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DEVELOPMENT OF PROTOTYPE: A SWINGING TRAINING AID TOOL "SWING TRAINER" ON WOODBALL MALE ATHLETES

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Abstract:
This research aims at (1) generating a prototype design aid tools that can be used to swing in swinging training for beginner and advanced level of woodball male athletes, (2) testing the design of swinging training aid tools whether or not be effectively used to improve the skills of athletes' swinging motion. Here are steps of developmetal procedures: (1) research and information collection, (2) planning, (3) develop preliminary form of product, (4) preliminary field testing (5) main product revision, (6) main field testing by 6 athletes, and (7) operational product revision, (8) operational field testing by 10 athletes, (9) final product revision, (10) dissemination and implementation. The result of this research is a product and this final product is a training aid tool of swinging training which is so-called "swing trainer" that can be used for swinging practice. The tool's validation result is obtained from an assessment rubric from woodball experts and tools experts with the score 92 (exact). Meanwhile, the efectiveness of this prototype was obtained from an assessment result by woodball experts in a small scale experiment and a large scale experiment. From those experiments, the average score of athletes performed that most athletes can do the whole swing motion and there are 16 athletes clarified that the training aid tool "swing trainer" is an effective tool to be used in swinging practice.

Keywords: swing trainer, research and development, woodball

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1. Introduction

Woodball is kind of sport played with a wooden mallet and wooden balls that has lot of similarities to putting in golf. The goal of the sport is very simple, to strike the wooden balls through the small gates whose width is slightly larger than the ball. Woodball game is almost similar to the game of golf, but the holes (hole) is replaced by a small wicket (gate) and when balls are hit with a mallet woodball, the ball will roll, being a golf ball when the ball is struck almost a whole will soar. (Kriswantoro, 2016).

The basic motion of woodball game is a swinging motion. Swinging motion is basically like a pendular movement or a very simple arch. Swinging motion is used on all strokes from the tee (early starting hit), to the strokes in a gate area (the goal). The fundamental aspects of the woodball swing still the same, but the length and the normal swing speed is different depending on the strokes used by the athletes.

The most important concept in the swinging techniques in woodball is when the athlete can direct the ball through a good swing motion. In woodball, the ball is not moving before being hitted, so the main goal is to develop consistent swings. One technique to develop a consistent swing is to imagine when the swing is at the wheel imagine sloping. The ideal swing will follow a path that is constantly spinning along a sloping field.

The observation conducted by the researcher in the Mini Golf Course of Unnes toward some beginners and advanced athletes at Woodball Students Club of Unnes showed that there are still many errors when students practice a swinging motion. Errors found in research include positions in swinging preparation (setup), mallet swung backward before hitting (backswing) and after the mallet head comes in contact point with the ball (follow through). The results of the observations concluded that an aid tool is needed to facilitate students easier to practice swinging motion as well as a way to faster muscle memory because the motion is already in the field of the correct swing.

The researcher found problems to follow up dealing with this study. Based on the observations, the problems are as follows: there are as many as 13 regional Indonesian Woodball Associations in Central Java don't have a standard swing trainer. The swinging training aid tool used by the regional woodball association in Central Java is only a simple structure that uses two sticks that were put down on the ground / floor parallel to the direction of the body which is less appropriate for the athletes. Central Java Regional Woodball Association (IWbA) did not have a plan to develop a training aid tool to swing practice, so that the woodball athletes in Central Java have difficulties in mastering the correct swing technique. According to the explanation

above, the researcher would like to develop a standard swinging training aid tool for woodball athletes which is modified from a standard golf swing aids (PlaneSWING®), so that this developed training aid would have the same functions with the golf swing trainer and tend to have more economical price.

2. Research Method

In this study, the researcher conducted a research and development method that would bring about a swinging training aid tool for woodbal athletes as the product of the study. The swinging training aid tool then would be so-called woodball swing trainer. This woodball swing trainer aims at facilitating woodball athletes especially male athletes in swinging motion practice on woodball. The materials used in the manufacture of swinging tools are stainless steel pipe, steel plate, door hinges, mallet, heat shrink tube, rubber mats, elastic straps, and stainless balls. All the developmental research steps were done based on R&D method.

The procedure used is the research and information collection, data collection, product design, design validation, design revisions, product testing, product revision, and trial usage. The design trial conducted through two phases, namely a small group test conducted in Pengcab IWbA Pengcab IWbA district of Jepara and Kudus. The subject of research which are involved in the study were athletes woodball as many as 16 athletes (beginners and advanced), gymnastic coach of five (5) members, experts / specialists woodball 2 (two) people, experts woodball supporters of two (2) people, as well as experts / expert equipment as much as two (2) people. The data used in this study is qualitative data and quantitative data. The instruments used in product development are the interview, observation, documentation, and assessment rubrics. This study used a qualitative approach and methods development models. Examination of authenticity of data need to be done by the researchers so that data obtained accountable legitimacy, in ways that can be done to determine the validity of the data results of the study are as follows: (1) Perseverance Observations, (2) Triangulation, (3) Examination peers and (4) Members Checking Through discussion.

3. Results

3.1 Product Description Tool Swing "Swing Trainer"

The specification of the product development tools swinging "Swing Trainer" can be seen from the following table:

Table 1: Product Development Aid Model Swing "Swing Trainer"

No	Developmental Product
1	The swing plane is made from stainless steel with the diameter is 1.14 inch and the thickness is 0.8 mm.
2	It empowers surrounding societies (artisan blacksmiths and welders).
3	It uses local materials.
4	It is made manually.
5	It can be raised and lowered by three buffers.
6	The shape of metal frame layer is round.
7	It has a small layer at the front side.
8	Have a description of the manual use of the product (book and cd manual).
9	Easily rectified if there is damage.
10	Equipment is more durable, because they can choose their own quality raw materials.
11	Operation is the same, that is used to perform swinging motion exercises.
12	Maintenance of the same, that should not be left too long exposed to sunlight.
13	Prices are affordable, that is Rp. 2,000,000. ($ 150).

(Source: Research Findings, 2016)

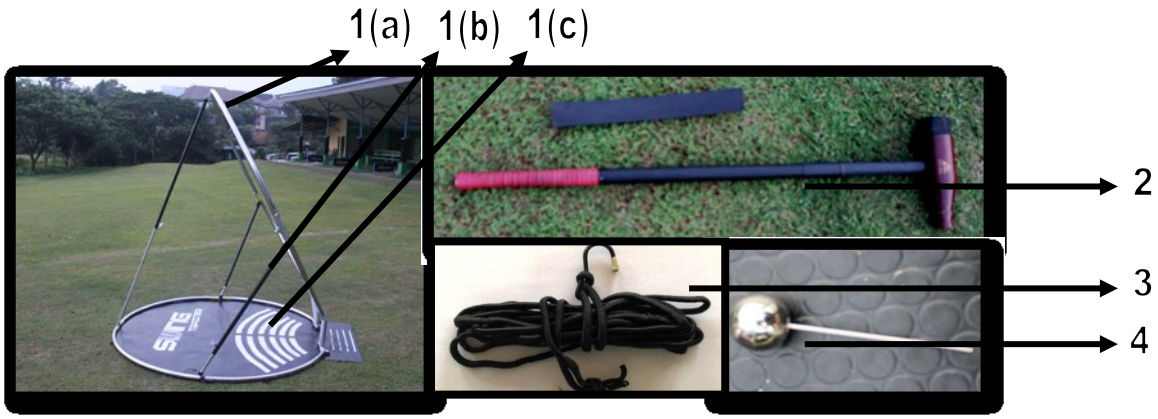

Figure 1: Part tool "swing trainer

Product development model tool "swing trainer" has four (4) main parts, among others:

A. Tools swinging named "Swing Trainer" consist of three (3) parts, namely:
(a) Section 1 (a) is part of the main tool called "swing plane", circular iron pipe, consisting of stainless steel pipe with a diameter of 1.14 inch (3 cm) and has a thickness of 0.8 mm, diameter iron pipe 5/8 inch thickness of 0.8 mm. Circular with a diameter of 180 cm. At the bottom there is a buffer with a height of 20 cm. On the right side there is a circular pipe door hinge that can be folded and straightens, while at the top of the bottom circle of metal installed shock. At the top of the rear mounted iron plate 7 cm long with a thickness of 0.4 cm. In the circle pipe is installed numbers 1-12 are placed in accordance with the formation of the clock and facing toward the athletes.

(b) Section 2 (two) is the center of the circle, is there are three iron buffer with the name "buffer 1", the buffer 2 and buffer 3 '. The stand 1 is the main buffer is placed on the top of the swing plane and the back of the metal frame below (metal frame). buffer 2 and 3 are placed right and left swing plane and the right part of the left frame under the iron (metal frame). buffer 1 consists of two iron pipe connection with an overall length of 220 cm, while the buffer 2 and 3 have an overall length 130 cm. the stand has two types of iron pipe marked with black on top and silver on the bottom. at each end of the buffer is attached an iron plate which gave a hole as a hook between the swing plane with a metal frame. at the center of the black iron installed bolt size 12 mm making it easier to raise and lower swinging aids.

(c) Section 3 (three) is the bottom, consists of a metal frame under the named "metal frame", pedestal footing with the name "mat" and headrests mallet with the name "little mat". Circular metal frame made of metal pipe with a thickness of 1.14 inch with a diameter of 150 cm. At the base are added rubber carpet (mat) circular diameter of 150 cm. On the mat there is a white line radial to determine the position of the footrests. The front is installed mattress pad small 50 cm x 30 cm on board mallet head.

B. Mallet

Mallet woodball length of 90 cm and weighs 900 grams. Mallet is the main tool to perform a series of swinging motion. at (shaft) stick by a layer of heat shrink to minimize friction with iron circles for doing the exercises.

C. Elastic Cord

Elastic cord with a diameter of 2 mm length of 130 cm. On both ends of the rope installed clip. Elastic cord plug in the pipe loop that exists between the numbers 3 and 9 in accordance height athletes

D. Correction ball

Corrections ball made of stainless steel spherical with a diameter of 3 cm. At the lower end of the iron paired diameter of 2 mm and a length of 15 cm. Ball correction in place at the end of the mallet that has been given into the hole with a 5 cm

3.2 Results Validation Experts Aid Products Swing "Swing Trainer"

Products produced in validation by some experts, the two experts / specialists woodball coming from coach woodball, namely Bambang Sulistiyo, S. Pd, and Drs. Kriswantoro, M. Pd. as well as two experts / specialists woodball equipment that Drs. Sutarno and

Ika Yulianingsih, S. Pd, M. Pd. Here are the results of the evaluation sheet or questionnaire filling of specialists / experts woodball and specialists / experts woodball equipment:

Table 2: Results of Questionnaire Completion of Specialist / Expert Woodball and Specialist / Expert Equipment Woodball

	Criteria	Rated aspect	Aspects Rating			
			A1	**A2**	**A3**	**A4**
1	Aspects of Originality	Is the work of researchers.	15	15	15	15
		Has a distinguishing feature compared with similar sports technology (originality).	5	5	5	4
2	Aspect of advantage Development Results	Has an advantage in terms of development results.	8	9	9	8
		Have advantages in terms of materials manufacture of products.	4	4	4	4
		Has an advantage in terms of the operation tools "swing trainer".	4	5	4	4
		Has an advantage in terms of maintenance tools "swing trainer".	4	5	4	4
3	Benefit aspects	Has a high efficiency for a wide audience in support of sports coaching woodball in Central Java.	15	15	15	15
4	Economic aspects	Having a positive power of the application of technology.	5	5	4	5
		Prototype development tool "swing trainer" can give rise to any other industry (Multiplayer Effect).	4	4	4	5
		Has potential commercialization and market reach	8	9	8	10
5	Security Aspects	Have a good level of security for the men athletes woodball beginner level.	5	5	5	4
		Have a good level of security for the men's athletes woodball advanced level.	5	5	5	4
6	Comfort aspect	Have a good level of comfort for the men athletes woodball beginner level.	5	5	4	5
		Have a good level of comfort for the men's athletes woodball advanced level.	5	5	5	4
Total score			92	96	91	91

(Source: Research Findings, 2016)

Information:

A1: Expert Woodball 1, A2: Expert Woodball 2, A3: Expert Equipment 1, A4: Expert Equipment 2

The results of testing the effectiveness of Aid Swing "Swing Trainer"

The results obtained by researchers in large-scale trials and small scale test is as follows:

a. A total of seven athletes beginner states:

The products can be used to exercise for the beginners athlete, the product is safe and comfortable to use by beginners athletes, and the product already has a standard size.

b. A total of nine athletes advanced states:

The products can be used to exercise for the advances athlete, the product is safe and comfortable to use by advanced athletes, the product already has a standard size, and products can be used to improve the skills of swinging motion.

After the trial is completed, woodball experts also conducted an assessment of the athlete. The following table shows athlete's ratings.

Table 4.15: Comparison of assessment before and after using the tools swing on a small scale test

Before using the tool	Aspects Basic Motion Swing	Before using the tool
58%	Set up	83%
58%	Back swing	88%
63%	Down swing	83%
63%	Impact	83%
67%	Follow through	88%
62%	Average	85%

(Source: Research Findings)

Table 4.15: Comparison of assessment before and after using the tools swing on a wide scale test

Sebelum menggunakan alat	Aspek Aspek Gerak Dasar Mengayun	Setelah menggunakan alat
55%	Set up	83%
68%	Back swing	93%
60%	Down swing	83%
68%	Impact	93%
63%	Follow through	90%
63%	Rata Rata	88%

(Source: Research Findings)

4. Discussion

This study is a product development tools swinging from the research development of tools existing swinging.

A. Swing Trainer Tool can be used for training for Men's Woodball athletes Beginner and advanced

Data analysis and interpretation of data obtained through the activities carried out by researchers carefully analyzed all the data that has been collected, the results of interviews, observation, and documentation. Based on the analysis of research data obtained data about "*swinging tools can be used for training for men's woodball athletes beginner and advanced level*". In summary, data from interviews can be classified as follows:

On the small scale test 6 (six) athlete swing states that development tools can be used to practice a swinging motion. A total of 6 (six) athlete swinging states that tools already secure, convenient and standards. A total of five trainers and 4 experts declare that tools can be used for practice swinging motion. In the wide-scale test of 10 athletes swinging states that development tools can be used to practice a rocking motion. A total of 10 athletes swinging states that tools already secure, convenient and standards. A total of five trainers and 4 experts declare that tools can be used for practice swinging motion.

B. Tools "Swing Trainer" effectively used to improve the skills of swinging movement for men's athlete's woodball beginners and advanced

Data analysis and interpretation of data obtained through the activities carried out by researchers carefully analyzed all the data that has been collected, the results of interviews, observation, and documentation. Based on the analysis of research data obtained data about "*swing trainer tool can improve motor skills for men's athletes woodball swinging beginners and advanced level*". In summary, data from interviews can be classified as follows:

On the small scale test as much as 6 (six) athlete swing states that effective development tools to improve their skills with the ball swinging motion. There is an increase of 23% effectiveness. A total of 6 (six) athletes swing states that tools already secure, convenient and standards. A total of 5 (five) trainers and 4 (four) experts claim that swing aids effectively to exercise a rocking motion. In the wide-scale test of 10 athlete swing states that effective development tools to improve their skills with the ball swinging motion. There is an increase of 23% effectiveness. A total of 10 athletes swing states that tools already secure, convenient and standards. A total of 5 (five) trainers and 4 (four) experts claim that swing aids effectively to exercise a swinging motion.

5. Conclusion

The process of model development tool that has gone through several stages, this research resulted in a swinging aid products, named "Swing Trainer". Based on the results of the discussion in this thesis, it can be concluded that: (1) Product model of development tools swinging "Swing Trainer" can be used as a training tool for men's athletes woodball swinging beginners and advanced. (2) Product development model swinging tools "Swing Trainer" effectively used to improve the skills of swinging movement for men's athletes woodball beginners and advanced.

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