

**Development of Web-Based Media for Sports Physical Tests****Fitri Agung Nanda<sup>1</sup>, Hartati<sup>2✉</sup>, Fauziah Nuraini Kurdi<sup>3</sup>, Syamsuramel<sup>4</sup>**Program Studi Pendidikan Jasmani dan Ilmu Kesehatan, Fakultas Keguruan dan Ilmu Pendidikan,  
Universitas Sriwijaya, Palembang, Indonesia<sup>1234</sup>**Article History**Received February 2024  
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Published Vol.13 No.(2) 2024**Keywords:**Applications; Measuring Instruments;  
Physical Tests; Sports**Abstract**

This research aims to produce a practical, valid and effective measuring tool for the physical training of FKIP Unsri physical education students. The method used in this research is the research and development (R&D) research method which produces products in the form of applications for measuring physical tests for various sports. The sampling technique used in the research was 3rd semester physical education students, FKIP Unsri. The data collection techniques used are validation tests, practicality tests and effectiveness tests. The instruments in this research are validation sheets, questionnaires and application use among students. Data analysis techniques are validity analysis, practicality and effectiveness analysis. Based on the research results, the physical test measuring instruments for various sports in this study were very valid with a percentage of 83.92% and the average of the two test results was 81.25%, so it was stated that the physical test measuring instruments for various sports that were developed were in the very good category. proper to use. The findings of this research are a software in the form of a practical and valid application that can be used to measure physical tests in various sports. The implication of the results of this research is that the application of measuring instruments for various sports can help coaches, athletes, students and students to be able to measure the process and results of training validly and easily because previously it was only done manually so measurement errors often occurred during training and training result.

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✉ Correspondence address :  
E-mail : hartati@fkip.unsri.ac.id

## INTRODUCTION

In technology-centered science, supporting progress 5.0, technological sophistication is needed in various fields, including education is also developing and increasing. This has an impact on society, namely making it easier and helping people to complete their work, especially in the fields of sports and education. That statement same as (Victorian et al., 2021) the industrial revolution 4.0 also influences advances in technology and information as a means of education, where learning can be done and provided online. Interestingly, there is more to advancing technology than trying to understand the needs and learning styles of each student and how they learn. In order to improve the field, an application is needed that can be accessed to improve the components of the physical test and the athlete's own performance. Sports science and technology is useful in the process of creating outstanding athletes in their fields. Sports science and technology can be used during training as well as during competitions and sports competitions. The science and technology that really supports achievement is the science and technology that is utilized in the training process because the training process is a very important part in determining the success of sports achievements, therefore this process should go through a sports science and technology approach. Considering that science and technology is one of the means that can provide accuracy in creating information on athletes' physical conditions (Pranata et al., 2019).

There are applications in the field of technology that can help with a good and appropriate training process. Technological advances in learning in the form of application-based media are media that can be used. Application-based media are devices that can be used and adapted to the desired function. (Syani & Wersantia, 2019: 88) e-learning technology-based media is software-based media that can be operated according to the guidelines you instruct. The instructions given can be applied in various applications including sports media. The physical tests listed in the application are adjusted to the criteria for each sport, such as futsal, volleyball, basketball, badminton, karate, pencak silat, swimming, wushu, athletics, sepak takraw, tennis and others. in the test, which is a measurement component that must be passed when carrying out sports activities to determine physical abilities. An athlete's physique needs to be improved and known so that it can be maximized to achieve brilliant achievements. A good physical test will later influence the athlete's fitness according to

the sport they are involved in, including important components that must always be considered in the athlete's body composition.

The results of observations on the 3rd semester Physical Education students at FKIP Sriwijaya University, the physical tests were still carried out in manual form by recording athlete identities, so it took quite a long time due to limited access and facilities, also the physical test criteria and physical test components were carried out manually, the result was not rule out the possibility that errors or mistakes may occur in recording the athlete's physical test results. Meanwhile, the test results represent the athlete's condition during training as a source of data and information for them and as a reference in improving their physical condition. Therefore, it is important to adjust tests and develop measuring instrument applications so that they can help athletes, coaches and lecturers in the field of physical education to achieve maximum performance with maximum conditions.

Application development is a series of processes carried out by a person or group of designers to create a series of processes from the initial design of the application, creating the application working model, implementation, final testing of the application until the application is complete and ready for use (Aufa, 2019). These stages are information gathering, planning, development, and maintenance. Previous research by (Pranata et al., 2019) with the title *Developing a Physical Test Application Model for Volleyball at the Regional Student Education and Training Center (PPLPD) Musi Banyuasin Regency* obtained results that could be categorized as suitable for use with field trial results of 75%, so that it could assist coaches in conducting and improving physical tests in the sport of volleyball.

Therefore, the application carried out in this research is in the form of a measuring instrument to maximize the results of the athlete's training process in each different branch. This application is considered very important to be developed considering that previously samples carrying out the physical training process still went through a traditional process without the help of technological media for test results which were sometimes inaccurate due to many human errors. Based on the description above, the researcher will conduct research with the aim of developing a physical test measuring tool to determine the achievements that will be tested on UNSRI Semester 3 Physical Education students so that later they can get more concrete results and minimize human error because it involves technological advances in the development of physical measuring test tools.

## METHODS

The research carried out here is a type of research and development (R&D). This method involves needs analysis and testing to ensure the product can function well in a broader context (Arikunto, 2013). The sample in this study was UNSRI Physical Education students in semester 3. In this study, a physical test instrument was applied which tested the validity of the practicality and effectiveness of the physical test measuring software developed, namely validation sheets, questionnaires and student physical tests. The research method used is the Borg and Gall development design which establishes 10 research steps, but the focus that will be conveyed in this research includes testing the results carried out, namely through expert tests and small-scale and large-scale field tests. This research aims to design a technology-based fitness measurement test application.

This research uses research and development (R&D) research. Research and development, also known as R&D, is a research method that aims to create special products and test their level of effectiveness, so that they can produce products that are useful and beneficial to society. This method involves needs analysis and testing to ensure the product can function well in a broader context (Arikunto, 2013). The subjects in this research were all 3rd semester Physical Education students. The results of the data calculations are then made in the form of a percentage multiplied by 100%.

## RESULTS AND DISCUSSION

This measuring instrument has several physical test components that can be tested, namely: tests of strength, flexibility, muscle strength, balance, endurance, speed and agility. These seven components are dominant in various sports, so this physical test measuring product can be used to help sports to further improve the physical performance of athletes and students majoring in sports. Based on the development procedure, after the tool is designed and created, the next step is testing. Testing is carried out in two ways, namely functional testing and measurement error testing.

Based on **Tabel 2** the results of this trial showed that the application content feasibility percentage was 78%. Therefore, from the aspect of feasibility, the application of the Physics Test Measuring Instrument for the Sports Branch re-

ceived the “feasible” category

**Tabel 2.** Results of Small Scale Trials

Aspects Assessed	Score	Score Max	Percentage (%)	Category
Feasibility of material content	312	400	78	Feasible
Total	312	400	78	Feasible

**Tabel 3.** Results of Large-Scale Trials

Aspects Assessed	Score	Score Max	Percentage (%)	Category
Feasibility of material content	338	400	84,5	Feasible
Total	338	400	84,5	Feasible

Based on **Tabel 3** the results of this trial showed that the application content feasibility percentage was 84.5%. Therefore, from the aspect of feasibility, the application of the Physics Test Measuring Tool for the Sports Branch received the “feasible” category.



This research is included in research and development (R&D). Research and Development aims to produce innovation, utilizing mixed methods, combining concepts, using multidisciplinary and interdisciplinary approaches in a sustainable, structured and measurable time period (Amelia, 2022). According to (I. Darmawan, 2019) With increasingly advanced technology, personal trainers can be replaced by apps that help beginners understand the use of exercise equipment. In addition to being effective and affordable, beginners

can also participate in a formal training program led by a personal trainer. The development process includes several stages: application design, customization, review, small group testing, large group testing, and implementation among students. With the approval of experts, the suitability of the content of the fitness test application for various sports reaches a percentage 89.28% which indicates the “appropriate” category.

In addition, IT expert validation resulted in a percentage of application content conformity of 78.57%, also included in the “feasible” category. Next, a small group test was carried out in one session involving 10 respondents consisting of Physical Education students in the third semester of FKIP Sriwijaya University in the odd semester. The results of this small group test show a content suitability percentage of 78% for the application, indicating the “decent” category. Next, the large group test was carried out in one session with 30 respondents, by carrying out the same physical tests as in the small group test. The results of this large group test produced a content suitability percentage of 84.5% for the application, also in the “decent” category.

Support to the progress of technology-based learning in the 5.0 era, media is needed that can be used through software applications that can calculate physical test results to find out students' physical fitness results, especially in the VO2Max section (Hartati et al., 2018) . According to (Hartati et al., 2020) Technological developments in the 5.0 era are expected to be able to develop learning abilities, especially the use of media to overcome existing learning problems. The use of technology-based media, namely applications, needs to be applied to health physical education which can be done to determine a person's level of fitness in order to have maximum performance for peak success as an athlete. (Victorian et al., 2021) states that physical education is a field of study in education which is one part of sports science which includes the study of motor skills and movement competence, increasing physical activity and physical fitness.

According to (Aryanti et al., 2020) Physical education learning in this life is expected to be able to develop character, discipline, high sportsmanship, and increase achievement which fosters national pride. All sports activities carried out are expected to meet the same goal of developing training carried out in stages. In order to obtain maximum performance for an athlete, good and thorough training and planning is needed through talent identification or recruitment of athlete talent from a young age and through a

good technology-based training program so as to be able to identify the athlete's success in the future (Yusfi et al., 2019). (Hartati et al., 2018) explained that it is important to apply physical education learning to meet the needs of character education in the hope of being able to compete globally. Good physical education learning and supporting character formation must fulfill cognitive, affective and psychomotor components. It is hoped that sports training and learning will be able to provide components that support sports success outside the context of learning at school. Apart from learning, the training provided is expected to be able to meet the needs and improve the quality of athletes in training towards the successful achievements that each individual hopes (Hartati et al., 2019).

This technology-based application developed to help measure physical fitness is intended to meet the needs and assist in carrying out measurements carried out by all those involved in the world of sports. It is hoped that this tool will be able to help measure physical fitness because it is practical and can be used anywhere because it is technology-based and connected to smartphones or laptops and other technology-based electronics. (Mardapi, 2012) Instruments in measuring fitness are tests that can be carried out by athletes. In carrying out measurements, what must be done is obtaining data, interpreting the data, grouping the data and then carrying out calculations based on the data obtained (Wati, 2021: 3). The media used is expected to be able to create a more effective measurement innovation. This technology-based media or application is considered very easy to help carry out endurance or fitness measurement activities and help the work of a researcher because it is more practical to carry anywhere (Subagio & Samsir, 2022).

According to (Putri et al., 2023) Technology-based media is usually created through software that is developed according to the needs of the technology used. The software media used can usually be Microsoft Word or Microsoft Excel. Technology-based media in the form of software applications are usually run through programs that have been developed according to needs and usage with the aim of getting maximum results in implementing athlete performance (Dhanta, 2015). in the development of application-based media carried out by this researcher is technology-based media using software to help carry out measurements of physical tests and physical fitness which is expected to be able to help the tester's work because it uses electronic media, not manual.



(Watikasari, 2023) explains that learning media plays an important role in learning. Learning media regulates the course of learning activities so that students are more focused and directs students to pay attention to the material being provided. Media is also a means of transferring messages in learning itself, media can be called learning media because in this media things about existing learning are channeled. In the current development of the world of technology and digital, what's more for today's female students, who in this era are increasingly modern and almost all students must already have or often use digital media such as cellphones, laptops and to create Android-based learning media in health and sports physical education may be helpful in delivering material and other things because health and sports physical education does not always have to be carried out in the field (Handoyo et al., 2023). (Alfiani et al., 2023) said that this stem provides a communication medium between the community, athletes and committee office staff in providing information about complaints about facilities or service problems experienced so that they can be handled more quickly. Waterfall is the method used in this research for website development.

(Darmawan & Sedyono, 2023) explains that the Salatiga City Sports Arena Information System can be used as a network media to disseminate information and loans about Salatiga City sports arenas. The Salatiga City Sports Arena Information System can help users view available sports arenas. Meanwhile, admins can make things easier with various features that can be used as supporting media in information system management. (Destriani et al., 2023) said that media is an important component in determining the success of physical education learning. A media will be adequate if it is efficient in terms of quality and sufficient quantity to meet the learning needs of all students. Nurhidayah (2024) said that technology-based learning media makes it easier to use pencak silat test equipment because it can be accessed anywhere. (Aryanti et al., 2023) stated that the use of media to support the development of physical education learning in the 4.0 era is very beneficial for successful learning.

(Vai et al., 2021) stated that the development of technology-based media is very good and supportive for use in flexible sports learning carried out in the field because it makes it easier to use and apply in the field. Technology-based media development is a vision that is being developed in the world of sports, especially in physical education learning at school (Sulistianta et

al., 2022). (Mitsalina et al., 2023) that the newest model of exercise therapy is based on sleeping/falling asleep, so it can be done before bed and after waking up with the principle of flowing exercises. The limitations of the research lie in that the sample is not large enough, the research location is not large enough, and the analysis used needs to be improved. It is hoped that future research can use a variety of samples, locations, and can create other methods that are more efficient and can look from various perspectives.

## CONCLUSION

Based on the results of research that has been carried out regarding the development of physical test measuring instruments carried out on third semester UNSRI physical education students, it was concluded that the measuring instruments are valid and can be used to help measure physical tests with the help of the latest technology-based media. This is known based on the results of small and large scale trials which reveal that the results are valid through the results of the calculations carried out and are suitable for continued use in training and further research related to physical test measuring instruments. The physical test measuring instrument for sports as a reference source for Physical Education students at FKIP Unsri needs to be redeveloped with more complex research subjects. The components of the physical test are needed to be more complete and the test is measured in accordance with the criteria for the sport.

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