The Development of Topc Soccer for Practice Passing and Control Techniques for 11 to 12 Years-old Children

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Abstract: The purpose of this research is to develop Topc Soccer tool for practice passing and control techniques on soccer sport 11 to 12 years-old children. This study was a Research and Development research. The development of Topc Soccer tool for children aged 11-12 years was carried out in several steps: (1) preliminary study, (2) manufacturing of products, (3) expert validation and revision, (4) product testing; small-scale / revised trials and large-scale / revised trials, and (6) final products. Small-scale and large-scale evaluation were conducted at the SSO of the Real Madrid Foundation UNY. Data writing techniques in this study are basic instruments. The data analysis technique used is descriptive qualitative and descriptive quantitative. The results of this study are developing Topc Soccer tool for practice passing and control techniques on soccer sport 11 to 12 years-old children which is equipped with progamming box, bag and usage guide book. Topc Soccer which was developed is suitable to be used as a training instrument in soccer games, it is based on expert judgment, media experts as much as 88% belong to the very proper category and 87% material experts are in the very proper category. Based on the small group evaluation, the percentage was 79% included in the category of proper and large group evaluation of 86% included in the very proper category.

1 INTRODUCTION

Soccer game is challenging, particularly on the physical and mental sides. Players must make moves that are highly skilled in sharing situations in the field under limited time, physical and mental drainage while facing opponents. Each player must put out his best ability to display the good game and good team performances in a match. In this case the coach has the dominant role to escort the players to reach their best performance. In addition to physical and mental, there are more basic things that must be possessed by a soccer player. The basic techniques soccer players need to have are kicking, stopping, dribbling, heading, tackling, and throwing in and goal keeping (Sucipto, 2000).

A real soccer game is a team game. Despite high-skilled player's domination in certain conditions, soccer players must depend on each other team members to create beautiful games and make quick and right decisions. To succeed in teamwork, one of the most important techniques that must be mastered and occupied are passing and controlling skills. Why are these passing and ball controlling skills crucial? Passing and receiving the ball skills form a vital connection that links the eleven players into a unit that functions better than its parts alone (Luxbacher, 1997). The accuracy, pace and timing of ball releases are an important parts of a successful combination of ball passes. Players must be able to pass and control the ball well post-ball passing by another team player. A poor skill of passing and receiving a ball will result in losing the ball passed by another player and missing the opportunity to create goals.

In an Indonesian sports science media research journal by Anam mentions that the technique of kicking a ball is the basis in playing soccer, because a good team consists of the players mastered the technique of well ball kicking (Anam, 2013). Kicking is the most important part, a soccer player who cannot kick the ball properly is unlikely to be a good soccer player. This is due to almost every team always gets a victory (scoring goals) because of the kicks. Speaking of kicking the ball (passing) will not be separated from the technique of stopping the ball, one of the factors that determines the success of a player passing is the ability of the player when he

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first touches the ball. Based on some of the above explanations, the authors conclude that the basic technical ability to kick and stop the ball has a very vital role in soccer.

Indonesian soccer team is one of the teams with poor passing accuracy. A research conducted by Ikhsan shows that the level of passing accuracy of local Indonesian soccer professional athletes of league 1 Indonesia 2017 was in the "very poor" category by 3.70% (4 athletes), the "poor" category by 30.55% (33 athletes), the "moderate" category by 41.66% (45 athletes), the "good" category by 12 , 96% (14 athletes), and the category of "very good" at 11.11% (12 athletes) (Ikhsan, 2018). Retracted from the data, it can be seen that the level one soccer athletes in Indonesia are still dominated by athletes with very poor, poor, and moderate passing accuracy with a percentage of 75.91%, while the good and very good categories are only 24.07%. From these data the authors hypothesize to improve the condition requires new things to make the process of training of the athlete candidates (young age) to be better in the future.

Young age is a potential period in physical development and growth. In the book Diktat Perkembangan Motorik, the age of 11-14 years is a period of dramatic growth and development occur. At this time, exercise aimed to increase muscle strength and pulmonary fitness. Endurance exercises can increase oxygen input by 33% or more. Variation of skill trainings as well as the right techniques began to be trained on athletes and began to be prepared to follow heavier trainings (Sukamti, 2011). According to Sukadiyanto, the characteristics regarding the purpose of training and readiness of children at the age of 11 to 13 years are enrichment of movement skills, refinement of techniques and preparation to improve trainings, and at the age of 14 to 18 years namely regarding training improvements, entering special training in accordance with the sport involved and the frequency of competition must be increased. Whereas according to (Scheunemann, 2014) there are four age groups of training in football namely the beginner level (Fun Phase) which is 5-8 years, the basic level (Foundation) is 9-12 years, the intermediate level (Formative Phase) which is 13-14 years and advanced level (Final Youth) that is 15-20 years.

The world of sports has become a part of the world affected by technological advancement. In the field of achievement, the coach certainly plays an important participant in accomplish the maximum achievement of an athlete, player or a team. Coaches who are adept at collaborating between science and technology will become more valuable and popular trainers. Supports in science and technology are mandatory in order to manifest the achievement, as stated by Minister for Youth and Sports Affairs period 2013-2014 Roy Suryo in "Teknologi Pemicu Prestasi Olahraga Indonesia" seminar that sports develop rapidly so that technology is required for the improvement of the athletes' skills. Developments occur in all sports sectors, as well as a manifestation of education, recreation, and achievement. Intensive and massive use of technology is a necessity in improve sports performance. "Every stakeholder, without exception, must understand the role of sports technology and be able to use it. This technology must be one of the main components in the national sports system, which must be managed seriously (kemenpora.go.id).

What is happening in the fields now is the lack of use of simple technology as a medium of training carried out by some trainers. Most trainers still rely too much on the training models of the previous trainers. Whereas today technology has become an important part as a medium for training in developed countries, one of which is as a tool for passing training. Other facts what happens at this time of SSB in Yogyakarta even in Indonesia, there is no utilization of technology used for passing training.

Based on the observations of researchers during practical work at a soccer school in Yogyakarta and being an assistant coach at SSO Real Madrid Yogyakarta, shows that the basic technical abilities of students in playing soccer are still poor, particularly in terms of passing accuracy and ball controlling which are ultimately crucial to support the quality of students in the game. Many found beginner students still have difficulty in learning passing techniques and controlling the ball well. Many students are not careful in controlling the ball and are inaccurate when passing or kicking to the goal.

As time goes by, coaches in a sport are required to keep going forward and innovating. Including soccer, not a few of the world's top coaches collaborate their knowledge with technology. Technology are able to assist the performance of the coaches themselves in improving player performance. From observations and interviews conducted by researchers at 4 SSBs in Yogyakarta namely SSO Real Madrid UNY, SSB Bathuretno (Bantul), SSB Matra (Sleman), and SSB Putri Binangun (Kulonprogo), it is obtained that the trainers are aware of the significance of basic technical skills particularly in passing in a soccer

game. The coach also has the notion that the players' skills will be improved if they have commitment to do extra independent training besides their main trainings, but until now there is no training aid that can be used by players to facilitate technical training that supports individual training to be improved in training at SSB or outside SSB.

Based on the above background the researchers hypothesize that the basic technical skills in soccer that support the quality of the technique, particularly passing and controlling, are highly required in the game of soccer. One of the tools potentially used for technical training is Toc ball. Toc ball is a new breakthrough tool in soccer, this tool is used to practice basic techniques of passing and controlling the ball. This tool allows players to get more touch of the ball in a short time, practice the accuracy of the position of the foot when kicking the ball, and improve the quality of controlling and passing with both players' feet (tocball.com). This tool is sold widely in the market with prices ranging from 1.5 million to 2 million Rupiah, in one of the buying and selling sites is sold at € 119.95 or approximately 1.6 million Rupiah (tweedehands.net). Toc ball tools are relatively expensive for the lower middle class, and also these tools are not yet available in the domestic market. In addition to the relatively expensive price of a Toc ball tool, it still has some shortcomings, namely the absence of a manual book and product bags, and the absence of a tool component that can calculate automatically so that trainings can be more measurable. Based on these, the authors attempt to develop this tool in Indonesia under the name of Topc Soccer tool (to passing to control Soccer) and expected that this tool will be useful for the improvement of soccer in Indonesia.

2 RESEARCH METHOD

2.1 Type of Research

The research method used is Research and Development method. The steps of this research are adapted from Sugiyono's research steps which are adjusted to the conditions in the field. The instruments applied are interviews, observations, and questionnaire scales rating.

2.2 Research Time and Place

This research conducted on July 25 to 30, 2019 which took place at the FIK UNY Soccer Field.

2.3 Research Target/Subject

This development research classifies the test subjects into two, namely:

2.3.1 Expert trial subject

(a) *Material expert:* the material experts referred are lecturers, coaches or soccer experts whose roles are to determine whether the development of Topc Soccer is in accordance with the level of depth of the material and the authenticity of the material used or not.

(b) *Media expert:* the referred media expert is the expert who is used to handling learning and training media.

2.3.2 Subjects of Product Testing and Usage

The research subjects in the development of the Topc Soccer tool were one material expert, one media expert, 4 trainers and 10 students for small group trials; 8 trainers and 22 students for large group tests. The research conducted at SSO Real Madrid Foundation UNY.

The technique of determining the subject of trials in this development research is the purposive sampling method. Purposive sampling is a sampling technique with certain considerations (Sugiyono, 2010). The considerations used were coaches and athletes at SSO Real Madrid Foundation UNY.

2.4 Research Instruments and Data Collection Techniques

Instrument is a tool for measuring, observing which produces quantitative data (Sugiyono, 2015). The instrument for collecting data in this development research is to use a questionnaire.

Data collected on media development are in the form of quantitative and qualitative data. Qualitative data obtained from the assessment of the quality of media products can be used for the benefit of product quality development. While quantitative data are obtained from scores of the questionnaires filled out by material experts, media experts, athletes and trainers.

2.4.1 Data from material expert

In the form of product quality in terms of the content and design aspects of the development of the Topc Soccer tool for coaches and athletes who are in the

process of improvement in soccer schools in Yogyakarta.

2.4.2 Data from media expert

In the form of quality display, color, certain content form in the developed product.

2.4.3 Data from Trainers and Athletes

In the form of product quality in terms of the interest of coaches and athletes. This data is used to analyze the interest and accuracy of the material provided to soccer school coaches, as well as a reference of the developer to improve the quality of the development of the Topc Soccer tool for training in passing and controlling techniques in soccer for children aged 11-12 years who are in development process.

2.5 Data Analysis Technique

Data obtained through testing activities are classified into two, namely quantitative data and qualitative data. Quantitative data in the form of assessment, collected through a questionnaire or questionnaire. While the qualitative data in the form of suggestions stated by media expert and athletes then collected for the improvement of the Topc Soccer tool.

Data analysis techniques are ways to find out the results of research conducted. Data analysis includes all activities clarifying, analyzing, using and drawing conclusions from all data collected in action. Once the data is collected, the data will be processed. The data analysis technique used in this research is a quantitative analysis technique that is valued using numbers. Percentage is intended to find out the status of one entity that is converted and presented as a percentage. The formula for calculating feasibility according to (Sugiyono, 2013) is as follows.

$$\text{Formula} = \frac{AS}{CS} \quad (1)$$

Description
AS: Assessment Score
CS: Criteria/ideal score

The results of subsequent data calculations are made in the form of a percentage multiplied by 100%. The percentage results are used to provide answers to the feasibility of the aspects researched. According to (Arikunto, 2009) there are five categories of feasibility. This scale concerns the range of the percentage number. Maximum expected score is 100% and minimum 0%. The division of feasibility categories according to (Arikunto, 2009) can be seen in Table 1.

Table 1: Feasibility percentage.

Percentage	Feasibility
81%-100%	Very Feasible
61%-80%	Feasible
41%-60%	Moderate
21%-40%	Infeasible
<21%	Very Infeasible

Source: (Arikunto, 2009)

3 RESEARCH AND DISCUSSION RESULTS

3.1 Research Result

The research method used is Research and Development method. The steps of this research are adapted from Sugiyono's research steps which are adjusted to the conditions in the field. The instruments applied are interviews, observations, and questionnaire scales rating.

3.1.1 Material Expert Validation Data

Material expert validation was conducted by Subagyo Irianto, M.Pd. who has expertise in the field of soccer. The assessment done by showing the Topc Soccer product and an assessment sheet in the form of a questionnaire.

The result of the validation of material expert is a total score of 104 from the maximum score of 120 with a percentage of 87%. Thus it can be stated according to the expert, Topc Soccer product material from the material aspects is in the category of "very feasible". There are a number of suggestions given by the material expert, but the trials can be carried out immediately without the second stage of validation.

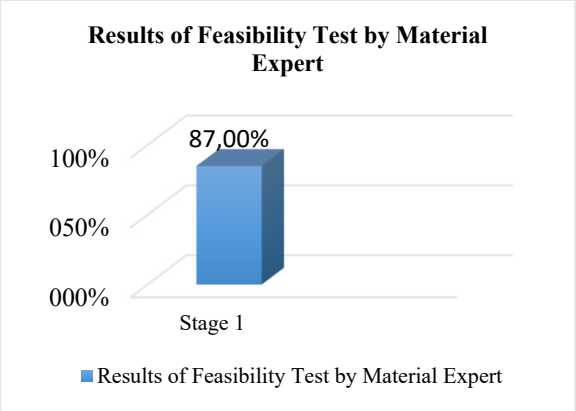

Figure 1: Results of feasibility test by material expert.

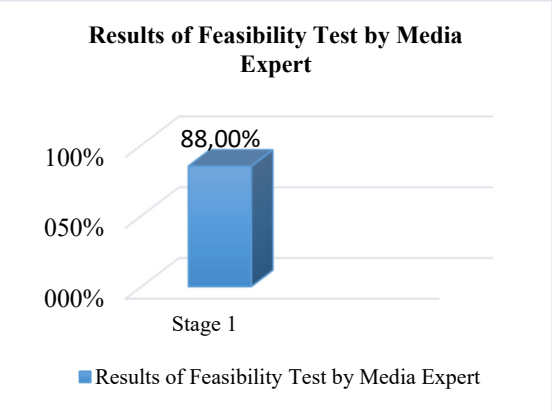

Figure 2: Results of feasibility test by media expert.

3.1.2 Media Expert Validation Data

Media expert validation was carried out by Mr. Nawan Primasoni, M.Or. who has expertise in the field of soccer. The assessment done by showing the Topc Soccer product and an assessment sheet in the form of a questionnaire.

Data from media expert validation was obtained through two stages. The first stage carried out to find out the weaknesses and recommendations for improvement by media expert. In this validation the media expert filled out the questionnaire provided by the researchers. The questionnaire included three aspects of assessment, namely the physical aspects of the product, aspects of product design and aspects of use.

The result of the validation by media expert obtained a total score of 84 from the maximum score of 95 with a percentage of 88%. Thus it can be stated according to media expert Topc Soccer products from the aspect of the media is in the category of "very feasible". There are several suggestions and revisions given by media expert before they could be tested.

From the result of the feasibility analysis based on the result by media expert test above, the diagram form as the following picture:

3.1.3 Small Group Trial Data

A small group trial was conducted on 14 people, consisting of 10 athletes and 4 coaches at UNO's SSO Real Madrid Foundation. The first process was the explanation regarding the purpose of the research conducted. Coaches and athletes also explained about the components in Topc Soccer products that are in accordance with the manual book. Then the researchers gave examples of how to use and how to do exercises with Topc Soccer products and followed by the opportunity for coaches and athletes to try to do exercises using Topc Soccer products. After athletes and trainers' trials of Topc Soccer products, researchers distributed assessment questionnaires for athletes and coaches to assess Topc Soccer products.

In the small group trial assessment of 10 athletes and 4 trainers get a total score of 936 from a maximum score of 1190, with a percentage of 79%. This percentage of Topc Soccer products in small group trial gets it in the category of "feasible", later the Topc Soccer development products for training in passing and controlling techniques in soccer for children aged 11-12 years old that have been made is feasible to be tested on a large scale.

3.1.3 Large Group Trial Data

A large group trial was conducted on 30 people, consisting of 22 athletes and 8 coaches at the UNO SSO Real Madrid Foundation. In a large group trial assessment of 22 athletes and 8 trainers get a total score of 2182 from a maximum score of 2550, with a percentage of 86%. This percentage of Topc

Soccer products in large group trial according to respondents gets it in the category of "very feasible".

3.2 Discussion

The development of Topc Soccer to practice passing and controlling techniques in soccer for children aged 11-12 years designed and produced with the aim to help the users in passing and controlling technical training in soccer. The process of making this product is through research and development procedures. The development phase starts from: (1) preliminary studies, (2) manufacture of products, (3) expert validation and revision, (4) product trials; small-scale trials/revisions and large-scale trials/revisions, and (6) the final product. The development of Topc Soccer is expected to be able to assist the users in practicing passing and control techniques in football, particularly individual training that can be done alone outside the main training at SSB/clubs or when training at SSB/clubs.

The development process is through research and development procedures, some planning, design, and evaluation. After the initial product is produced, it needs to be evaluated to experts through validation and needs to be tested on SSB players. The evaluation phase is carried out by material expert lecturers and media experts. While the research stage is tested with small group trials and large group trials.

Research and development of this tool is the development of Topc Soccer for children aged 11-12 years. The discussion is as follows:

3.2.1 Component

This tool framework uses iron-based materials, the use of iron not only to reduce the production costs but also intended to strengthen the frame and withstand shocks when the tool is used. The component consists of a barbell pad base, slats, a series of balls and a programming box. The barbell pad base frame is designed in a circle and widened to make the tool more stable when used, and the circumference of the corrugated blade is made thicker and reduced in order to reduce vibration when the ball is kicked. The sensors in programming box required for movement detections through passing and the amount of passing that can be done. This sensor is connected to arduino uno in the programming box which functions to provide the training mode that has been designed. This arduino uno functions as the brain of the topc soccer tool, supported by several components such as an infrared sensor that functions as a sensor receiver, an LCD screen used to send test results, and a buzzer as audio to channel sound.

3.2.1 Quality of the Tool

The development of Topc Soccer tool for passing and control techniques for children aged 11-12 years tested 4 times, namely laboratory testing, expert validation, small group trials and large group trials. Overall, this tool is suitable to be used to train the passing and controlling techniques of children aged 11-12 years.

The result of expert validation shows that both media and material are already very feasible to be tested, some of the inputs provided are aspects of the use of materials and some input of tool designs that will be applied. A small trial conducted to see the quality of the development of this tool when it is used. A total of 14 respondents did the training with this tool. After obtaining the desired data, a big trial with 30 respondents was conducted to see the development of this Topc Soccer tool. Small group and large group trials were carried out in FIK UNY's field.

Based on the result of the analysis, it shows that the assessment of media experts and material experts on the development of Topc Soccer tools is in the very feasible category. The assessment of media experts on the development of Topc Soccer with a percentage of 88% is in the very feasible category. There was a revision from the media experts after the first stage of validation was done to increase the strength of the blades, and to add button writing information. Material expert assessment of the development of Topc Soccer with a percentage of 87% is in the very feasible category.

In a small-scale trial, the assessment was carried out by 14 people consisting of 10 athletes and 4 coaches from the SSO Real Madrid Foundation UNY. Data obtained from the result of small-scale trials shows that Topc Soccer product assessment is 79% and in the category of "feasible". From these data it can be interpreted that the Topc Soccer product is worth testing in a large group test.

In a large-scale trial, the assessment was carried out by 30 people consisting of 22 athletes and 8 coaches from the SSO Real Madrid Foundation UNY. Data from the results of large-scale trials that Topc Soccer product rating is 86% and in the category "Very Eligible".

4 CONCLUSIONS

Based on the results of research and development of Topc Soccer to practice passing and controlling techniques for children aged 11-12 years it can be concluded:

The making of the Topc Soccer development product for the passing and controlling techniques practices for children aged 11-12 years equipped with a manual and Topc Soccer bag began with a preliminary study followed by making the product, expert validation and revision, product trials and final product trials. Topc Soccer is a tool consists of a barbell pad base, an iron bar, a series of balls, and a programming box, and equipped along with a guide book and Topc Soccer bag to facilitate the users.

The results of the development of the Topc Soccer tool for passing and controlling techniques practices in soccer trainings for children aged 11-12 years have been considered to be feasible to use. This is based on the assessment and revision of media experts, material experts, coaches and players. Overall the quality of this tool as a medium for passing and controlling techniques practices in soccer generally categorized as feasible, in terms of physical feasibility, design, material and use. This tool is declared feasible through several stages of revision and improvement until it is declared feasible to be tested by media experts and material experts namely supervisors. The level of feasibility of Topc Soccer based on material experts is 87% as in the very feasible category and 88% media experts in the same category. Based on small group trials, the data obtained from 936 trials resulted in a percentage of 79% categorized as feasible; large group trials obtained the results of the trials of 2182 with a percentage of 86% which categorized as very feasible.

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