The "Fahombo Batu" High Jump Training Model for Students Ages 13-15

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Abstract: The study aimed to produce a high jump training model for students ages 13-15. The study used the research and development (R&D) method from Borg and Gall. The subjects of this study were 30 junior high school students in North Nias Island. Data collection techniques were carried out by observation, documentation, interviews, and tests. Data analysis was done qualitatively and quantitatively. Model development done through limited trials, extensive trials and effectiveness tests. The results of the study were: (1) the high jump training model can be carried out and applied to students aged 13-15 in the stone jumping process; and (2) the high jump training model with stone jumping was more effective and efficient to improve students' high jump skills so that students were motivated to practice.
Keywords: training model, high jump, stone jumping

INTRODUCTION

Indonesia is a multicultural country with various tribes, religions and languages. Every society or community usually tends to have different culture that is unique, proud and valuable for their ethnic group. All tribes naturally want their cultural elements to be preserved from generation to generation. Therefore, various forms of cultural practices are carried out to preserve this culture. This practice then becomes a tradition that will be maintained and developed. This tradition becomes a tool of hereditary habits carried on by a community.

Each tribe has its way of demonstrating its culture. One example of it can be seen in traditional sports in each region. Many traditional sports are carried out as competitions where elements of artistic activity are presented in the competition. This in accordance to quote by Omelchenko et al., (2020), “each tribe and religion has its own way of expressing its own culture, one of which is reflected in the traditional sports that live and develop in each region”.

One of traditional sports originating from North Sumatra Province, precisely from Nias Island is the hombo batu or fahombo (stone jumping) tradition. Stone jumping helps preserving Nias Island culture. Unsurprisingly this tradition is developed—in addition as an ancestor’s cultural tradition that is guarded, it is at the same time become a tourist attraction. The stone jumping

attraction is expected to be one of the breeding efforts in athletics with the type of high jump sport. The high jump is an athletics sport where the high jump athlete must jump as high as he/she over the bar without any help of tools. This explanation is deepened in Ebrahimi and Hosseini's quote, (2021), "*high jump is a type of athletic sport where the high jump athlete must jump as high as possible to cross the bar without the aid of tools*". Although stone jumping tradition and high jump sport different in purpose, this culture originating from Nias Island is expected to be the forerunner for the development of prospective high jump athletes.

The *Hombo Batu* or *Fahombo* (stone jumping) tradition has two very important values, they are: the value of motor skills and the value of socio-cultural skills (Bantors Sihombing & Halawa, 2021). Basically, the style used and the purpose of hombo batu or stone jumping and high jump sport are the same. The only difference is the target to jump. The stone jumping aims to be able to make a maximum jump with the target to jump is a stone tower as high as 2 meters. Judging from the stone jumping rules, the jumper must do repulsion with one leg. Meanwhile, the purpose of the high jump sport is for the jumper to try to raise his body's center of gravity as high as possible and try to pass the bar without touching it.

The stone jumping movement is a series of movements to lift the body upwards starting from several processes, which are: running, taking off, leaping, and landing. If analyzed, the series of stone jumping movements are similar to the techniques performed in the high jump sport and long jump sport events in the Athletics sports, consisting of elements: approach (initial phase), take off, flight/ bar clearance (main phase), and landing (final phase).

When jumping, the body will move from one point to another. In initial phase, the jumper is ready to jump, the feet will be slightly tiptoed. In this tiptoe position the fulcrum (weight point) is at the end of the feet to jump. When landing, the body rests on both feet. From the initial phase of the jump until the foot lands, it will form a semicircular trajectory (in physics theory this trajectory is called parabolic motion). Based on research studies it was found that the elevation angle of the jump in the stone jumping of 55,220 affects the high jump (Gea, 2017). Karanggulimu studied parabolic motion using PhET (Projectile Motion) simulations and found that changes in elevation angle affect the object's trajectory, the object's farthest distance, the object's highest point, and the time it falls (Karanggulimu et al., 2017).

The physical condition of a jumper, of course, must have general fitness, that is physical endurance which is marked by good cardiorespiratory quality in jumpers and several fitness skill

abilities such as speed, flexibility, eye-foot coordination and leg muscle power (Bantors Sihombing & Halawa, 2021; Refieter, 2012).

But the reality in the field, it is inversely proportional to the skills of students in doing high jump sport. From several students observed, it showed that the basic high jump technique trainings only focused on jumping over stone, without paying attention to mastery of jumping techniques and landing techniques. In addition to technical mastery in the high jump is influenced by several factors, such as physical ability, seriousness in performing, and group cohesiveness. By modifying the media in learning the high jump material, it is hoped that students will be more motivated and more enthusiastic in doing the high jump. This certainly has a good impact on the development of student abilities. The purpose of this training model is to provide a variety of exercises in improving high jump skills through stone jumping.

METHOD

The method of this study is research and development (R&D) from Borg and Gall, which aimed to improve students' high jump skills by using stone jumping training model. The target of this study were students aged 13-15 at North Nias Island Middle School. The R&D from Borg and Gall is followed this timeline: (a) Needs analysis, (b) Model development planning, (c) Training model design development, (d) Expert validation and model revision, (e) Small group trial and revision. (f) Field trial and revision. Data analysis techniques used qualitative and quantitative analysis.

RESULTS

Based on the data collected from each expert, there are several product designs that need to be revised before carry out small group trial and large group trial. The product revision is intended to make the product design that is developed perfect.

After conducting small group trials and revising the product development stage of the high jump training model with stone jumping for students ages 13-15, field trial and the third stage were revised. Therefore, to find the effectiveness of the product, it is necessary to do t-test. But before doing the data analysis, it is necessary to test the normality of pretest and posttest of high jump training using the Liliefors test ($\alpha = 0.05$). The summary of the normality test result was shown in the table below:

Table 1. Normality test

Group	N	Sig.	α	Result
1	30	0.000	0.05	Normal
2	30	0.161	0.114	Normal

The results of the Kolmogorov-Smirnov normality test showed a significance value of more than 0.05. Thus, it can be concluded that the data of the control group and the experimental group are normally distributed.

Before conducting further data analysis, it is necessary to test the effectiveness of the high jump training model at students ages 13-15 using the t-test with SPSS ver. 25 in the summary table below:

Table 2. Effectiveness test

		t	Df	Sig.(2-tailed)
Pair	control-experiment	43,794	29	.000

Based on the output table above, it can be seen that the results obtained were t-count = 43.794, df = 29, and p-value 0.000 < 0.05. Therefore, it can be concluded that there was a significant difference in the results of high jump training in the control and experimental groups. Thus, it can be stated that the high jump training model with stone jumping for students ages 13-15 years was effective to be used to improve students high jump skills in athletics.

DISCUSSION

Based on need analysis, the high jump training process at school with the help of stone jumping media had been implemented, but the findings said that the teacher/coach only taught direct high jump without any introduction to the basic of high jump movements. In general, since stone jumping is part of the daily tradition, every 13-15-year-old is able to jump as a form of maturity. This of course strengthens this study to develop a high jump training model adapted from stone jumping so that the students ages 13-15 can be more focused to do the high jump.

High jump training model will be maximized if there is a modification of the tool in the high jump training process, such as using stone jump. As the result of research by Anggraini, et al, that practicing using modification tools can improve student high jump results (Anggraini & Musa, 2020). Therefore, it is important to have assistive media to be able to do high jump movements, one of which is stone jumping.

When doing high jump, the most important thing is when landing. As stated by Rao (2014), that "*The most important and critical phases of the jump are the approach run and takeoff, the bar clearance is a direct consequence from previous phases*" (Rao et al., 2014). The result of this study was also supported by Masturah's research result which said that there was significant difference in high jump learning model of flops before and after the treatment of the flop model high jump training (Masturah, 2019). So, the high jump training model can be used effectively and efficiently.

Students ages 13-15 are included in the category of junior high school students. In PE curriculum, they are required to be able to do high jump activities well. Using the stone jumping training model had been proven to be successful in improving high jump skills, as stated by Nugroho that the use of assistive devices can used as an effective and efficient learning resource so that students easily learn something and do not get bored easily (Nugroho & Agustiyanto, 2017). Thus, the high jump training model with stone jumping can successfully improve high jump skills for students ages 13-15.

CONCLUSION

After analyzing and discussing the data, it can be concluded that the hypothesis was proven where the high jump training model with stone jumping for students ages 13-15 was able to help the coach or teacher and of course the athletes (students) to improve their high jump skills. Thus, the use of high jump training with stone jumping can be used effectively and efficiently.

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