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Crossbox Net Tool Model Development As a Volleyball Training Aid

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Abstract
Often the net comes loose and becomes loose, making it very disruptive to learning. Taking advantage of this phenomenon, researchers tried to develop a Crossbox training tool for volleyball. This tool has a very big function in learning and training. Able to adjust the height of the net without having to change the condition of the net permanently. This crossbox has a hook which is intended to hook the net so that tying the net to a permanent pole no longer happens. The tool developed by this researcher is also multifunctional. As the researchers wrote previously, this tool can also be used to support learning and practicing takraw, badminton and tennis. Therefore, researchers conducted research entitled the development of a crossbox net as a volleyball training tool. The researchers made the objectives of this research as follows: Know the crossbox net aids in learning volleyball, Find out the feasibility of the crossbox net tool product based on the validator's assessment. From the comparison test carried out, the aim was to find out whether the crossbox net training aid was effective in improving the user's service ability. The data obtained is based on the average of the pretest scores of 874. This is the score obtained before being given training aids. After the initial test was carried out, the tools were used with a training program created so that after being tested again, the service capability obtained a post-test score of 1303. By looking at these results, it can be concluded that there has been an increase in quantity.

Keywords: Volleyball, Training Aids and Serving

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INTRODUCTION

Volleyball is currently the 4th most popular sport in Indonesia, one level below football in third position (Zauharudin, 2023). The achievements of this sport in Asia also deserve appreciation because matches against Southeast Asian countries, Indonesia, are always met at official ASEAN events. Indonesia's appearance at the Asian event has made Indonesia give birth to a new spirit in volleyball. Prestigious domestic competitions were born. Competitions between villages also do not escape existence.

This existence needs to be the basis for volleyball central administrators to be able to show the world that Indonesia will be consistent in Asian and even world events (Aini Hayati Fortuna, 2023). The creation of a positive climate for this competition will directly bring euphoria within the country. Indonesian society is starting to open its views. The western region of Indonesia is considered diligent in promoting the sport of volleyball. It can be seen from the

popular Indonesian athletes currently emerging from the western region of Indonesia. Coaching and nurseries are always carried out by administrators in the area.

The private sector, which sees this as an opportunity, is not wasting this opportunity. So that consciously, not only the government but also the private sector takes advantage of this opportunity, which is definitely to make a profit (Erta, 2023). The profit in question is a profit in a positive sense, such as symbiotic mutualism. It's not uncommon for inter-village matches to look so lively with banners, flags and even large billboards from private sponsors who support the match. Big prizes and continuous and continuous competition make players even more enthusiastic about practicing and competing.

When this opportunity becomes more promising, the younger generation will see this as an opportunity. It seems that young people in the village have a volleyball court, they don't just play, they also practice to try to have the opportunity to compete (Ulfatul Nur Aman, 2023). This circular cycle will continue to spin and even get bigger so we can see how players from the western region continue to emerge. The flying hours of competing and playing are no longer in doubt. This achievement has caught the attention of the Indonesian and eastern regions who need to cut corners to find achievements.

The sport of volleyball in eastern Indonesia is still treated as (Azamat Orunbayev, 2023b) a political vehicle. Bringing in good players with the aim of achieving achievements, the aim of which is only to elevate a handful of names from the board. This makes this sport not develop in the region. Never mind breeding and coaching, competition alone, if there is no role from the government, this agenda will not work. Looking at this from an educational perspective, it is appropriate for academics, in this case the campus. Together with practitioners, taking advantage of current developments in synergy to solve this problem.

The foundation or foundation is the focus that must be considered. Volleyball in eastern Indonesia, especially Papua province, can be said to be recognized by all levels of society. However, what happens is that Papuan people learn about volleyball when they enter adulthood. Playing volleyball at an early age can be scary. In fact, in the western region of Indonesia, volleyball is played when people are 5-6 years old. In the world, this sport is already considered when it is 4-5 years old, even though it is in the context of playing with gross motor movements (McGuine, 2023).

It is hoped that introducing it from an early age will make children more mature in acting and thinking about the organization of sports games (Azamat Orunbayev, 2023a). The sport of volleyball has so many benefits that are felt by the players and those around them. This sport is able to attract the attention of people who see it, let alone play it. The province of

Papua, especially the city of Jayapura, has become a role model for the development of volleyball in Papua. The center of civilization which is currently in the city of Jayapura should make its people more advanced in viewing sports, especially volleyball.

Cenderawasih University has a health and recreation physical education study program. The physical education study program produces educational staff in the field of physical education and sports. If you look at this scientific field, it has become a direction for graduates to work in their field. Sports education at the educational level is the task of graduates of the Physical Education and Sports Study Program in the future. Applying the knowledge learned during college is part of the implementation of knowledge. The integration of science into real life, in this case the world of education, is a manifestation of one of the tri dharmas of higher education (Sartika, 2020).

Reviving volleyball in Papua province, especially Jayapura city, gives new hope in developing this sport. The presence of study programs as a source of knowledge in the sports education scientific field is expected to be an agent of change in improving the physical fitness of Indonesian children (Han & Ahn, 2020). Sports facilities in the city of Jayapura are generally available for all sports, one of which is volleyball. After the implementation of XX PON in Papua, Jayapura City received a legacy of national and international standard sports facilities and infrastructure. One of these magnificent remains is the volleyball venue located in Koya Koso, Muara Tami district.

There is currently only one sports infrastructure such as indoor volleyball in the city of Jayapura that is designated for the sport of volleyball. There are also many sports halls but they are used for various sports and to use them requires a large amount of money to use them just to practice and compete. Sports infrastructure in the form of volleyball courts in the city of Jayapura is mostly outdoor and all of them are owned by schools at junior high school level. This opportunity is also greatly utilized by the physical education study program where the school is a partner of the physical education study program (Safaringga, 2022).

Making the basics of volleyball at the educational level lighter. Not all of the villages in the city of Jayapura have infrastructure in the form of volleyball courts. Even though they have fields, most of them are not maintained and arranged according to applicable standards (Ashidiq, 2023). So that the volleyball courts have good shape and are organized in schools and every sub-district has a school and also a volleyball court. The problem is, this field is only used.

The problem that researchers found was that many school students who were new to volleyball faced the height of the net. The problem that most often arises is that the ball cannot

pass through the net or even cross the net. In developed countries like Japan which have advanced, modern and good infrastructure, introducing volleyball teachers does not necessarily mean introducing the actual net height (Azadian, 2022). The height of the net is made as comfortable as possible for the students. The height of the net poles can be adjusted according to what is desired. In Indonesia itself, especially in the city of Jayapura, it can be said that all nets are permanent, so that the height of the net can be adjusted depending on the string ties. Another problem is that the net that is tied always cannot be tightened because of the ties around the net posts.

Often the net comes loose and becomes loose, making it very disruptive to learning. Taking advantage of this phenomenon, researchers tried to develop a Crossbox training tool for volleyball. This tool has a very big function in learning and training. Able to adjust the height of the net without having to change the condition of the net permanently. This crossbox has a hook which is intended to hook the net so that tying the net to a permanent pole no longer happens. The tool developed by this researcher is also multifunctional. As the researchers wrote previously, this tool can also be used to support learning and practicing takraw, badminton and tennis. Therefore, researchers conducted research entitled the development of a crossbox net as a volleyball training tool.

After explaining the background of this research, the problem formulation in this research is: How to develop a crossbox net tool as an aid in learning volleyball?, What is the feasibility of the crossbox net tool product based on validator assessments?

After formulating the problem in this research, the researcher made the objectives of this research as follows: Know the crossbox net aids in learning volleyball, Find out the feasibility of the crossbox net tool product based on the validator's assessment

Carrying on with the aim of developing this crossbox net tool, for information the benefits of this crossbox net tool are: For students and athletes Makes it easier to learn and practice volleyball. Providing a variety of experiences and training for students and athletes. For teachers and trainers Providing more variety in learning and practice, making the learning and practice atmosphere more enjoyable.

METHOD

This research uses model development or what is more often known as research and development (Hasibuan & Akhmad, 2022). This research will produce products that will be used in learning and training. In producing a product, researchers involve scientific stages in it. The scientific stages used by researchers are ADDIE (analysis, design, development,

evaluation) in an effort to make this research studied and validated (Ranuharja, 2021). Starting from needs analysis, namely observing quantitatively whether the product is desired by the market. Then, after understanding what needs are desired, researchers design a product and implement it in small and large scale trials.

After the trial was carried out, the researchers distributed questionnaires to validators to assess the products that had been made. The product in this model development research is a crossbox net in volleyball learning. This tool will later be installed on a volleyball net to support volleyball learning to be interesting and varied. The resulting product is an innovation based on the needs desired by physical education teachers and volleyball coaches at schools.

In the implementation stage of developing this tool for learning in schools, researchers conducted small-scale trials in 3 junior high schools in the city of Jayapura. This trial treatment was carried out in 3-4 meetings according to the material taught in volleyball lessons (Kurniaty Bangun1 et al., 2022). Then, after the small scale trial is carried out, it is evaluated directly by the validator and corrected. Large-scale trials were carried out at 8 schools in the city of Jayapura. The intensity of the meetings is the same as a large-scale trial. After the trial is carried out, it is re-evaluated to improve the product before being marketed(Dwi Alfiana Putri et al., 2024).

The population in this study was junior high schools in the city of Jayapura. The population is the totality of the objects studied (Staines, 2022). The number of junior high schools in the city of Jayapura is 40 schools. The sample in this study was 20 schools. The large and small scale trials in this study took participants from the existing sample size

This crossbox net product is made from plate iron and 6 cm iron rods which are formed into the letter U with an iron length of 12 cm. This iron will later be installed on the two volleyball nets which can be adjusted in height and can be attached to the net posts. The data collected in this research is in the form of qualitative and quantitative data. Qualitative data regarding the process of developing the crossbox net tool takes the form of input and suggestions from physical education teachers, while data collection is carried out through distributing questionnaires with the following instruments (Juli Fitrianto et al., 2023):

Table 1. Tool Usage Indicators

No	Rated aspect	Rating Scale				
		1	2	3	4	5
	Physique					
1.	The crossbox net tool as a medium for learning volleyball serves is appropriate.					
2.	The shape of the crossbox net tool is in accordance with the needs of learning to serve volleyball					
3.	The shape and structure of the crossbox net are strong					
4.	The crossbox net material is made of iron					
5.	The shape of the crossbox net is a box representing the volleyball net posts.					
6.	Can grip the net pole well					
	Design					
1	Arrangement of the framework and shape of the tool					
2	Color match					
3	Easy and practical use design					
4	Attractive shape and color					
5	Anti-rust paint material					
	Use					
1.	Helping teachers in making variations in learning					
2.	Make it easier for students in the process of learning to serve volleyball					
3.	The use of the crossbox net tool in learning basic volleyball techniques is effective					
4.	The tool can be used on any type and shape of pole					
5.	This tool is safe to use by students					

Table 2. Indicator Norms

The norms from the results of filling out the questionnaire above are as follows:

Presentation	**Classsification**	**Scale**	**Meanings**
0-20%	Not Good	Thrown Away	1
20,1-40%	Minus Good	Fixed	2
40,1-70%	Pretty Good	Used(conditional)	3
70,1-90%	Good	Used	4
90,1-100%	Very Good	Used	5

Quantitative data is a test of the effectiveness of tools in learning volleyball serves. The effectiveness test used is the T test using SPSS to see the results of students' service abilities before using the tool and after using the tool.

RESULTS AND DISCUSSION

Result

The results of the development of this volleyball training aid are very good for use to help with volleyball training (Pratama et al., 2024). Teachers and trainers are greatly helped by this tool. In more detail, it will be explained according to the stages of analysis, design, development and evaluation.

a. Analysis

Analysis is a description of problem findings when conducting observations in the field. This observation was carried out through observations carried out for one month while learning volleyball material, here are some of the findings that were found:

1. Students have difficulty with net heights that use international standards.
2. A net height that is too high makes it difficult for students to develop their playing skills.
3. A tied net makes the net tension uncomfortable when used.

b. Design

To overcome the above problems, researchers developed tools that can help students' problems. In developing training aids, several indicators that researchers pay attention to are:

1. The tools and materials made come from raw materials found nearby, namely iron plates which can be obtained at building shops.
2. Researchers collaborate with MSMEs in the welding workshop sector to make assistive equipment products
3. Tools are made easy to use

Picture 1. Tools of Crossbox Net

c. Development

In this development stage, to measure how much this tool has a significant impact on training, researchers created an assessment instrument for the results of training using this training tool. The training instrument used is volleyball service training. This measurement is

carried out at the beginning before treatment and after treatment is given. The following is the serviceability test instrument used.

Test Name: Volleyball Serving Ability Test, Volleyball ability test is a person's ability to serve a volleyball in the context of an athlete or player who is able to perform volleyball serving skills well and correctly.

Objective: Measure service ability based on the accuracy of the direction the ball falls.

Reference source: (Pudji Hastuti, 2009),

d. *Implementation*

The implementation stage is the monitoring stage of the implementation of the use of this training aid. In this implementation, the researcher created a questionnaire which was then filled in by the teacher using this tool. Several assessment indicators were created to represent the teacher's answers. The following is the questionnaire and its results.

Table 3. Result Tool usage indicators

No	Rated aspect	Rating Scale				
		1	2	3	4	5
A.	Physique					
1.	The crossbox net tool as a medium for learning volleyball serves is appropriate.	0	0	2	3	0
2.	The shape of the crossbox net tool is in accordance with the needs of learning to serve volleyball	0	0	0	5	0
3.	The shape and structure of the crossbox net are strong	0	0	0	5	0
4.	The crossbox net material is made of iron	0	0	2	2	1
5.	The shape of the crossbox net is a box representing the volleyball net posts.	0	0	0	4	1
6.	Can grip the net pole well	0	0	5	0	0
B.	Design					
1	Arrangement of the framework and shape of the tool	0	0	0	3	2
2	Color match	0	0	3	2	
3	Easy and practical use design	0	0	0	3	2
4	Attractive shape and color	0	0	1	3	1
5	Anti-rust paint material	0	0	0	3	2
C.	Use					
1.	Helping teachers in making variations in learning	0	0	1	2	2
2.	Make it easier for students in the process of learning to serve volleyball	0	0	2	2	1
3.	The use of the crossbox net tool in learning basic volleyball techniques is effective	0	0	0	3	2
4.	The tool can be used on any type and shape of pole	0	0	0	3	2
5.	This tool is safe to use by students	0	0	0	0	5

e. Evaluation

Based on the results of the data above, it can be concluded that on average teachers answered Good, that the tool developed is suitable for use.

Evaluation is the final stage of the previous process. Researchers got the results from the initial test and final test and then got the following values.

Table 4. Serviceability results before and after treatment.

Testee	Pretest	Posttest
1	22	33
2	22	32
3	23	31
4	21	34
5	24	33
6	25	31
7	16	32
8	13	35
9	21	40
10	22	40
11	10	31
12	13	32
13	22	33
14	24	33
15	15	34
16	13	31
17	22	32
18	24	33
19	12	30
20	23	30
21	35	36
22	27	34
23	22	26
24	26	29
25	23	33
26	12	25
27	24	31
28	32	40
29	14	26
30	27	34
31	32	37
32	23	34
33	32	37
34	21	34
35	24	28
36	25	26
37	23	37
38	22	32
39	22	30
40	21	34
Jumlah	874	1303

1. Average Value.

Table 5. Average value

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Pretest	40	21.85	5.811	.919
Postest	40	32.58	3.622	.573

From the results of quantitative analysis using SPSS 23, it was found that the average value between before and after being given treatment had increased. The average value before being given treatment was 21.85, while after being given treatment it was 32.58.

2. Correlation Coefficient

Table 6. Correlation Coefficient

Correlations

		Pretest	Postest
Pretest	Pearson Correlation	1	.399*
	Sig. (2-tailed)		.213
	N	40	40
Postest	Pearson Correlation	.399*	1
	Sig. (2-tailed)	.213	
	N	40	40

*. Correlation is significant at the 0.05 level (2-tailed).

Based on the results of the exercise correlation coefficient test display before and after being given training treatment, a Sig (2 – tailed) value of 0.213 was obtained. This value can be compared with the p-value of 0.05, which means 0.213 › 0.05, so there is a relationship between before being given treatment and after being given treatment.

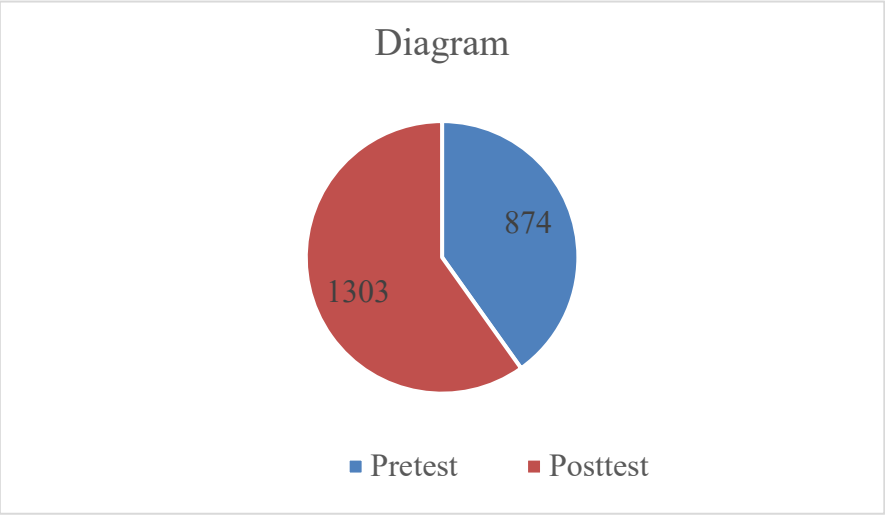
3. Significance of the Difference

Table 7.Significant Differences

One-Sample Test

	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Pretest	23.780	39	.000	21.850	19.99	23.71
Postest						

In the significant difference test using the T test assisted by SPSS 23, tcount = 23,780, df = 39 and p-value = 0.00 < 0.05. So, there is a significant difference before and after being given training treatment on the service model of volleyball ability.



Picture 2. Pretest and Posttest Circle Diagram

Discussion

From the comparison test carried out, the aim was to find out whether the crossbox net training aid was effective in improving the user's service ability. The data obtained is based on the average of the pretest scores of 874. This is the score obtained before being given training aids. After the initial test was carried out, the tools were used with a training program created so that after being tested again, the service capability obtained a post-test score of 1303. By looking at these results, it can be concluded that there has been an increase in quantity. Previous research found that to train basic movements you can use repetitive exercises (Akhmad, 2022). There needs to be media to speed up the training process.

In general, no significant obstacles were found when using the tools that were created. However, based on several inputs from several students, teachers and researcher observations. Researchers noted several things that could be of note.

1. The tools developed should be distributed by researchers so that teachers and trainers can get them without having to bother making them
2. It needs to be made more attractive so that there are no difficulties in storing it.
3. It needs to be made to be strong so that it can be used for a long period of time.

CONCLUSION

Based on the results of field trials and discussion of research results, several conclusions were drawn, namely: The volleyball training aid that was successfully developed is called Crossbox Net. All users responded that this tool can be used for learning and training activities.

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