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Development of Table Tennis Tools for Beginner Player

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Abstract: The purpose of the research is to develop table tennis learning aids for students. The method used is research and development. This research was conducted for 2 months. The instrument used questionnaires and interviews and the data were analyzed by the percentage formula. The results of the study developed four tools, namely spin roll, drive roll, long bounce, short bounce. The results of the evaluation of media experts provide an assessment that the level of feasibility of the tools developed is in a good category. And the material expert gave an assessment that the level of material feasibility of the developed tool was in a good category. Based on the results of the evaluation above, the tool developed is suitable for use as a table tennis learning tool for beginners.

Keywords: table tennis, equipment, learning, skills

1. Introduction

Table tennis is a fun sport for those who play it. This sport is fun because the characteristics of this sport are very suitable for all people. The place to play this sport does not need a large area, parked, on the school terrace, in the school yard, and even in the car garage, this sport can be done. Then this sport is fun because it doesn't drain the energy or energy of the players, this happens because the field is small. So the old age likes to play this sport. In formal education, table tennis is one of the materials contained in physical education subjects, sports and health. At the college level, table tennis is a compulsory subject in the curriculum for the physical education study program, health and recreation. The importance of the position of table tennis in the curriculum requires educators (teachers and lecturers) to be able to properly teach table tennis that is easy for students to understand and effectively makes students more skilled. However, if you look at the facts in the field, it turns out that educators have obstacles in teaching table tennis. The obstacle is the number of tables that are not in accordance with the number of students and due to the limitations of these tables, students are not effective in learning, students practice very little. As a result, students' hitting technique skills remain poor. Some research results show that skills can affect a person's motivation to do something. So having skills in playing table tennis is an important aspect for someone, because if they are not skilled then people will be reluctant to play this sport (Muelling et al., 2010).

Playing table tennis regularly, measurably and systematically can provide benefits for those who play it. These benefits are that it can improve physical fitness for those who play it, can reduce aging, can improve thinking skills, and social sense (Siregar et al., 2022). With the many benefits of this sport, this is what drives researchers to be motivated to reactivate this sport through the development of assistive devices. A tool that can be used by educators to improve students' hitting technique skills. When students are skilled in the technique, students will automatically have a strong desire to do table tennis.

2. Literature

¹ According to (Larry Hodges, 1996) table tennis is a game where a small ball is hit back and forth on the table, until someone makes a mistake to get points. This opinion explains that for every mistake there must be points, the accumulated points obtained determine the victory of each player. Then (Mc.Afee Richard, 2009) also explained that table tennis is a sport that requires a combination of explosive power from the feet and fine motor skills in the hands. The main focus at the beginning was developing hand skills to control the ball. The definition of this sport is strengthened (Sofyan Hanif A, 2015) which explains that table tennis is a recreational sport and is very popular with both children, those who are young and those who are a bit old and the elderly, both in big cities, as well as in areas even in every village there is a table tennis court. And (Sutanto Teguh, 2016) also defines table tennis as a racket sport played ³ two people or two opposing pairs. (Samsuddin Siregar, 2020) explains that what ³ meant by table tennis is a game played by 2 players (single) or two opposing (doubles) pairs, using a flat table equipped with a net (net) barrier as a field, and a small ball. (white-yellow) made of celluloid and the game uses a bat (bet).

In general, the basic techniques of table tennis can be grouped as attacks that are offensive ¹ and defensive strokes, and based on the type of stroke technique in table tennis it consists of; drive, push, block, smash, hit, serve, Halley volley, side slip shot, loop, flip, drop shot, lob and chop (Mc.Afee Richard, 2009).

In table tennis, it takes a skill that must be possessed by every individual in playing every basic technique in this sport. The skills that must be mastered are basic techniques in table tennis, namely basic techniques for holding bats, foot work, various strokes (forehand, and backhand) and types of strokes (drive, push, block, lob, chop, spin, smash, service). A person in obtaining a level of technical skill is very much needed regarding how a certain skill is produced or acquired and what factors play a role in encouraging mastery of skills. And each individual ² with each other certainly has different skills. As explained (A. Suherman, Safari, 2017). There is a difference between students or athletes who owned high and low hand-eye coordination towards their forehand topspin stroke accuracy in playing table tennis. Higher ability in motor skill has better results and the accuracy of forehand topspin between those who followed massed practice and distributed practice has also different results significantly with those who have higher and lower hand-eye coordination.

However, it is clear that an individual will have good skills if he learns or is trained in the task with certain requirements, one of which is that learning activities or training these skills are carried out continuously within a certain adequate period of time. As explained that to realize sports movement skills can only be achieved through a process of learning and practice, namely learning and understanding the pattern of the motor ⁷ formula, repeatedly learning and practicing the movements to be mastered (Safari, 2017). Motor skill learning is a relatively slow process that results in improvements in performance above baseline levels (Chen et al., 2018).

Learning aids are everything that educators use in learning with the aim of making it easier for teachers to teach subject matter. A good learning aid is a tool that can stimulate the interest, thoughts, motivation and attention of students. And also a good tool is that it can help overcome the problems faced by students. In this study, the problem faced by students was the low skill of hitting table tennis as a result of the limitations of table tennis learning tools. To overcome this problem, it is necessary to design learning tools that can be used in table tennis learning.

3. Method Research

This study aims to develop a tool that can be used in learning table tennis. The method used in the development of the tool is the Borg and Gall research and development method, which consists of ten steps (gathering information, planning, product development, expert analysis, revision, small group trial, revision, large group trial, revision, testing). product effectiveness). However, the results of the research presented in this article are not fully traversed by the ten steps above, only to the expert analysis step.

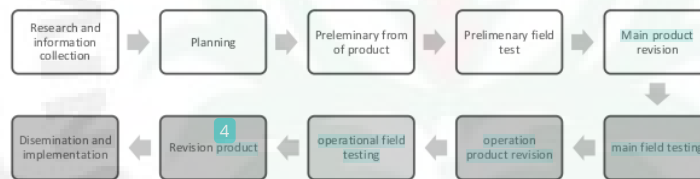


Figure 1. Product Development Stages (Borg, W.R. & Gall, 2007)

The instruments used are questionnaires and interview sheets. The data were analyzed using the percentage technique.

4. Result and Discussion

This research was carried out through a five-stage process, namely the stages of needs analysis, planning, product development, expert testing and revision. Through this stage, it is hoped that the product developed is feasible to be tested in the field. Needs analysis, through the results of observations made on several table tennis learning conditions carried out by 10 educators (teachers and lecturers) on their students. It was found that 90% of educators conduct table tennis lessons with limited learning tools and a small number of table tennis courts. This condition looks like learning is not meaningful for students, the values that exist in this sport cannot be meaningful for students. And for educators it looks overwhelmed and difficult to teach table tennis. Planning is done to plan everything needed in product development. Through the problems above, planning is carried out to overcome them. There are 5 plans that are carried out, namely preparing a work team, compiling a schedule, determining the place, preparing the required tools and compiling the required budget. The work team that is prepared to develop the product is 10 people with their respective tasks. The planning stage also needs to prepare the necessary tools such as questionnaires, evaluation tools and interview sheets.

Product development is carried out based on needs analysis. The need for students is to be able to do table tennis stroke techniques. So before developing the product, the motion analysis of

the drive stroke technique and the table tennis spin stroke technique was carried out first. Through this motion analysis tools are developed, the aim is to make the tools appropriate and efficient to overcome existing problems. The drive stroke technique and the spin technique have three phases of movement, namely the preparation stage, the implementation stage and the final stage. For the drive stroke technique, there are five things that need to be considered in developing aids, namely a) Taking a position according to the fall of the ball, b) Taking a side stance position, left foot slightly forward, both shoulders in the direction of the foot position. c) The preparations carried out are only medium in nature, as well as the movements. Arms form an angle of 160o at the elbows, start hitting with a stroke slightly behind the bottom of the ball. By moving forward, the bat will touch the ball when the ball is at its height. All strokes are strengthened by rotation of the body from the waist up, d) In the final stage or after the ball is hit, the arms form a 90o angle at the elbow, e) Return to the original position, ready to return the next ball. Based on the above analysis, the tools developed have a specific purpose, namely helping students in terms of techniques for touching the ball with a bat, waist rotation when hitting. The following tools were developed:

- a) Slap ball (slap ball), slap ball is a tool developed to improve the drive technique stroke. This tool is made of iron, bolts, nails, balls, cement, steel.
- b) Spinning ball (ball spinning). Spinning ball is a tool developed to improve the spin technique stroke. This tool is made of elastic iron, bolts, nails, balls, cement, steel.
- c) Bounce board long. Bounce board long is a tool that was developed to improve the lumbar spine of the spin and drive techniques from a long distance. This tool is made of plywood, bolts, nails, balls, iron, steel.
- 4) Bounce ball short (short bouncing board). The bounce board long is a tool developed to improve the waist rotation of the spin and drive techniques at close range. This tool can be positioned on a table. This tool is made of plywood, bolts, nails, balls, iron, steel.

The expert test stage is the stage to determine the feasibility of the tool whether it can be used to achieve the stated goals. Through expert analysis the feasibility of the tool can be obtained. In this expert test, three people are involved, namely two media experts and one tool material expert. The media expert analyzed the tool whether the structure of the tool above met the principles of learning media and the material expert analyzed the tool in terms of the suitability of the tool with the sports physical education curriculum. The following are the results of the analysis of the three experts which have been described in graphical form.

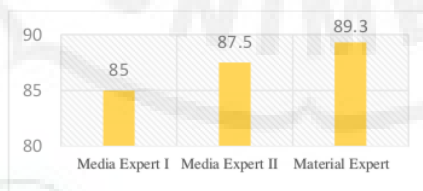


Figure 2. Graph of Expert Evaluation Results of the Developed Tool

The table above is a description of the data arranged in the form of a graph. Through the graph, it can be seen that media expert 1 gave an 85% (good) level of feasibility for slap ball, spinning ball, and bouncing ball short tools, media expert 2 gave an assessment of the feasibility level of slap ball, spinning ball, bounce board tools. ball, and bouncing ball short of 87.5% (good), and material experts assessed the feasibility of slap ball, spinning ball, bouncing board ball, and bouncing ball short of 89.3% (good).

Media experts give a good assessment of the developed tools, this means that the developed tools are feasible when viewed from the tool structure side, namely the size of the tool, the design of the tool, the size of the frame and the appearance of the tool suitable for learning purposes. Learning tools must of course pay attention whether the structure is in accordance with the characteristics of students. Tools that are not in accordance with the characteristics of students are feared to have a negative impact on students (Asep Deni Gustiana, 2005). It is explained that learning tools that are not suitable for students can cause boredom for students, learning objectives are not achieved, damage the physical aspects of students. Then the media expert judged that the tool was feasible in terms of its good function. Experts assess that the slap ball, spinning ball, bouncing board ball, and short bouncing ball can make it easier for educators to carry out the table tennis learning process. Then this tool is safe to use if it meets the rules for its use, and the tool will be dangerous if students do not obey the rules. For effective tool storage both before use and after use, and tools provide benefits.

Furthermore, the material expert assessed that the slap ball, spinning ball, bouncing board ball, and short bouncing ball were appropriate to be used as table tennis learning tools. The tools developed are seen from the content and use of the tools that are easy for students to understand so that they do not cause misconceptions. Then according to the purpose of this tool is developed according to the physical education curriculum. Tool development basically must have a purpose, so that the tool provides benefits for students. As stated, if we want to develop a learning tool, we need to see what its function is. The function of learning tools, of course, tools must be able to help facilitate student learning and also facilitate teaching for educators, provide a more real experience for students and educators, attract the attention of students or in other words learning does not cause boredom, all the senses of students can be activated, can evoke the world of theory with reality (Smaldino, Sharon. Lowter, Deborah. Russel, 2011). Another opinion is that the function of learning tools as a whole is to simplify, clarify, and as tools and materials to assist teachers in the teaching and learning process so that students easily understand the content of learning materials and foster a sense of enthusiasm for learning for students (Muhammad Ramli, 2021).

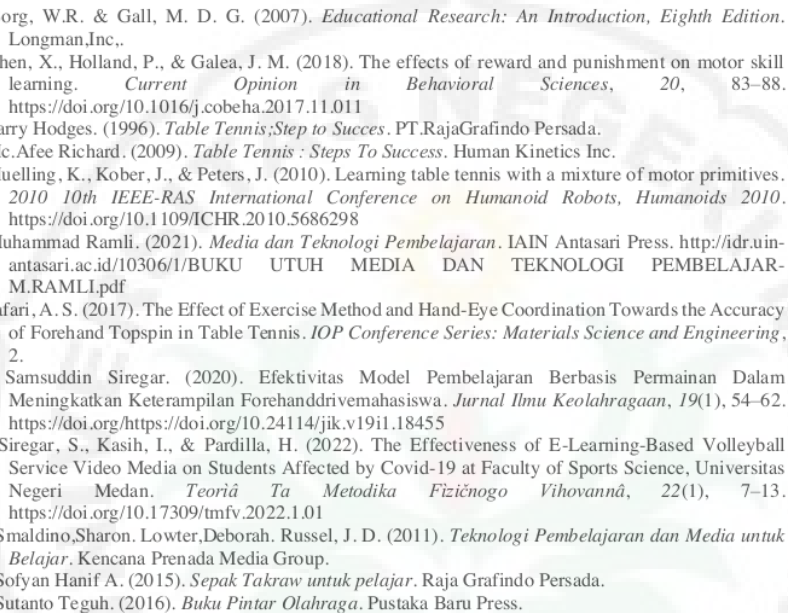

5. Conclusion

Based on the description of the results and discussion of the research above, it can be concluded that the slap ball, spinning ball, bouncing board ball, and short bouncing ball according to expert analysis are feasible to be used as draft table tennis learning tools that still need to be clinically tested using representative users.

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