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BADMINTON SMASH SKILL TRAINING MODEL FOR HIGH SCHOOL BEGINNERS STUDENTS

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Abstract

The purpose of this study was to produce a product form of a badminton smash skill training model for high school beginners students (SMA) and to test the effectiveness of the developed training model. The author uses a development research design that adopts the development design of the ADDIE method (Analysis, Design, Development, Implementation, Evaluation) by including high school athletes with the criteria and requirements for beginner athletes aged 14-17 years. At the model feasibility stage, 30 subjects were included to apply the model, 3 badminton experts were used as the validity of each model item, while at the effectiveness test stage 90 subjects were included. Data analysis was carried out descriptively qualitatively through documentation, interviews, and observations, while quantitative data to determine the difference in average skills was carried out using a paired sample test which was analyzed using SPSS-26. The correlation coefficient value is 0.331 with a significance value of 0.014, and the significance of the difference in t-count shows = -21.974, db = 43 and p-value = 0.00 < 0.05, meaning that there is a significant difference in athlete skills before and after being given the developed training model. It was concluded that the model could be developed and applied in practicing badminton smash skills; and a model that is made effective to improve the smash skills of beginner athletes at the high school level.

Keywords: exercise model; skills; badminton smashes; novice athlete; high school.

PRELIMINARY

Badminton is a sport that is popular and much-loved by people in Indonesia and throughout the world. Badminton has been known to most people in Indonesia from cities to remote villages. This is due to the achievements that have reached the world level in various international events. The thing that is most often encountered is when at school the game of badminton is part of the learning curriculum at school as a small ball game activity.

Marco, Goreti and Carlos (2018) stated "this sport attracts various age groups, various skill levels and both men and women play this sport of badminton. Badminton can be played indoors or outdoors for recreation or as an arena for competition". Badminton is popular among students because it is considered easy to implement and does not require expensive equipment.

Other authors Gazali and Cendra (2019) stated in their journal "Since its rules are straightforward, the equipment required to participate can be low cost and it can be

played in a relatively small area, badminton can easily appeal to individuals of varying ages, physical abilities and socioeconomic conditions". It can be interpreted that "Because the rules are simple, the equipment required to participate can be low cost and can be played in a relatively small area, badminton can easily attract individuals of all ages, physical abilities and socioeconomic conditions".

In terms of athlete skills, skills are described as a set of internal processes related to training (experience) that produce relatively permanent changes in behavior in the form of skilled movement behavior (Tomm, 2019). Skills can refer to the specific action performed or to the nature in which the skill is performed. Many activities are considered as a skill, consisting of several skills and the degree of mastery achieved by a person describes his skill level.

Badminton knows several terms to support the training process, such as (1) shadow training, shadow training in badminton is hitting practice without a shuttlecock. This shadow exercise aims to improve footwork, speed, endurance and strengthening of beginner athletes' strokes. (2) Stroke exercise, stroke exercise in badminton is an exercise by making variations of strokes. This exercise is done after the novice athlete has mastered how to hold the racket, footwork, and all basic techniques (basic stroke). (3) Drill exercise which is one of the training methods with the aim of improving individual abilities or as a method used to learn movement skills such as smash hits in badminton. Where the presenter must be skilled in presenting the shuttlecock in the desired direction in order to train the eye, hand and foot coordination of beginner athletes, so that the beginner athlete is ready to hit the shuttlecock with the best possible body position. Then use a large number of shuttlecocks and are used continuously to the desired place by the presenter, so that novice athletes get a portion of the movement that will be useful for improving their smash skills.

Movement in badminton has a suitability to the type of stroke. If someone is required to play badminton well, a player must be able to perform several stroke techniques or perfect hitting motion skills. Vora dkk (2019) states that "In general, the basic skills of playing badminton can be grouped into four parts, namely (1) how to hold a racket (grips) (2) ready attitude (stance or ready position), (3) footwork (footwork), and (4) the motion of hitting (stroke)". Some players look for effective training methods to help their progress, hoping to gain the ability to play a variety of shots and use different tactics on the field to make playing the game more interesting and enjoyable.

The badminton extracurricular at the Muhammadiyah Vocational High School (SMK) in Cilegon City is one of the fostering developments of student talent in the field of sports at one of the educational foundations in the city of Cilegon, where students who have potential will be developed and honed so that they can become professional athletes. This badminton extracurricular at high school Muhammadiyah Cilegon city is held twice a week, on Wednesdays and Saturdays from 04.00-06.00 PM. And it was held at the Asa Sport Center Sports Building, Jalan K. H. Wasyid number 2, Cilegon, Banten.

It is necessary to know more deeply that development research as it exists is research that produces products that do not yet exist or develops products that already exist. This is reinforced by research conducted by Wang and Moffit (2019) who said that "studies on instructional design models are explored in terms of journal of publication, preferred model, country where the study was conducted, research method, data collection tool, data analysis. method, sampling interval, and field in which the model was applied. The current research is carried out using published journals where research is conducted on research methods, data collection tools, data analysis methods, sampling intervals, and the field in which the model is applied.

This research is based on the function and application in education and for some time the results can be used, namely research and development. In learning technology, descriptions of procedures and steps of research and development have been developed. Dewi (2012) stated that "researchers have used a number of terms in the field of education to refer to what is meant by "development research", including: design studies, design experiments, design research, developmental research, formative research, formative inquiry, formative experiment, formative evaluation, action research, and engineering research".

Based on the researcher's observation of the badminton extracurricular, there are still some students who are not good at hitting smashes. Among extracurricular members totaling 34 students in the 2020-2021 school year, only a few are able to master smash skills. The smash technique is still wrong, so the impact of the racket on the shuttlecock is not quite right, for example the hand is not straightened when hitting, even there are still many players when doing the smash, the shuttlecock gets caught in the net and even goes out of the field.

Some opinions say that one of the blows that can kill an opponent and earn points is a smash. Firdaus and Purnama (2018) states that "the forehand smash is an important offensive technique in badminton".

Milne (2019) states that "due to the high speeds generated by the stroke, the forehand smash is a shot that frequently determines winning of points during a game" frequent strokes determine the point win during the game".

Smash should be a weapon for every player to get points or kill the opponent. Smash practice patterns are not given much attention, more exercise is carried out in physical training and games. When playing, most of the smashes made by students are too wide to the right and to the left, so that the smash that should generate points for itself, actually generates more points for the opponent. In the journal Wang and Moffit (2019) contains the opinion that "unfortunately, the scientific understanding of the forehand smash continues to lag behind its practice as most participants acquire the skills by learning from individual experience rather than through research-based instruction". Scientific knowledge of forehand smash continues to lag behind in practice as most participants acquire skills by learning from individual experience rather than through research-based instruction".

Effective and efficient training methods are driven by the facts or symptoms that arise in training. The training method is a method that aims to improve the skills of the athletes being trained. This method can also be used for development in the progress of athletes in learning and achievement efforts. As for achieving maximum smash ability in badminton, besides requiring good physical strength, you must also be able to master good techniques as well. So according to the researcher, it is necessary to develop a model of badminton smash skills training in order to maximize smash skills for high school beginners, especially for badminton extracurricular students at SMK Muhammadiyah Cilegon.

Previous research by Smith (2019) which appeared was more inclined to test and explain methods to increase strength in supporting badminton smash techniques for athletes in general. Zutshi et.al (2018) explain in their writings that the interval method in training centered on arm muscle strength is able to make badminton smashes perfect. Another study conducted by Digy, Dnhuvàhog and Thomas (2020) describes an exercise model to improve badminton smash learning outcomes by including student subjects. Several previous studies have not appeared a product and also tested its effectiveness in improving badminton smash skills with a specific subject, namely the level of ability of certain athletes. Taking into account the needs of the field as well as the data in the observations, the researchers tested the effectiveness of the model developed to improve the badminton smash

skills of junior high school athletes (Gazali & Cendra, 2019).

METHOD

The research uses qualitative and quantitative approaches. Qualitatively, this development research has the final result of a description of the smash skill training model for high school beginner athletes which is cemented in the form of books or journal publications. Qualitatively, the research that has been made describes the results of the effectiveness test. This development research adopts ADDIE development steps (Analyse, Design, Development, Implementation, Evaluation) by involving 90 subjects from 3 high school level schools. For data collection using observation, documentation and tests. Analysis of the existing data was carried out qualitatively and quantitatively.

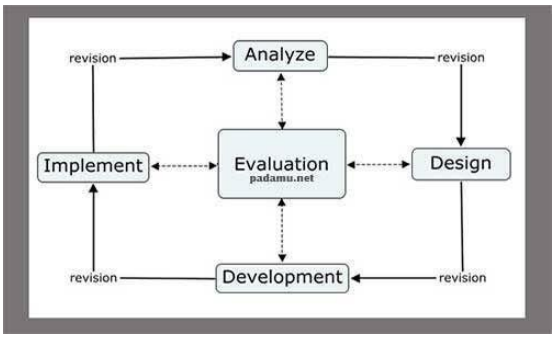

Figure 1. The concept of developing the ADDIE model (Harjanto, 2008)

Qualitative data in the form of a description of the model developed while quantitative data in the form of analysis results of the model's effectiveness test on the badminton smash skills of high school beginners. The initial stage is a needs analysis followed by designing a model design and developing it with the validation of 2 badminton experts, 1 coaching expert. After doing the empirical test, the overall test is to test the effectiveness of the model. Test the effectiveness of the model in this study using the significance test of Pre-test and Post-test with badminton smash skills as an instrument for beginners. The existing instruments were validated by 1 badminton expert and 1 professional trainer, while the reliability of the test was carried out using a test-retest which resulted in a reliable value of 0.48 or with "medium" criteria.

RESULTS AND DISCUSSION

This development research uses empirical tests of subjects with limited groups. From the initial 20 items, 14 items were implemented, 6 of which were not implemented due to the limited complexity of the scheme and infrastructure that did not allow it to be conditioned. A total of 14 items developed based on storyboard that has been designed previously, while the design is designed as follows.

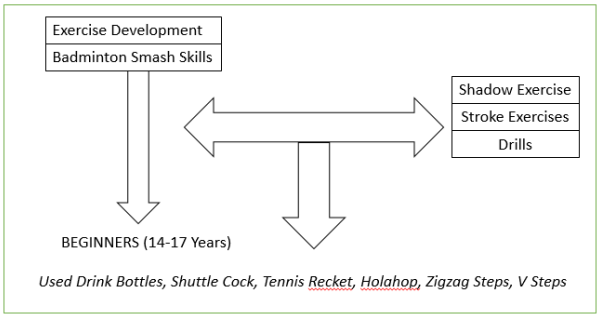

Figure 2. Research storyboard

The pictures that show the development of badminton skills training have three discussion points including shadow training, strokes and drills. The training model developed is for beginner athletes and the equipment predominantly uses a drinking bottle, cock, tennis racket, zig zag-V steps. All of them are arranged into 14 skill training items systematically from hardest to easiest, simplest to complex and low intensity to high intensity.

The implementation stages included testing the effectiveness using a pre-test and post-test that included the treatment and control groups of 45 subjects each. Table 2 reveals that the average results of the pretest and posttest of the subject's smash skills are 39,132 and 81,123. The N-gain score (%) shows the figure of 75.9% which is included in the effective category. The difference in the mean pre-post test and the results of the N-gain is not enough to conclude that the smash skills of beginner athletes have significantly improved.

Tabel 1. Normality Test

	Smash Skills	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Result	*Pre-test*	.152	45	.011	.923	45	.210
	Post-test	.311	45	.000	.854	45	.465

a. Lilliefors Significance Correction

Furthermore, it is necessary to test the difference in average using a paired sample test (t-test), the test must be preceded by a normality test. Because there are 45 subjects, the normality test uses Shapiro Wilk SPSS 26.0 with the results of the pre-test and post-test having a sig-p-value. 0.210 and 0.465 which indicate a value of more than = 0.05, meaning that the data is normally distributed (table 1).

Tabel 2. Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre_Test	39.132	45	9.272	1.382
	Post_Test	81.123	45	9.129	1.361

As table 3, the correlation coefficient of the subject's smash skills before and after treatment is 0.148 with a p-value of 0.00 <0.05, which is significant.

Tabel 3. *Paired Samples Correlations*

		N	Correlation	Sig.
Pair 1	Pre_Test & Post_Test	45	.148	.331

Tabel 4. *Paired Samples Test*

	Paired Differences					t	df	Sig. (2-tailed)
Pair 1	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pre_Test Post_Test	-39.33	12.00	1.79	-42.94	-35.72	-21.97	44	.000

The significance test of the difference through SPSS 16 in table 4 shows the results of t-count = -21.974, db 44 and p-value = 0.00 <0.05. This means that there is a significant

difference in smash skills after being treated with the developed training model. Because the N-gain score (%) shows the figure of 75.9% in the effective category, it can be said that the training model developed is effective and can improve the badminton smash skills of high school beginners.

After the research was conducted from January 2020 to March 2021, subjects with limitations as beginner athletes experienced a response in the motoric mastery of the techniques taught through the developed model. The training model developed has a systematic sequence in the stages of mastering a movement in a comprehensive manner. The introduction of new techniques can be absorbed in the results of information in the form of new motion perfection. Masters of new techniques who are trained by drilling have a match with the character of the subject. Subjects experienced repeated responses in the training process so they were familiar with the existing techniques in badminton.

Research written by Kerlingart (2015) explains that a person's new movement can be learned and trained according to the suitability of the individual's general and multilateral movement abilities. This opinion explains that the introduction of new movements to individuals is a series in the process of mastering a motor movement in general and continuously. Milne (2019) added in their research that by exercising regularly by paying attention to the principle of regular exercise within 14-19 meetings with the allocation of each 60-120 minute training session, it can significantly improve smash skills and speed in badminton. The skills that are raised in this discussion are the result of hitting the racket on the shuttle with the appropriate timing so that it can show a hard flat smash.

Drills in the application of the badminton training model can be done repeatedly in earnest with the aim of strengthening an association or perfecting a skill so that it becomes permanent. The training material given to badminton beginner athletes is carried out from the simple to the more complex. A good analysis is needed to carefully examine the development of every badminton beginner athlete. Each exercise must contain useful drills and clear training objectives (Abdolmaleki, 2016). A process that is systematically carried out in practice and is carried out repeatedly on a regular basis in an effort to achieve certain goals. Therefore, trainers or teachers who provide teaching materials have tasks and roles that are much broader and more complex than just training in the field.

The character of the subject as a beginner athlete seems to be improving in terms of skill classification for the better by

applying the developed training model. The existing model pays attention to the biomechanics aspect in badminton with the principle of racket tilt when the impact on the shuttle is not more than a degree (Marynowski, Denny & Colverson, 2013). The badminton game played by professional athletes with as many as 21 game points if analyzed takes 45 to 85 minutes of gross time, in games performed by novice athletes it is recorded with a time of 30-65 minutes in one set (French et al., 2020). The data is also used as the basis for designing this training model so that in its application several training items are conditioned at that time.

Skills understanding involves optimizing and balancing several aspects of skills that are important to different extents in different settings. In summary, skills generally involve achieving some environmental goal well defined by (1) maximizing the certainty of goal attainment, (2) minimizing physical-mental and energy performance, (3) and minimizing time spent. It is necessary to understand the difference between the understanding of motor skills and the understanding of skilled movements. Motor skills are a quality level of mastery in carrying out body movement activities where the coordination of several body parts or all body parts can function properly. The level of coordination of the body parts required to carry out the movement is relatively high. To achieve a good level of movement skills, it is necessary to learn and practice within a certain period of time.

Based on the explanation of several theories above, it means that movement skills are a very important element in sports. Maryam (2020), "these three elements are critical to almost any skill: (1) Perceiving the relevant environmental features (2) Deciding what to do and where and when to do it to achieve the goal (3) Producing organized muscular activity to generate movements that achieve the goal". This means that all three elements are essential to almost any skill.

The development of exercises using the ADDIE research method is a suitability for the implementation of each item. This method has the advantage of being more detailed in the implementation of each item, therefore, of the 14 training items made, it is in accorandce with the stages in mastering the new badminton smash technique. The technique used to analyze this model is by presenting a number of models of smash skills training for high school beginner athletes in the form of pictures and explanations that are practiced directly by the author in front of experts, then the experts evaluate each training model that has been made as many as 14 model items.

Whether the training model made is relevant to the conditions of high school

beginner athletes in the field. After the experts evaluated the smash skill training model for high school novice athletes, the researchers revised the model according to the results that had been evaluated by the experts.

Based on the results of discussions and evaluations that have been carried out, with the current pandemic, the author cannot conduct field tests. So with expert validation of the model that has been made, then the experts see, assess and decide on each model item that has been made, whether the smash skill training model for high school beginner athletes is effective to apply. After being validated by 3 experts, then based on the results of the decisions of the three experts, it was decided that the smash skill training model for high school beginner athletes was 14 model items.

The final result of the smash skill training model for high school beginner athletes after the research can be concluded that the smash skill training model applied is feasible and suitable for high school beginners. By applying a simple training model, athletes feel motivated when doing exercises. In response to this, a fun smash skill training model is needed and can improve movement skills in everyday life.

CONCLUSION

The conclusion that can be drawn from this research is that the skill training model developed is in the form of 14 skill training items for beginners in the form of a book with an explanation of smash skills, a skill training model and an example of a systematic badminton smash skill training program for beginners at high school age. This training model for badminton smash skills for beginners is proven to be able to significantly and effectively improve smash skills to be used as an exercise in improving badminton smash skills for beginners. Furthermore, similar research should include subjects more specifically, whether it is in terms of disability, gender or differences in character in the geography and culture of athletes.

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