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DEVELOPMENT OF A LOADING TRAINING TOOL TO TRAIN *WATER* POLO JUMPS AND SHOTS BASED ON *WATER BACK SPIDER* (WBS)

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Abstract This study aims to obtain scientific data on the development of water polo weight training tools to improve the results of jumping and shooting training for water polo athletes. Samples were taken totaling 20 water polo athletes who were 16 years old who were members of the DKI Jakarta regional training camp. Data was collected using a questionnaire. The data was then analyzed using the R&D method with a quantitative approach. Based on the feasibility test results by experts there is a value of 98% on the effectiveness of the tool, 95% on the function of the tool and 75% on the tool design. Based on the instrument reliability test using the Kuder and Richardson 21 (KR 21) formula, while the validity test for multiple choice uses biserial point correlation. Reliability testing using SPSS there is a *Cronch's Alpha* value for the effectiveness test questionnaire for the *water back spider* (WBS) based loading tool in the reliability test is 1.48610103. The effectiveness test obtained a mean *pre-test of* 8.90 and *post-test of* 16.00 with a standard deviation of 1.210 and 1.747. The t-test table with a significance level of 0.05 has Sig. (2-tailed) 0.001. The p-value result of Sig. (2 - Sided) <0.05, then the *water back spider* (WBS) based loading tool can significantly improve jumping and shooting results.

Keywords: Water Polo, Jump, Shoot

INTRODUCTION

Physical components are one of the factors to support a water polo athlete in playing water polo, by mastering the strength, explosiveness, speed, accuracy and agility of a water polo player will affect performance and appearance when playing. But it is not absolute if a water polo player has a good physical component will perform well too, because there are several factors that affect the performance of a water polo athlete outside the physical components above. If the physical abilities of individuals in the team are good, it will be easier for a coach to do further training for the team.

Water polo is a team sport in water that requires some basic techniques that a water polo athlete must have in playing. These basic techniques must be owned by water polo players and goalkeepers, because by mastering these basic techniques one will be able to easily adapt further exercises. Some basic techniques that must be mastered by an athlete in the sport of water polo include:

- Floating (*watertrappen*)
- *Ball Grabbing*
- *Passing*
- *Shooting*
- *Dribbling*
- *Jumping*

The basic techniques of playing water polo must be owned by every player, both from young athletes to elite athletes. It's just that the portions differ between young athletes and elite athletes in their abilities and training methods. A water polo player who has mastered the basic techniques above can support the player in doing every exercise given both technical training and tactical training. The basic techniques above must be trained, not necessarily come to each individual, therefore before an athlete chooses to become a water polo athlete, that person must have a qualified swimming ability, but not for a goalkeeper.

The basic techniques above have their respective tasks, such as one of them is *jumping* (jumping), this jumping technique is very important for water polo players, both players and goalkeepers, the use of jumping for water polo players is many, one of which is to hold the throw or hold the opponent's shot who will pass towards his friend then the player swiftly jumps without any footing in order to hold the throw, besides that jumping is also used by goalkeepers to protect the goal if an

opposing player wants to *shoot*. The higher a player can jump, the better the ability of his legs, because if a player has good jumping ability, the player will find it easier to hold any ball passes that pass through him easily. In other words, the player gets the ball easily just by jumping, in order to hold the opponent's throw and return to attack the opponent's goal.

Because of the importance of jumping, therefore every player who wants to play water polo must have good enough leg strength, because the strength of the legs possessed by each water polo player will have an impact on the jump that the player will produce. The better a player's jump, the more balls the player will be able to hold, unlike the goalkeeper, the more and higher the jump he has, the more opportunities the opposing players will have to shoot and score goals.

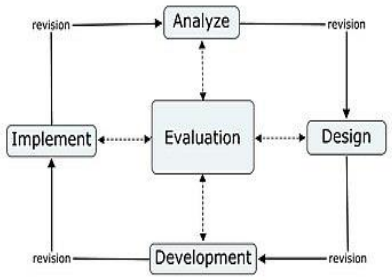
Based on observations that researchers observed in the field, many of the water polo athletes did not jump enough when they were defending, if they jumped more, many balls could be held (*blocking*). However, if the player does *blocking* using a jump, due to inadequate leg strength, the player's jump will not be optimal. Therefore, researchers really want to make tools that are developed from existing tools to support athletes in practicing to produce higher jumps than before.

Referring to previous research and also the experience that researchers have experienced, it can be concluded that jumping in water polo is very influential in attacking and defensive positions. Therefore, researchers really want to design a tool that can be used by water polo people to train strength in the legs which will affect the ability to jump and shoot individuals.

METHOD

This type of research is a development research (Research and Development) through quantitative methods. This method was determined based on data collection techniques carried out during the product development process. Through this research using the ADDIE model (Aldoobie, 2015). The ADDIE model has 5 phases or stages that must be carried out in research, namely 1) analysis (*analysis),* 2) *design (design),* 3) development (*development),* 4) implementation (*implementation),* 5) evaluation (*evaluation).*

Figure 1 ADDIE Theory



This model is very effective and efficient and has an interactive process, where the results of the evaluation in each phase have and lead to the development of learning in the previous phase. The ADDIE model can also be used as a bridge between learners but in this context it is athletes, materials and all technology-based and non-technology-based media.

The sample of this study came from water polo athletes who were 16 years old and joined the DKI Jakarta regional training camp for PON 2024 as many as 20 athletes. This study uses questionnaire data collection techniques which will be distributed to 20 athletes after trying to use the tools that researchers make.

RESULT AND DISCUSSION

On the results of the development of a loading tool to answer the research hypothesis, the development of a water back spider-based weight training tool by following the ADDIE model.

The first stage carried out is need assessment (analysis according to needs), identifying problems, and conducting task analysis. The stages of analyzing the tools that have been used in previous weight training, then what materials are needed in weight training and what materials are needed to be developed from previous tools.

At the design or planning stage, researchers will formulate specific, measurable, applicable and realistic (SMAR) training objectives. Then proceed with the preparation of the test, the preparation of the test must be based on the formulated training objectives. At this design stage, the researcher plans to develop an initial design in the form of a tool that will be developed to train the limbs.

The development stage is a stage that realizes a previous stage in the form of a blue-print or design that was previously planned to be a concrete tool. At this stage the researcher will make a blue-print of the form of loading equipment that will be used to train limbs in water polo from the previous form of loading equipment that has been made at the design stage equipped with instructions for use, the usefulness of the tool and others.

At this implementation stage, what researchers will do is to implement real numbers to implement the learning system that is being created. Then everything that has been developed and made in such a way according to its function can be implemented or executed. Researchers will conduct field trials of the form of a water back spider (wbs) based loading tool that has been

made to see if the tool can be used directly by water polo players in the loading training program.

Evaluation is the last stage in this research, so there is a process to see whether the tool being designed is successfully used, according to its usefulness or not. In the evaluation stage, it can be done at the previous four stages, but the evaluation that occurs at the previous four stages is called formative evaluation, because it aims for revision needs. Researchers will conduct expert validation tests for water back spider (wbs) based loading tools that have been made before, to assess whether the tools that have been made can be used to train the limbs of water polo players.

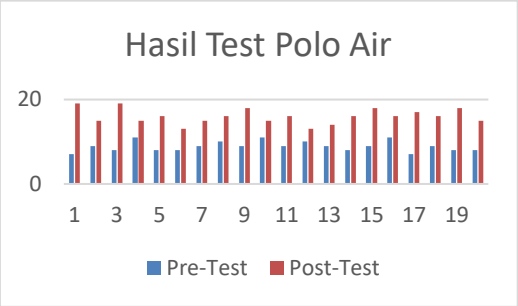
In this study, an instrument effectiveness test was carried out which used a questionnaire, this questionnaire was then filled in by athletes who had used the water back spider tool, with the results of the validity and reliability of the instrument athletes could assess the tools that had been created.

Table 1 Validity & Reability Results

Multiple Choice Question Items	**Criteria**
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	Valid

Research with effectiveness test samples involved 20 athletes. The pre-test was given before using the water back spider tool, after which the athlete was given several types of exercises to train jumps and also shots using the water back spider tool. After the training session is complete, 20 athletes who were previously given the treatment are tested again. The data results from using the water back spider tools are presented in the following table:

Figure 2 Grafic Pre Test & Post Test



The next step is to analyze using an independent t-test with a significance level of 0.05.

	Test	N	Mean	Std. Deviation	Std. Error Mean
Hasil Uji Efekti-vitas *Water Back Spider*	Pre Test	20	8.90	1.210	.270
	Post Test	20	16.00	1.747	.391

Table 1 Uji-t Independen

t-test for Equality of Means

Significance One Sided p	Mean Difference	Std. Error Difference
<.001	-7.100	.475
<.001	-7.100	.475

The pre-test mean was 8.90 and the post-test mean was 16.00 with a standard deviation of 1.210 and 1.747. The t-test table with a significance level of 0.05 has a Sig. (2-tailed) 0.001. The p-value result of Sig. (2 - Sided) <0.05, then the water back spider (WBS) based loading tool can significantly improve jumping and shooting results.

CONCLUSION

This water back spider-based loading tool was developed in the ADDIE model development process which has five steps. Analyze, Design, Development, Implementation and Evaluation. This tool is for water polo athletes over 16 years old and is focused on loading exercises, which function to train leg muscles. After going through several stages in the ADDIE model, this proves that the water back spider (WBS) based loading tool created is an effective effort to improve the results of jumps and shots in water polo.

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