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GAME-BASED BACKHAND TENNIS TECHNIQUE LEARNING MODEL TO IMPROVE LEARNING OUTCOMES

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Abstract

The purpose of this study is to find out a learning model using a game-based tennis backhand skill model. The method used is Research & Development with mixed methods research approach that combines qualitative and quantitative methods. It is intended to be able to reach or process all data or information so that a comprehensive explanation will be obtained. The number of samples as many as 20 respondents. The steps taken in the trial include: (1) establishing a group of research subjects (2) Carrying out Pretest (3) trying the model that has been developed (4) carrying out post-test (5) looking for the average score of pretest and posttest and compared between the two (6) looking for the differences between the two averages through statistical methods (t-test) to find out whether or not there is a significant influence of the use of the model. The conclusion of this study is that game-based tennis backhand learning model can be developed and applied in the process of learning backhand techniques of tennis effectively and efficiently.

Keywords: Learning Model; Backhand Tennis; Games; Learning Outcomes

INTRODUCTION

The game of tennis is one of the activities that requires the skills of everyone in which there are several elements of physical components needed in the success of the game of court tennis. "Components of physical condition include: strength (strength),speed (speed), endurance (endurance), muscle explosive power (muscular explosive power), agility (agility), balance (balance),flexibility (flexibility),and coordination (coordination)" (Wibowo, 2017).

Based on the above statement, the supporting factors of the success of the game of tennis one of which is the physical

component which is very influential in determining the success of the running of the game of tennis. "Players who have strong arm muscle power will be able to hit the ball quickly and strongly. These physical abilities need to be trained in order to improve the ability of tennis techniques "(Siahaan, 2017).

Almost all students who attend tennis lectures have difficulties, so the game of tennis is classified into difficult and complex types of

skills. "Given the open nature of tennis play, these characteristics have preferentially described the cross court and or down the line strokes, often with similar impact locations, which in turn highlight scope for future investigative efforts" (Reid et al. , 2013) . That's because tennis is influenced by others or environmental factors that are difficult to control. This means that tennis players while playing will never receive or hit the ball in the exact same place, but always move around where the ball falls. In addition, during the game of tennis the type of ball spin, bounce of the ball, direction and height, speed, and distance of the fall of the ball are difficult to estimate in advance by the receiver.

Tennis games are included in the type of open skill. That is, the environmental conditions of playing tennis are difficult to predict and controlled by tennis players. The factors that cause environmental conditions are difficult to predict and control during the game, among others are (1) opponents playing, (2) wind, and (3) sunlight (Sukadiyanto, 2005). The basic techniques in playing tennis consist of several techniques that must be mastered by a tennis player, namely: service, groundstroke, volley, smash and lob. Groundstroke punches include drive, slice, dropshot and half volley punch.

Backhand is a blow that is done after the ball bounces on the field where the ball is hit using the back of the hand starting with the open stand and back of the body forward until it becomes a follow-through with a contact point in front with the completion of the racket behind the right head if the back of the right hand grasping the racket will face the ball (Roy et al., 2017). Based on the above quote we can conclude that backhand punches are harder to implement than forehand punches, therefore the backhand becomes the second dominant punch in the game of tennis. There are currently two popular types of backhand punches: one-handed backhand and two-handed backhand. Each punch has its advantages and disadvantages. However, nowadays two-handed backhand punches are more widely used by pro players because of their effectiveness. From the problems that have been explained, it is considered necessary to improve, creativity and innovation in the learning process, sports and health, especially in the backhand material of tennis courts.

Learning using the development of learning models can provide explanations to students well, and what factors can support the implementation of backhand mastery of tennis courts for beginners.

State of The Art in Research that will be conducted by researchers is to test the model of learning backhand tennis-based tennis game against the success of tennis learning at the university. This research uses the method of development (Research & Development) to produce a product that can help in the success of learning both in the form of books and CDs.

In the research that will be done there is a difference with previous research that only do backhand learning with drill, and as for others are not focused on the backhand but focus on groundstrokes. While in this study using different methods by focusing only on the backhand and using the game approach to improve the learning outcomes of tennis by taking a game approach in backhand learning is expected to make it easier for students in tennis learning to follow the learning and get the fun element but still in the learning indicators.

King, Kentel, &Mitchell (2012) test the effectiveness of the ball impact and the strength of the hand grip against the backhand. The results show that the more impact the ball approaches the sweet spot which is in the middle of the racket then the blow will be much more effective compared when the impact of the ball is far away with the sweet spot. Meanwhile (Alexandros et al., 2013) more focused in the effectiveness of the backhand hands one and two for adult beginner category. In his research, it can be found that more effectively two-handed backhand compared to one-handed backhand, it is because the backhand of the two hands is more inclined towards the power and control of the ball. In its execution one hand backhand is easier to do than a two-handed backhand, but if we talk effectiveness then a two-handed backhand is far superior. Genevois et al., (2014) found interesting things related to what factors affect the backhand in the real game. Some of the factors are that the dominant backhand is used only to hold on while the backhand can also be a lethal weapon such as a forehand (Iwatsuki et al, 2016). The differences in the use of one and two hand backhands in professional games include: one hand backhand focuses more opal control while the backhand of two hands is more towards power, where if in the realm of professional backhand two hands almost rival the one-handed backhand control, therefore the backhand of the two hands dominates more in the professional realm. (Wibowo, 2017) find differences in changing learning and repetition of backhand abilities based on hand eye coordination. While (Kinnerk et al. , 2018) researching game-based learning against a competitive team. Of all the studies above the researchers concluded that the study focused only on the results of backhand punches not to

the process and the absence of approach methods of gaming in tennis learning, especially backhand. This time the research focuses more on backhand skills because the backhand is the second dominant blow and very difficult to learn.

The execution of the punch is swung from across the body towards the front or use the back of the racket to hit the ball and the palm of the hand turned away from the ball.

Backhand has the location of the pedestal and kinematics of the corners of the wrist and racket, the off-longitudinal axis pedestal has a great effect on the kinematics of the racket and the angle of the wrist flexion while the lateral axis pedestal has a clearer impact. Meanwhile (Elliott et al., 1989) says "The top spin backhand drive is often the most potent weapon in advanced player arsenal" Top spin backhand is a weapon in the game of top-level players.

Beginner and intermediate athletes often have difficulty hitting backhand punches and junior players often have difficulty because they are not strong enough to perform blows. Some professional tennis players prefer one-handed backhands while others like a two-handed backhand. Thus, it has been proven over the years that both backhand punches can be very effective, depending on the individual.

The evolution of backhand (BH) is one of the biggest changes in tennis over the last three decades. Where a one-handed backhand (1BH) was almost exclusively a backhand option before the 1980s. But as the era of two-handed backhands changed more dominantly used in pro players' matches (Brown, 2013). The average player is satisfied when mastering the backhand to the point of not being a problem in the game, whereas the backhand can be very effective in getting the same points as the forehand if it continues to be sharpened and trained. Here are the stages of implementing a two-handed backhand and a one-handed backhand:

Two handed backhands

Ready stance

a) Racket held in front of the body parallel to the waist
b) Left hand placed on the neck of the racket
c) Both knees are bent slightly
d) Both legs are stretched shoulder-width apart with the weight pedestal on both legs
e) The player must be in a relaxed position and focus on the ball to be dating

Backswing

a) Both shoulders rotate and both hips rotate.
b) The handle changes when both shoulders are turning
c) Weight moved to the left leg
d) The two hands are united
e) The racket is below the height of the upcoming ball
f) The end of the racket points towards the approaching ball

g) Both knees are bent to help lift movement

contact/impact point

a) The player steps towards the approaching ball before swinging the racket
b) Right arm straight at the point of contact
c) The point of contact is on the right hip
d) The surface of the racket is at the edge of the contact point
e) Swing the racket from low to high

Follow-through

a) After the point of contact swing punch continues to be done following the ball with a long swing up to the shoulder
b) Swinging from the ground up
c) Both hands end up above shoulder height
d) The left foot is behind and the right foot is in front

Figure 1. Two-handed Backhand Stage

One handed backhand

Ready stance

a) The racket is held in front with the position at waist height
b) Both knees are slightly bent
c) Both legs are stretched a cross the shoulders
d) Weight rests on both legs
e) Players should be in a relaxed position and focused on the ball to come

Backswing

a) Player twists both shoulders and hips towards net
b) Both legs are set sideways
c) Weight rests on the left leg
d) Racket pulled back with right hand position holding racket neck
e) The position of the racket should be below the upcoming ball
f) The end of the racket leads to an approaching ball
g) Both knees are bent to aid lifting movement

Contact/Impact point

a) The player steps towards the ball with his right foot before the swing begins
b) The contact point is at waist height and in front of the right leg
c) Racket surface on the edge of contact
d) Swing trajectory from low to high

Follow through

a) Round shoulders and body continues to swing the racket
b) Right hand ends above shoulder height past right eye
c) Left hand straightens backwards for balance
d) The view leads to where the ball goes
e) The left leg is backwards and the right foot is in front

Figure 2. Stage one-handed backhand punch

Game Concept

The game is a self-selected busyness without any element of coercion, without being urged by a sense of responsibility. The game has no specific purpose (Arisman & Noviarini,

2021). The goal of the game lies in the game it self and can be achieved at play time. Learners love to play because inside they have an inner urge and a self-developing urge. Many scientists are interested in researching the game because they are aware of the importance of the role of the game in development.

(Musthofa et al., 2016) states that "Play is a physical activity that is done voluntarily and earnestly to gain pleasure from doing the activity". While (Prasetyo, 2016) argues, "Game learning strategy is different from skill learning strategy, but it can be certain that both must involve modification or development to conform to the principles of DAP (developmentally Appropriate Practice) and body scaling (physical size including physical ability)".

Akhiruyanto (2008) said “The approach of play will provide a development of diversity and quality of motion. This can be proven when presented various forms of interesting games, along with an emphasis on equality in the fight for skills (balance skill competences)". So the concept of the game is not only focused on providing variety and fun to learners, but also must achieve existing learning objectives.

(Hidayat, 2018) said that "One of the popular learning methods in the andragogy and effective approach to achieving learning objectives is learning by using games , or the process of learning through games. It can be said that games is one of the main methods in the learning process for adults. Pedagogical advantage of games in adult learning is that games present a structured situation as an actual life situation".

"The games approach is based on practice being as closely aligned with competition and requires a skillful analysis of the game by the coach. The games approach allows coaches to motivate athletes because practices are much more enjoyable more successfully

The approach of the game is based on practices that are aligned with the competition and require skillful game analysis by the coach. The game approach allows coaches to motivate athletes because exercise is more fun and becomes more athlete-centered than coach-centered (Okilanda et al., 2021) more successfully.

Kinnerk et al (2018) There are 3 phases in the development of GBA (Game Based Approach) from ancient times until now. Phase 1 "teaching games to understand", "game tastes", "Practice play" and "tactical game models". Phase 2 is like; "Athlete centered", "game performance assessment instrument" and "pedagogical training". Phase 3 involves assessing selected publications on their ability to meet inclusion criteria: "electronically accessible English publications with the

availability of experimental/observational full text, peer review research studies explicitly state that the goal is to investigate specific forms of coaching pedagogy identified as GBA (e.g. Game Sense), a study that takes place in a competitive team sports environment, not a physical education class.

METHOD

The design of this research is designed using Research & Development that will produce a model of learning skills backhand tennis court with the following implementation steps.

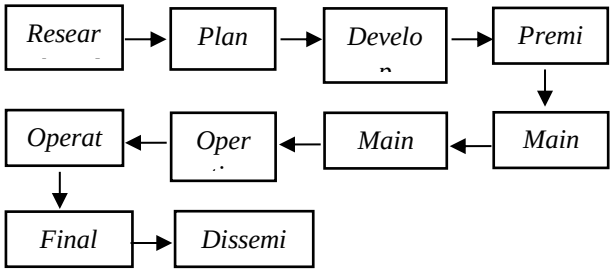

Figure 3. Adaptation Development Measures

The goal is to test a learning model using a game-based tennis court backhand skills learning model. This learning model was developed in order to master backhand techniques related to several aspects, among others:

1. To obtain in-depth information about the process of implementing tennis backhand learning in students of Physical Education Health and Recreation Faculty of Sports Sciences Medan State University.
2. Develop a backhand learning model on the tennis game.
3. Obtain in-depth information about competencies, characteristics, and early abilities in the implementation of learning, especially in the backhand learning materials of tennis with learning development patterns for students on tennis materials.
4. The goal of this development research is to produce a product in the form of a game-based tennis backhand skills learning model, so as to help the learning process in students, namely, to be more effective, efficient, and interesting.

This research was conducted at the Faculty of Sports Sciences, Medan State University. The duration of the research was conducted for 3 months with details of needs analysis, Model development planning, Learning model design development, Expert validation and model revision, small group trials and revisions, large group trials and revisions, Feasibility and revision tests, Dissemination and implementation of final products.

RESULTS AND DISCUSSION

Description of the findings in the field and in the analysis so that a formula of the results of the data has been collected. The

following will be explained about the results of the analysis of needs and field findings by researchers:

Table 1. Results of Needs Analysis and Findings in Field

No.	Question item	Field Findings
1.	What are the obstacles for students in tennis learning?	Most students who take these tennis courses are beginners and on average have difficulty in backhand techniques.
2.	Is that taking this average tennis course of beginners?	The average who takes a tennis course is a beginner.
3.	During the course of engineering which is very difficult to master by students?	Students have a hard time doing backhand techniques.
4.	Is there a learning model specifically backhand?	Lack of a learning model specific to backhand
5.	Does it take a backhand learning model of tennis?	It is needed, in order to increase the enthusiasm of students in following the learning.

Effectiveness Test Results

To know the effectiveness of the product made carried out the implementation process by collecting effective test data using t-test with SPSS software. The effectiveness test was conducted with 20 students.

Table 2. Effectiveness Test Results Game-based tennis backhand learning model

No.	**name**	**Tennis**	
		Pre test	**Post test**
1	Subject 1	40	75
2	Subject 2	35	80
3	Subject 3	40	80
4	Subject 4	20	75
5	Subject 5	30	75
6	Subject 6	30	75
7	Subject 7	45	85
8	Subject 8	40	80
9	Subject 9	40	80
10	Subject 10	40	85
11	Subject 11	40	80
12	Subject 12	50	90
13	Subject 13	35	80
14	Subject 14	40	80
15	Subject 15	30	75
16	Subject 16	40	80
17	Subject 17	50	85
18	Subject 18	45	80
19	Subject 19	50	90
20	Subject 20	40	85
Average Value		39	80.75

The average result of pre-test backhand learning on a tennis is 39. After being given the treatment of a backhand learning model of game-based tennis.

then post-test will be known that student learning outcomes increased with an average result of 80.75.

Based on the description above, there are differences in the results of backhand learning of tennis between pre-test and post-test that the model developed is effective and can improve learning outcomes at state universities after

being calculated using the IBM SPSS Statisticapplication.

Table 3. Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre test	39.0000	20	7.53937	1.68585
	Post test	80.7500	20	4.66651	1.04346

The results of a descriptive statistical summary before being treated with a pre-test data learning model showed that 20 subjects obtained Mean 39.00, Std. Deviation 7.53 and Std. Error Mean 1.68. After being given the treatment of the product model developed post-test data showed from 20 subjects obtained a mean of 80.75 Std. Deviation 4.66 and Std Error 1.043. That means the average value of backhand tennis chases has improved.

Table 4. Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre-Test & Post-Test	20	.808	.000

Correlation or relationship results between both pre-test and post-test variable data showed 20 subjects obtained correlations.

Table 5. Paired Samples Test

		Paired Differences					t	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pre test - post test	-41.75000	4.66651	1.04346	-43.93399	-39.56601	-40.011	19	.000

In the signification test differences with SPSS applications statistic obtained results of T_h -40.011 and Sig.(2tailed) 0.00 > 0.05 which means there is a significant difference in the backhand learning model of game-based tennis. So it can improve the learning outcomes of backhand tennis.

DISCUSSION

Product Enhancements

The game-based tennis backhand learning model is feasible to use and effective in improving student learning outcomes. The resulting product is a game-based tennis backhand learning model still has some shortcomings that researchers will describe for the achievement of product improvement that will be produced.

a) The learning model must be simpler and easier to understood so that it is easy to understand in its implementation
b) In the implementation of duration and time must be considered in order to learn more effectively and efficiently
c) Game variations should be made more interesting so that students are more motivated in learning

Product Discussion

Game-based tennis backhand learning models are created to be a reference or reference of tennis learning with different learning variations to assist in learning. This

learning model is prepared based on the analysis of the needs in the field. Products that have been evaluated with some weaknesses that exist and revised products in order to be a good final product, then can be conveyed some advantages of this product as follows:

a) Products that facilitate learning variations
b) The product provides fun and competitive learning of learners in its implementation
c) This learning model is useful in improving learning outcomes, especially backhand tennis
d) This product is the first product that specializes in game-based backhand movements

Product Limitations

This study is made as best as possible in order to get the perfect results according to the limits of the ability possessed by researchers, but in every ability a person must have limitations. Admittedly in this study there are many shortcomings, therefore researchers will put forward these limitations as follows:

a) This research can be done in a wider scope than it should be
b) This study does not cover all the techniques of tennis but rather focuses only on the backhand movement of tennis
c) Media and variations in learning models are many more that can be used

CONCLUSION

Game-based tennis backhand learning model can be developed and applied in the process of learning backhand techniques of tennis then research data from the game-based tennis backhand learning model that is done to obtain effective and efficient results in the learning process of tennis.

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