) Students complete the top pass for one minute; (3) Position for the top fitting is behind the line, three meters from the target wall.

Rating: (1) Evaluation based on the ball's touch in the target area; (2) If the ball is lost, the first throw to the target is not given credit; (3) Off-target ball touches are given a value of 0; (4) If the ball touches precisely on the target line, the score obtained is the highest; and (5) The value obtained is the total score of one minute of forearm pass executed.

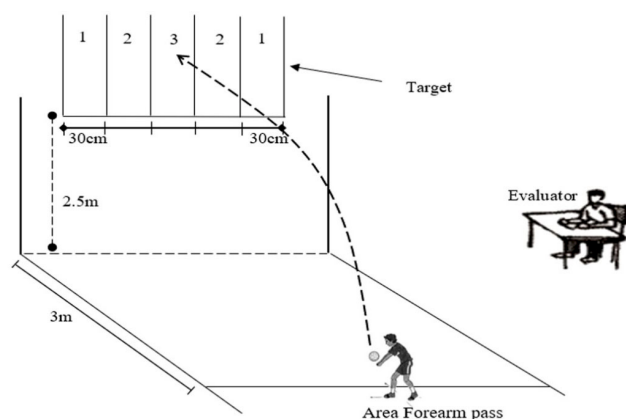


Fig. 2 Forearm pass

Service

Volleyball court, net, ball, and comments are provided

Procedure: (1) Students may perform the smash experiment twice before the test; (2) Students must smash ten times; and (3) Position for free service (as long as the service area is allowed).

Rating: (1) The ball's fall into the target area is taken into account; (2) The ball strikes the net and leaves the field (goes out); and (3) The value achieved is the sum of the scores for the ten serves made

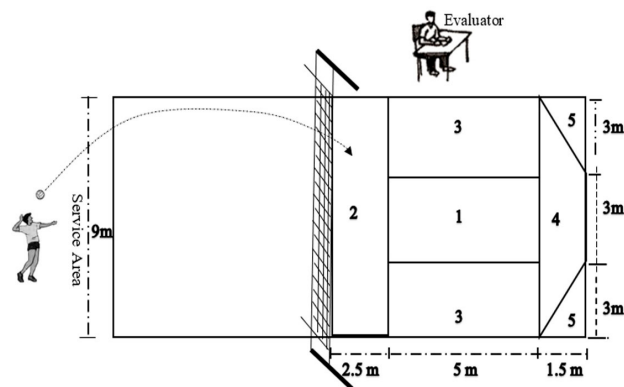


Fig. 3. Service

Block

Volleyball court, net, ball, and comments are provided

Procedure: (1) Students may do block experiments twice before the test; (2) Students block ten times; (3) Position for a free block (along the net).

The ball concerned at the net and out of court is given the number 0; the value gained is the total score of 10 blocks.

Rating: (1) Assessment based on the ball's fall in the target area.

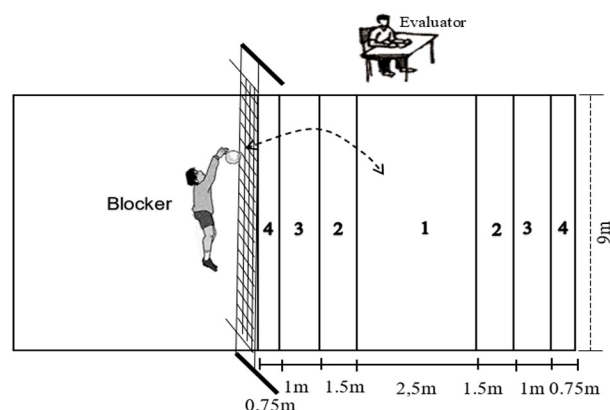


Fig. 4. Block

Smash

Volleyball court, net, ball, and comments are provided

Procedure: (1) Students may perform the smash experiment twice before the test; (2) Students may smash ten times; (3) Students may smash by throwing their balls; and (4) Students should crush in the middle (position 3).

When the ball strikes the net and leaves the field (goes out), it receives a score of 0; when it falls in the target area, it receives a score of 1; and when it lands in the target area, it receives a score of 10.

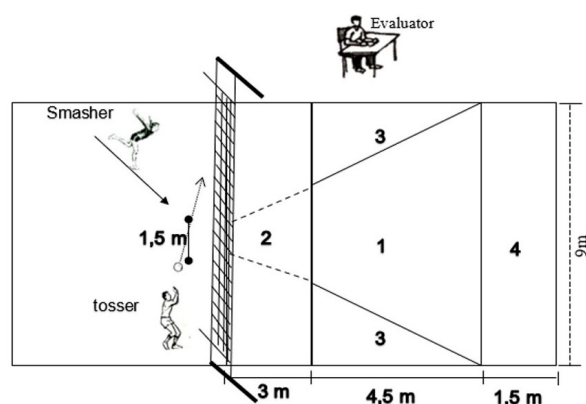


Fig. 5. Smash

Statistical analysis

Validity and reliability tests are used in data analysis methods. The correlation Product-Moment of Karl Pearson is the validity test that is employed. The Scale Reliability Analysis from Alpha Cronbach's Reliability Test (Sugiyono, 2017).

Table 1. Standards for interpreting a test instrument's correlation coefficient

Interval Coefficient	Category
0.80-1.000	Very high
0.60-0.799	High
0.40-0.599	Currently
0.20-0.399	Low
0.00-0.199	Very low

In addition, a paired test (t-test) was used to assess the accuracy of the fundamental volleyball skill exam. SPSS 25 overall data analysis.

Results

Figure 1 displays the outcomes of a descriptive analysis that considers mean scores, standard deviations, and other metrics to highlight the findings of this study on the validity and reliability of students' basic volleyball playing abilities in terms of gender characteristics.

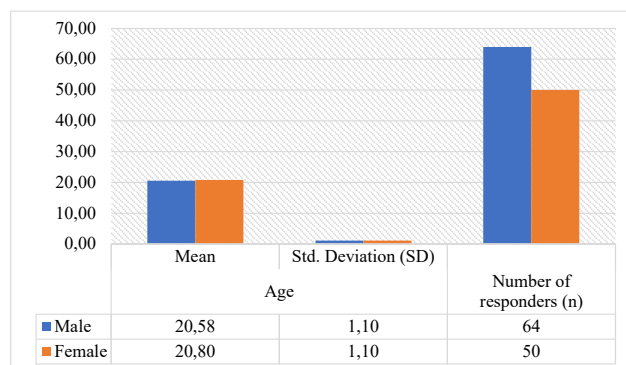


Fig. 6. Characteristics of sex and age

Figure 6 displays the sex characteristics of 64 males and 50 females, together with the mean ages of males and females ($20.58 - 20.80 = 0.22$). This indicates a 0.22-year difference in age features, while the sample's other characteristics studying in the first and third semesters of the Universitas Muhammadiyah Surakarta sports education study program are nearly the same. Furthermore, the results of the validity and reliability test of basic volleyball skills are in Table 2 while Table 3 interprets the results of the difference in mean and standard deviation (SD) of basic volleyball playing technique skills.

Table 2. Results of the Analysis of Volleyball Skill Instruments' Reliability and Validity

Variable	Male (N = 64)		Female (N = 50)	
	Validity	Reliability	Validity	Reliability
Overhand pass	0.639	0.744	0.638	0.852
Forearm pass	0.603	0.756	0.632	0.847
Service	0.673	0.758	0.686	0.801
Smash	0.666	0.752	0.656	0.832
Block	0.683	0.787	0.644	0.896

Table 3. Results of differences in the mean basic technical skills of playing volleyball

Variable	Gender M/F*	Mean $\pm$ SD
Overhand pass	M/F	1.96 $\pm$ 2.15
Forearm pass	M/F	1.42 $\pm$ 2.44
Service	M/F	1.48 $\pm$ 6.05
Smash	M/F	3.48 $\pm$ 5.23
Block	M/F	4.20 $\pm$ 2.17

*M = male; F = Female

The findings of the investigation of the validity and reliability of the fundamental volleyball skills of students in the high category are presented in Table 2. The acquisition of each test is proof of this: (1) Overhand pass with a validity of 0.639 and a reliability of 0.744 for males and a validity of 0.638 and a reliability of 0.852 for females; (2) Forearm pass with a validity of 0.603 and a reliability of 0.756 for males and a validity of 0.632 and a reliability of 0.847 for females; (3) Service with a validity of 0.673 and a reliability of 0.758 for males and a validity of 0.686 and a reliability of 0.801 for females. Thus, it can be inferred that the tool can be used to assess students' proficiency in fundamental volleyball abilities. However, due to the population and sample size being so tiny for the Universitas Muhammadiyah Surakarta's sports education study program, care must be used when employing this instrument.

Additionally, based on variations in mean and standard deviation for the boys and females of each study variable, Table 3's descriptive analysis of research outcomes was performed. The acquisition of each test is proof of this: (1) Overhand pass, with a mean of 1.96 and a reliable standard deviation of 2.03; (2) Forearm pass, with a mean of 1.42 and a reliable standard deviation of 2.50; (3) Service, with a mean of 1.48 and a reliable standard deviation of 4.52; (4) Smash, with

a mean of 3.48 and a reliable standard deviation of 4.97; and (5) Block, with a mean of 4.20 and a reliable standard deviation of 1.80. It follows that there are disparities between the typical fundamental volleyball skills of male and female students. As a result, the fundamental volleyball skills of male and female students differ. This suggests that the coefficient, which was applied to a sample of 114 persons, can be generalized or applied to the population as a whole.

Discussion

When this research was conducted on sports education students at the Universitas Muhammadiyah Surakarta, the volleyball accuracy test instrument was modified from several valid research results and is suitable for testing and measuring basic volleyball skills of students aged 18-24 years. Test the instrument's validity and dependability and the accuracy of the fundamental volleyball methods, including serve, top pass, bottom pass, block, and smash in the high category. Each of the aforementioned basic volleyball skill tests utilizes a value for Cronbach's Alpha of 0.60. Therefore, it is possible to infer that the correlation coefficient with the range of 0.60 to 0.799 has good reliability. The test data results have a strong level of validity and reliability if the correlation coefficient is more significant with r -table $N = 114$, if the number of samples with a level of $5\% = 0.05$ is 114, or if the correlation coefficient is more significant than 0.5, or if the correlation coefficient is 0.176, or if primary volleyball skill data can be used to measure volleyball playing skills in students between the ages of 18 and 24. It may be anticipated that volleyball sporting accomplishments will be at their best in line with Furkan's advice that coaches, managers, and officials can exploit Battery Tests to pick players (Furkan, 2019).

According to Aulia's research, the invention of the study's instruments is a valuable tool for determining motion and the outcomes of volleyball abilities such as serve, dig, set, block, and spike (Aulia et al., 2022). Furthermore, according to Aulia's research, this volleyball skill instrument helps measure the skills of volleyball players between the ages of 18 and 25 (Aulia et al., 2022). According to Yudasmar's research findings, the test instrument has a high correlation coefficient value, enabling teachers to utilize it to gauge how well students learn volleyball. Tests are quick and straightforward to perform anywhere. It has also been demonstrated that the instrument can evaluate volleyball-related theoretical or practical concerns (Yudasmar & Fadhli, 2018). According to Komani's research (Komani et al., 2022), volleyball smash test equipment is designed using sensor technology to quantify a player's capacity to smash the ball. According to Sujarwo's research findings, this instrument helps assess volleyball players' levels of self-assurance when serving and jumping (Arif & Sujarwo, 2021). Contrary to Soytürk's results, aspiring physical education teachers must learn to assess motion and apply alternative measurement techniques in volleyball matches (Soytürk, 2019).

The instrument's validity determines the veracity of any justifications or generalizations drawn from the data acquired (Palao et al., 2015). An instrument is considered valid for measurement (Conti et al., 2016). Analyzing measurements and checking for logical inconsistencies in data findings are requirements for validity studies (Garri et al., 2020). According to Xupeng Wan, a measuring device is

considered accurate if it can determine the target's size (Wan & Niu, 2017). Objectivity is one of the elements that should be prioritized when it comes to testing, measurements, and evaluations (Destriana et al., 2021). If an instrument lacks objectivity, it is seen as unreliable. The concept of objectivity is crucial for all measurement tools and methodologies. The skill level of each volleyball player should be assessed equally (Wang et al., 2018).

As a result, instruments must adhere to particular standards, such as being highly valid or measuring what should be measured. Last but not least, the instrument must have high reliability, consistency in measurements, and high objectivity, or findings that are essentially the same regardless of how many people take measurements. The current study investigated the validity, objectivity, and reliability of volleyball skill instruments used to gauge players' skills and abilities between the ages of 18 and 24. The findings of this study show that an instrument developed to score volleyball players between the ages of 18 and 24 in terms of service, forearm pass, overhand Pass, block, and smash abilities, has excellent levels of validity, objectivity, and reliability. This shows that tools for measuring research skills can be used to gauge what needs to be gauged. When coaches, managers, and team officials employ the instrument test to choose players, it is reasonable to anticipate that volleyball sporting accomplishments will be at their peak.

Conclusions

Based on the study's findings, it is clear that the primary skill accuracy test is highly effective and efficient and merits being used as a normative instrument to assess the skills of volleyball players between the ages of 18 and 24. Further research involving various factors, including social environment, psychosocial factors, and physical condition factors under student characteristics, is necessary to improve volleyball playing abilities. However, caution is required due to the small sample sizes used in this study and the need to consider other variables.

Acknowledgment

We appreciate the participation and contribution of the research team, the students in the sports education program at the Universitas Muhammadiyah Surakarta, and the Faculty of Teacher Training and Education. The researcher specifically expressed his gratitude to the Universitas Muhammadiyah Surakarta for providing full financial support through grants for community service for the lecturers' personal development for the fiscal year 2023.

Conflict of interest

The researcher claims that there are no conflicts of interest in this study.

References

- Oliinyk, I., Doroshenko, E., Melnyk, M., Sushko, R., Tyshchenko, V., & Shamardin, V. (2021). Modern approaches to analyzing technical and tactical actions of skilled volleyball players. *Physical Education Theory and Methodology*, 21(3), 235-243. <https://doi.org/10.17309/tmfv.2021.3.07>

- Hu, L., Zhao, K., & Jiang, W. (2022). Biomechanical Analysis of Volleyball Players' Spike Swing Based on Deep Learning. *Computational Intelligence and Neuroscience*, 2022. <https://doi.org/10.1155/2022/4797273>
- Muharram, N. A., Suharjana, S., Irianto, D. P., Suherman, W. S., Raharjo, S., & Indarto, P. (2023). Development of Tenda IOT174 Volleyball Learning to Improve Cognitive Ability, Fighting Power and Sportivity in College Students. *Physical Education Theory and Methodology*, 23(1), 15-20. <https://doi.org/10.17309/tmfv.2023.1.02>
- Soytürk, M. (2019). Analysis of Self and Peer Evaluation in Basic Volleyball Skills of Physical Education Teacher Candidates. *Journal of Education and Learning*, 8(2), 256-263. <https://doi.org/10.5539/jel.v8n2p256>
- Yudasmar, D. S., & Fadhli, F. (2018). Development of Volleyball Course Scoring Instrument for Students. *Proceedings of the 2nd International Conference on Sports Science, Health and Physical Education (ICSSHPE 2017)*, February, 153-157. <https://doi.org/10.5220/0007056901530157>
- Dewanti, G., Nompembri, S., Widiyanto, Hartanto, A., & Arianto, A. C. (2023). Development of Physical Education Learning Outcomes Assessment Instruments for Volleyball Materials Based on Game Performance Assessment Instrument. *Physical Education Theory and Methodology*, 23(2), 170-177. <https://doi.org/10.17309/tmfv.2023.2.03>
- Nasrulloh, A., Deviana, P., Yuniana, R., & Pratama, K. W. (2021). The Effect Of Squat Training And Leg Length In Increasing The Leg Power Of Volleyball Extracurricular Participants. *Physical Education Theory and Methodology*, 21(3), 244-252. <https://doi.org/10.17309/tmfv.2021.3.08>
- Budiarti, W. W., Hanif, A. S., & Samsudin, S. (2019). Volleyball Smash Learning Model for Middle School Students. *Budapest International Research and Critics in Linguistics and Education (BirLE) Journal*, 2(4), 238-244. <https://doi.org/10.33258/birle.v2i4.512>
- Samsudin, Setiawan, I., Taufik, M. S., & Solahuddin, S. (2021). Volleyball fundamental movement learning model in primary school. *Physical Education Theory and Methodology*, 21(3), 194-199. <https://doi.org/10.17309/tmfv.2021.3.02>
- Bompa, T. O., & Buzzichelli, C. A. (2019). Periodization: Theory and Methodology of Training. In *Journal of Chemical Information and Modeling*, 53(9).
- Indrakasih, Sinulingga, A., Lumbaraja, F., & Pasaribu, A. M. N. (2022). Development of test forms of down-passing techniques in sensor-based volleyball games. *Journal Sport Area*, 7(2), 300-309. [https://doi.org/10.25299/sportarea.2022.vol7\(2\).9012](https://doi.org/10.25299/sportarea.2022.vol7(2).9012)
- Juditya, S., Suherman, A., Ma'mun, A., & Rusdiana, A. (2020). The Basic Movement Skill Test Instrument of Ball Games for Students Aged 13-15 Years. *Jurnal Pendidikan Jasmani Dan Olahraga*, 5(1), 50-54. <https://doi.org/10.17509/jpjo.v5i1.21447>
- Lima, R., Rico-González, M., Pereira, J., Caleiro, F., & Clemente, F. (2021). Reliability of a reactive agility test for youth volleyball players. *Polish Journal of Sport and Tourism*, 28(1), 8-12. <https://doi.org/10.2478/pjst-2021-0002>
- Sugiyono. (2017). *Metode Penelitian Kuantitatif, Kualitatif dan R&D (Quantitative, Qualitative and R&D Research Methods)*. Bandung: PT Alfabet.
- Furkan. (2019). Penyusunan Battery Test Olahraga Bola Voli (Preparation of Volleyball Battery Test). *JUPE: Jurnal Pendidikan Mandala*, 4(5). <http://ejournal.mandalanursa.org/index.php/JUPE/index%0AVol>
- Aulia, F., Hashim, A., Abd Karim, Z., Osman, N., & Hassan, S. (2022). Effectiveness of Volleyball Skills Instrument. *Jurnal Sains Sukan Dan Pendidikan Jasmani*, 11(2), 27-38.
- Aulia, F., Hashim, A., Karim, Z. A., & Hassan, S. (2022). Validity, Objectivity, and Reliability of Volleyball Skills Instrument. *Jurnal Sains Sukan Dan Pendidikan Jasmani*, 11(1), 81-88.
- Komaini, A., Illahi, F. D., Gusril, Sin, T. H., Handayani, S. G., Yohandri, & Ayubi, N. (2022). Volleyball Smash Test Instrument Design with Sensor Technology. *Journal of Physics: Conference Series*, 2309(1). <https://doi.org/10.1088/1742-6596/2309/1/012011>
- Arif, A. P., & Sujarwo, S. (2021). Instrument Validity and Reliability Confidence to Jump Serve in Volleyball. *JUARA : Jurnal Olahraga*, 7(1), 151-158. <https://doi.org/10.33222/juara.v7i1.1433>
- Palao, J. M., Manzanares, P., & Ortega, E. (2015). Diseño, validación y fiabilidad de un instrumento de observación para las acciones técnico-tácticas en voleibol. *European Journal of Human Movement*, 34, 75-95. <http://www.eurjhm.com/index.php/eurjhm/article/view/332>
- Conti, G. De, Costa, T., Castro, H. D. O., & Greco, P. (2016). *Rev Bras Cineantropom Hum Content Validity of scenes of the Declarative Tactical Knowledge Test in Volleyball – DTKT : Vb*. December, 629–638.
- Garri, Z., Alnedral, & Yendrizal. (2020). The Development of Volleyball Skill Test for Advanced Levels Student at Coaching Department of Sport Science Faculty in Padang State University. *Atlantis Press: Proceedings of the 1st Progress in Social Science, Humanities and Education Research Symposium (PSSHRS 2019)*, 464(Pushers 2019), 451-454. <https://doi.org/10.2991/assehr.k.200824.108>
- Wan, X., & Niu, J. (2017). Biomechanical Analysis of Volleyball Jump Buffer and Pedal Skills of Top-lever Left-side-hitters from University. *Atlantis Press: 5th International Conference on Machinery, Materials, and Computing Technology (ICMMCT 2017) Biomechanical*, 126(Icmmct), 1339-1343. <https://doi.org/10.2991/icmmct-17.2017.258>
- Destriana, Destriani, & Yusfi, H. (2021). Development of Learning Technique Smash Volleyball Games. *Atlantis Press: 4th Sriwijaya University Learning and Education International Conference (SULE-IC 2020)*, 513, 447–452. <https://doi.org/10.2991/assehr.k.201230.145>
- Wang, Y., Zhao, Y., Chan, R. H. M., & Li, W. J. (2018). Volleyball Skill Assessment Using a Single Wearable Micro Inertial Measurement Unit at Wrist. *IEEE Access*, p. 6, 13758–13765. <https://doi.org/10.1109/ACCESS.2018.2792220>

БАЗОВІ ТЕХНІЧНІ НАВИЧКИ ГРИ У ВОЛЕЙБОЛ ДЛЯ СТУДЕНТІВ: ВАЛІДНІСТЬ І НАДІЙНІСТЬ

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Авторський вклад: А – дизайн дослідження; В – збір даних; С – статаналіз; D – підготовка рукопису; Е – збір коштів

Реферат. Стаття: 7 с., 3 табл., 6 рис., 25 джерел.

Мета дослідження. Метою цієї дослідницької роботи є забезпечення іспиту з базових навичок гри у волейбол для студентів Університету Мухаммадія Суракарта (Індонезія), які записалися на навчальну програму «Спортивне виховання».

Матеріали та методи. У цій роботі використовували експериментальні методи. За їх допомогою перевіряють надійність і валідність основних навичок гри у волейбол для студентів віком від 18 до 24 років. Для аналізу даних показників об'єктивності та валідності використовують індивідуальні кореляції, а для аналізу даних показників надійності використовують коефіцієнти надійності між класами. Генеральна сукупність і вибірка склалися зі 114 студентів, які вивчали спортивне виховання в першому та третьому семестрах, із яких 64 чоловіки та 50 жінок.

Результати. Значення валідності, $r = 0,653$, було високо значущим. Крім того, оцінка автора дослідження за участю дослідника-асистента 1 становить $r = 0,759$, за участю дослідника-асистента 2 ця оцінка становить $r = 0,651$, а коефіцієнт кореляції між результатами дослідників-асистентів один і два є високим на рівні $r = 0,686$. Значення показника об'єктивності підсумкової оцінки для інструменту оцінки навичок гри у волейбол становило $r = 0,787$ для автора дослідження та дослідника-асистента один та $r = 0,705$ для дослідника-асистента два. Коефіцієнт кореляції між дослідниками-асистентами один і два був високим на рівні $r = 0,706$. Оцінка надійності руху для навичок гри у волейбол була високою ($r = 0,652$). Оцінка надійності навичок гри у волейбол мала дуже високу підсумкову оцінку $r = 0,872$.

Висновки. Одержані результати дослідження дають підстави вважати очевидним, що тест на точність основних навичок є високоефективним і практичним і заслуговує на використання як еталонного інструменту оцінки навичок гри у волейбол. Для вдосконалення здібностей до гри у волейбол необхідні подальші дослідження з використанням різних факторів, зокрема факторів соціального середовища, психосоціальних факторів, факторів фізичного стану за характеристиками студентів. При цьому потрібно виявляти обачливість з огляду на малий розмір вибірки, що використовується в цьому дослідженні, і необхідність враховувати інші змінні.

Ключові слова: тести валідності, надійності, набори тестів навичок гри у волейбол.

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Cite this article as: Jariono, G., Nurhidayat, N., Sudarmanto, E., Nugroho, H., Maslikah, U., & Budiman, I.A. (2023). Basic Volleyball Technical Skills for Students: Validity and Reliability. *Physical Education Theory and Methodology*, 23(5), 747-753. <https://doi.org/10.17309/tmfv.2023.5.13>

Received: 09.06.2023. Accepted: 27.09.2023. Published: 30.10.2023

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