



Development of Volleyball Underhand Passing Skill Test Instrument for High School Students

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Abstract

From observations conducted on students and teachers, researchers identified an issue in the volleyball skill assessment rubric, particularly in the basic technique of underhand passing. The study aimed to develop a valid, reliable, and objective volleyball skill testing instrument for 28 11th grade students at SMAN 1 Srengat Blitar. The development process used the research model proposed by Kirkendall, which initially consisted of 11 steps, but was simplified into 6 steps: determining test objectives, selecting and compiling tests, preparing equipment, compiling tests, conducting test trials, determining validity, reliability, objectivity, and practicality. From the test trial results, it was found that the validity for underhand passing resulted in a validity of 0.86 (excellent), reliability of 0.89 (good), and objectivity of 0.90 (acceptable). This indicates that the skill test instrument is feasible and practical to use. The conclusion of the study is that the testing instrument for implementing underhand passing in volleyball has met the standards related to validity, reliability, objectivity, and practicality. To expand the reach of this product, the researchers recommend re-evaluating it and adapting it to the target audience, both in terms of content and presentation. This will make the development of a volleyball skills test instrument for eleventh-grade students at SMAN 1 Srengat Blitar more engaging and useful.

Keywords: Underhand passing; Volleyball; Validity; Reliability.

INTRODUCTION

Physical education programs emphasize the importance of physical activity and direct interaction between students and teachers in the learning process. Physical education is a discipline that aims to improve student health through physical activities guided by trainers (Saputra and Aguss 2021). Learning can be designed in the form of games to motivate students to move and adapt to new environments and friends (Rohendi 2022). Schools become places to develop students' potential, talents, and interests. In learning evaluation, tests are used as a tool to systematically measure student abilities, which are divided into skills tests, written tests, and oral tests (Dianah 2023). Tests are a series of tasks that students must complete (Qodir 2017), while measurement is the process of comparing objects with specific measuring instruments (Ali 2012). This entire process aims

to create quality Indonesian individuals based on the values of Pancasila (Syamsul Arifin 2017).

According to (Ari Iswanto 2021), physical education serves to improve thinking power, motor skills, physical activity, intelligence, and internalize moral values to support healthy growth. One popular form of physical activity is volleyball, which is played by two teams on an 18 x 9 meter court with a net in the middle (Irwanto 2021). The ball may be played using any part of the body, with a maximum of three touches per team (Pratiwi 2021). The goal of the game is to drop the ball into the opponent's area to score points and achieve victory (Dwi Yulia Mulyadi 2020). To assess player abilities, volleyball skill tests are used, including basic techniques such as underhand passing, as a means of measuring individual skills in the sport.

Volleyball is part of the material in physical education (Rochim 2023). This game not only emphasizes movement techniques, but also on social values such as cooperation, understanding team abilities, and respecting other players (Raihan et al. 2024). Volleyball has a number of basic techniques, but the most important is the underhand pass (Arifin et al. 2023), which is the technique of passing the ball from a low position to a teammate (Putro and Ismoko 2017). According to (Dwi Yulia Mulyadi 2020) This technique must be mastered by players because it functions to receive the ball from the opponent and pass it to teammates.

Based on analysis and observations at SMAN 1 Srengat, it was found that the school uses the independent curriculum in its teaching. Data obtained from students indicated that the teaching module lacked a physical education assessment instrument, particularly in net play (volleyball), which was not performing well, particularly in correctly executing underhand passes.

The most important physical education assessment is one conducted according to the set of rules outlined in the academic curriculum in force at the time. When assessing student abilities, teachers often only assess their ability to perform a skill without measuring it in game conditions. This study aims to design a standardized underhand passing skill test instrument in volleyball to assist teachers in assessing students' abilities in a structured manner and improving the quality of physical education instruction. The skill test instrument to be developed by the researcher is a volleyball skill test instrument for 11th-grade students, specifically for underhand passing techniques.

Based on the issues outlined, it is crucial that teacher-designed assessment instruments be developed in accordance with the curriculum and applicable regulations.

Based on observations of teachers and students, the researcher used one problem in the assessment rubric for volleyball underhand passing skills.

METHOD

method used was Research and Development (R&D). The following sports skills test development process was used (Kirkendall, 1980), modified into 6 steps to be more relevant to the research conditions and to consider the efficiency of implementation time. Thus, the research procedure still follows scientific principles, but is also practical for application in the context of physical education in schools. The following is a diagram of the research implementation procedure :

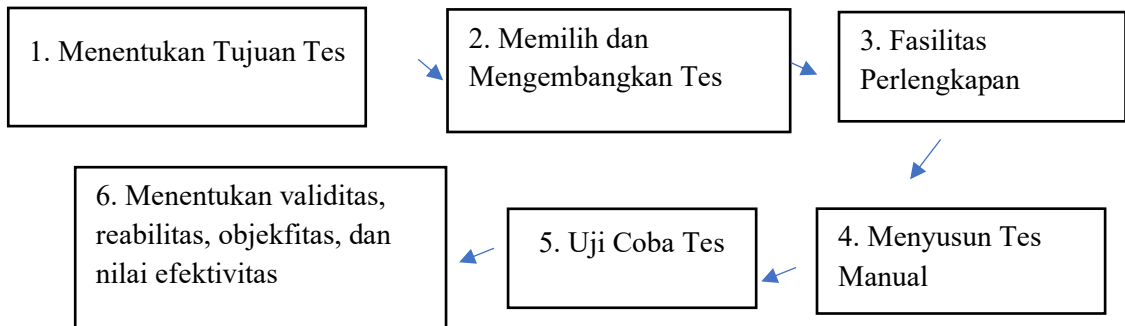


Figure 1. Procedure Chart for Compiling Sports Skills Tests

(1) Determining the purpose of the test. This test aims to measure the basic techniques of volleyball passing skills in class XI students at SMAN 1 Srengat Blitar, (2) Identifying the abilities to be assessed. (3) Choosing or creating assessment items that reflect the desired skills based on specific standards, (4) Arranging essential facilities and tools, (5) Conducting a pilot study on a group of pupils. The trial was conducted by one class with an attendance of 28 class XI students at SMAN 1 Srengat Blitar, (6) Revising items and directions.

The subjects studied in this study were 28 students of grade XI at SMAN 1 Srengat. The validity of the test items was conducted through justification by volleyball material experts and evaluation experts. Data analysis used descriptive statistics. The validity test of the underhand passing skill test instrument was conducted using empirical validity in the form of correlating or comparing the test results with the assessments of 2 judges. The reliability of the instrument was tested using a retest. Objectivity was carried out by means of observations carried out by 2 observers.

Data analysis to obtain validity, reliability and objectivity results used Pearson's product moment formula.

RESULTS AND DISCUSSION

Based on the results of the research and development of the instruments carried out, the following results were obtained:

Table 1. Criteria for a good test in physical education

No	Aspect	r Count	Mean	Standard Deviation	r Table	Category
1	Validity	0.86	0.86	0.00	0.329	Valid
2	Reliability	0.89	0.89	-	0.329	Reliable
3	Objectivity	0.90	0.92	0.03	0.329	Objective

Based on the trial results of the volleyball underhand passing skills test instrument conducted on class XI students at SMAN 1 Srengat, three important aspects were analyzed, namely validity, reliability, and objectivity.

The data processing results showed that this instrument had a validity of 0.86. This value far exceeds the table r value of 0.329, indicating empirical validity. Thus, the test items effectively measure underhand passing skills as intended in the learning objectives.

Validity is the degree to which an instrument accurately measures what it is supposed to measure. A valid instrument will accurately assess abilities or skills according to the stated measurement objectives. In the context of physical education, for example, if a test is designed to measure underhand passing skills in volleyball, the instrument should assess the technical aspects of the underhand passing movement, not other aspects such as physical strength or running speed. Validity ensures that the measurement results reflect the students' true abilities according to the indicators to be achieved (S Arifin 2017; Qodir 2017).

Furthermore, the reliability value obtained was 0.89, also exceeding the table's r value. This indicates that the instrument has a high level of consistency and can produce stable test results when used repeatedly under similar conditions. This means that this instrument can be trusted for continuous evaluation of student skills.

Reliability refers to the level of consistency of results obtained from an instrument when used repeatedly under similar conditions. A reliable instrument will produce stable and reliable data even when used at different times or on different groups with similar characteristics. In practice, reliability can be tested through retesting (*test-retest*) or by comparing the results of two measurement sessions. If the values obtained are relatively

similar, the instrument is considered to have high reliability (Ambiyar 2011; Winarno 2006).

The instrument's objectivity value was 0.90. This value also exceeds the table's r threshold and indicates that the instrument is capable of producing consistent results even when assessed by more than one observer. In other words, test results are not influenced by assessor subjectivity but rather reflect students' actual abilities.

Objectivity is the extent to which test results are free from the influence of assessor subjectivity. An objective instrument will produce the same results even if assessed by different individuals, as long as the assessors follow predetermined guidelines and criteria. In physical education, objectivity is crucial because motor skills or movements are often assessed based on direct observation. Therefore, instruments equipped with clear and measurable assessment rubrics will help reduce bias and ensure fairness in assessing student learning outcomes (Ali and Kusnandar 2012; Pasaribu 2020).

Overall, the three main aspects of the assessment criteria of validity, reliability, and objectivity were met very well. This indicates that the developed volleyball underhand passing skills test instrument is suitable for use in physical education lessons, particularly to assist teachers in accurately and structuredly assessing student abilities.

The purpose of the research and development conducted was to create a basic volleyball ability measurement tool for students that has validity and reliability, so that it can be used by physical education teachers at the high school level. This development process provides support to physical education teachers who face difficulties in assessing students. Assessment instrument development is the process of designing a measurement instrument or test that can be used to assess specific skills or abilities in the field of education or sports (Ambiyar, 2011).

In physical education, sports, and health education, it is important to evaluate skills appropriate to the material being taught. Skills tests in sports are crucial in physical training and sports practice because the results can be used to identify individual strengths, evaluate athlete development, and help determine appropriate training programs to improve those skills (Winarno, 2006). A test is a series of tasks to be completed or a series of questions to be answered by students to measure their level of understanding and knowledge of the necessary information and to align with certain academic content (Udayana, 2016). Physical education, sports, and health education encompasses several concepts that serve as the foundation for the learning material. These concepts are outlined in core

competencies and basic competencies. Physical education has a structure that includes an opening, core, and closing stage.

Menurut (Pasaribu, 2020) tes keterampilan olahraga merupakan teknik atau teknik yang digunakan untuk mengukur tingkat keterampilan, kekuatan, dan performa pada berbagai bidang olahraga. Tes keterampilan *passing* bawah bola voli ini bertujuan untuk mengevaluasi kemampuan siswa dalam melakukan operan dengan mengarahkan bola ke arah target sasaran (dinding) yang ditentukan. Siswa mulai tes dari garis awal, mereka memiliki dua kesempatan yang dibagi menjadi dua sesi tes. Sebelum melakukan *passing* bawah, siswa harus Bersiap di depan sasaran (dinding) targetnya. Siswa harus berada dalam kondisi siap dan tidak terburu-buru saat melakukan *passing* bawah. Selama tes berlangsung, peran penguji adalah untuk memastikan posisi Gerak dadi siswa yang sesuai dengan ketentuan yang sudah tertulis, dan mencatat skor yang diperoleh oleh siswa. Observasi yang dilakukan oleh peneliti selama penelitian menunjukkan bahwa siswa cenderung mendapatkan skor tertinggi pada tes kedua, hal ini disebabkan oleh kesiapan serta fokus siswa yang lebih baik untuk mencapai hasil optimal.

According to (Pasaribu, 2020) sports skills tests are techniques or techniques used to measure the level of skill, strength, and performance in various sports. This volleyball underhand *passing skills test* aims to evaluate students' ability to pass by directing the ball towards a designated target (wall). Students start the test from the starting line, they have two opportunities divided into two test sessions. Before performing an underhand *pass*, students must be ready in front of their target (wall). Students must be in a state of readiness and not rush when performing an underhand *pass*. *During the test*, the examiner's role is to ensure the student's position of the movement is in accordance with the written provisions, and record the scores obtained by the students. Observations made by researchers during the study showed that students tended to get the highest scores in the second test, this was due to the students' better readiness and focus to achieve optimal results.

The volleyball underhand passing test aims to assess the accuracy of students' technique in directing the ball to a target, a wall two meters away, with the ball required to bounce at least 1.5 meters. For some students, this test is challenging because not all of them have an interest in volleyball, especially underhand passing techniques. This results in their performance tending to be less than optimal. Conversely, for students who are active in volleyball and have a strong interest in the sport, the test is considered easier. In fact, one student was able to achieve 59 passes in one minute.

The results of a study conducted at SMAN 1 Srengat showed that the volleyball underhand passing skills test instrument for 11th-grade students was proven valid, reliable,

and objective. This instrument has the advantage of making it easier for teachers to directly observe and assess students' skills according to established procedures. Students can also demonstrate their underhand passing skills in a more focused and measurable manner. However, this instrument has a weakness in terms of time efficiency, as the implementation process requires a relatively long duration to thoroughly and systematically test each student.

The developed volleyball underhand passing skills test instrument was then validated by two expert lecturers from the Physical Education, Health, and Recreation (PJKR) Study Program at Malang State University. The validation process was conducted in February and focused on improving the validation test sheet, including aspects of grammar, completeness and clarity of the assessment rubric, and suitability of the content to learning objectives. Based on input from the validators, several revisions were made to improve the instrument's accuracy and feasibility. The validation results were then processed and analyzed using Microsoft Excel.

The content validity of the instrument in this study was obtained through assessments by two experts: a volleyball subject matter expert and an evaluation and measurement expert. The volleyball experts assessed the suitability of the instrument's content to the basic competencies and basic techniques of the game, particularly the underhand passing technique. The assessment was conducted to ensure that each test item reflected relevant skills and was in line with the teaching material. Meanwhile, the evaluation expert assessed the format, question construction, and relevance of the content to the learning objectives of Physical Education (PJOK) at the high school level. The results of this evaluation served as the basis for refining the instrument to make it more suitable for use.

In this study, the researcher did not utilize all ten stages of the Borg & Gall Research and Development (R&D) model in its entirety. This was due to adjustments to the scope, objectives, and limitations of time and resources available in the research implementation. The main focus of this study was to develop a valid, reliable, and objective volleyball underhand passing skills test instrument, so the stages taken only covered the core of the development process, namely: needs analysis, initial product design, expert validation, product revision based on input, and limited field trials. Further stages such as broader operational trials, further revisions, and product dissemination were not implemented because they were not yet relevant to the scale of this research, which was still in early development and not intended for mass implementation. Furthermore, in the context of educational research, especially at the thesis or final project level, the use of the Borg & Gall model is often modified to only a few core stages. This approach remains

methodologically accountable as long as the development process is carried out systematically and meets the principles of scientific validity. Thus, even though it does not follow all ten stages of R&D, this research remains valid and relevant in producing a quality instrument product that is suitable for use by PJOK teachers in the process of assessing student skills.

CONCLUSION

Judging from the test validity criteria, the results of the volleyball underhand passing skills test on students obtained a validity of 0.86 in the form of empirical validity, with a reliability coefficient of 0.89 using a retest (test-retest), with test objectivity, 0.90 obtained through 2 observers. This test instrument was proven to be valid, reliable, objective, practical, and suitable for use in PJOK learning.

Suggestions for researchers who want to develop an instrument to measure volleyball test skills It is hoped that this underhand passing instrument will be used as a basis for research, by adding other variables related to volleyball playing skills.

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