

Development of Android based Soccer-based Muscle Training Media for Children Ages 12-14 Years

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Keywords: Muscle Strength, Soccer, Application, Android.

Abstract: This study aims to develop a training media using the application of android-based soccer muscle strength training for children aged 12-14 years about heating material, muscle strength training material, and there are tests and measurements. The research method used is research and development with reference to (Sugiyono, 2013) research steps which were adapted into 10 steps. The subject of this study is the choice of players according to the age of 12-14 years. The results obtained from the material expert validation of 66% means that it is good enough, the validation of media experts shows that the results of the 65.90% evaluation means that it is good enough. In the small group trial, the application got the results of 84.3% in the good / proper category and in the trial of the large group of applications the results were 91.63% in the good / decent category. It is concluded that this application is good / feasible to use.

1 INTRODUCTION

Football is the branch of sports that most people loved and it fascinated most of the people around the world, nowadays. Considering plenty of information about football serves by electronic media and printed media is one of the most factual indications that football is the most popular sport. In Indonesia, the children's interests through football playing are also soaring. Especially in DIY, there is a lot of soccer coaching prepared by the institutions or private courses. The early age coaching is enchanting especially for the development of football in Indonesia, especially in Yogyakarta region. By this coaching, the people benefits by introducing the early ages and teens about football accordingly they are able to be geared up earlier.

Almost all the Football Schools (*Sekolah Sepak Bola*) in Sleman region hire the local coaches who live near the region, the writer has seen from the situation that the coaches have not maximized the knowledge of sport science. Stepping from this problem, the writer tries to give the solution to the problem by digging more in one of the aspects in football, which is the physical condition of the football players age 12-14 about the muscle strength that the writer observed their knowledge about the muscle strength was still low.

The division of age according to the long term athlete development theory, is divided based on the stages of coaching, those are: First, Fundamental Stage (6-10) years, the second is Training to train Stage (10-14) years focused on the physical and technique along with the training and match portion division of 75:25 (Istvan Balyi, 2001). Besides, the match completed is not oriented to winning only, hence, it is done to apply the skill in the match and to build the confidence of the athletes. The third is Training to compete Stage (14-18) years. The Fourth is Training to win > 18 yearsold.

As we know that for the children aged 10-14 years or the stage of training to train, the children must be equipped through the tough physical and technical training as their underpinning step to go to the next stage that is training to compete. From the data collecting result completed by the writer by interviewing the coaches, discussing about the training problem of physical condition, those are first, the training program appears to be complex to be prepared because of the training program time, the second problem is that there is a friction between the training meetings and school schedule, the third is the lack of the training facilities, and the fourth is the coach insights is still deprived to understand the children and the phases. One of the problems stated by the coach was the lack of training facilities. Striding along from this problem the writer tried to

give the innovation about the supporting media that help the players to do the exercises independently to increase the physical condition of the players, so they are able to do the training individually and do not depend on the training schedule from Football School (SSB). The goal of the media is to cover several aspects required in the muscle strength when playing football if they maximize their training. At the age of 12-14 years old, there are expansion occurred in the complex words mastery (Fischer & Lazerson, 1984), where the players become better in analyzing the one word function that takes role in the sentences of the application (Santrok, 2007). The players learn to understand the certain vocabularies that they have not acquired when they are in the fields along with the coach. Thus, this application is created to help the players to analyze the goal in of the sentences in the application and help them to boost their insights about the strength training pattern without depending on the coach since the application is validated, in other words, the users of this application are able to conduct the training at home even when there is no coaching companion, the players still obtain the optimal training results when they accomplish the steps consisted in the application about the football muscle strength.

This application consists of the strength training technique materials with or without tools, video tutorials, training execution explanation, test and measurement, and warming up, so that the application can be used as the coach learning source and simplify the players to conduct supplementary at home training to achieve the optimal result. The verity showed that the players are still dependant to the coach because there are no sufficient facilities to carry out self-training.

This research is aimed to create a product of football strength training media development, android-based for the age of 12-14 years old. By this application, the players are expected to do self-training at home without depending on the training schedule and by this application, the players are also expected to gain optimal results since this application is validated.

2 METHODS

2.1 Research Type

This research applies the Research and Development method. The research and development is one of the research methods to create a certain product by applying a need analysis research to test the

effectiveness of the product so that the product benefits to the society (Sugiyono, 2013).

This research is aimed to develop the android-based application about types of football muscle strength training for the coach and the children of 12-14 years old which is able to be used as self-training source and supporting tool in determining the training materials given by the coach, validated and feasible to be applied as the learning media by the users.

2.2 Research Time and Place

The testing tool creation was done in Technique Faculty (FT) UNY. The implementation of the testing tool was done in SSB Satria Pandawa and SSB Baturetno. The small group trial test was done on April 15, 2019 and large group trial test was done on April 19, 2019.

2.3 Research Population and Sample

The subjects of this development test were SSB Pandawa and SSB Baturetno. The trial test was done in several stages. Small group trial and large group trial the technique of determining the trial subject in this research was done by the purposive sampling method. Purposive sampling is a technique to determine the sample by considering certain criteria (Arikunto, 1987).

2.4 Data Collecting Instrument

The questionnaire is one type of data collecting technique by giving the written questions to the respondents to be answered (Sugiyono, 2013). The Questionnaire can be a question/ closed question or open question. The types of the questionnaire based on its format divided into three, those are: (1) Multiple Choices Questionnaire, (2) Check list. (3) Rating Scale (Sugiyono, 2012).

The data collection in the research and development of android-based football muscle strength training media used a closed and open questionnaire, which on the next page is accompanied by a suggestion column. The questionnaire was given to the media expert lecturer, materials expert lecturer and physical condition expert lecturer and the respondents from the experimental people.

2.5 Data Analysis Technique

Data analysis technique is a way to find out the results of the conducted research. The data analysis includes all the activities of clarifying, analyzing, applying and drawing the conclusion from all data collected in the action. After the data is collected, the data will be processed. The data analysis technique used in this research is a quantitative analysis technique that valued by numbers. Percentage is proposed to understand the status presented and served in the form of percentage (%).

Formula of measuring the validity is as follow (Sugiyono, 2013):

Information:

$$\text{Formula: } \frac{CS}{CrS} \quad (1)$$

CS: Counted Score

CrS: Criteria Score

The result of the calculation shall be made in the form of percentage by multiplying it to 100% After obtaining the percentage by using the formula, the validity of android-based football muscle strength training in this research is grouped into four validity categories by using this scale.

Table 1: Validity percentage categories (Arikunto, 1993)

Score in percentage	Validity Categories
<40%	Not Good/ Not Valid
40%-5%	Poor/ Poor Validity
56%-75%	Fair/ SufficientlyValid
76%-100%	Good/Valid

The questionnaire used in this research is scoring or response questionnaire in the form of answers and scoring information, those are: (1) Strongly Disagree/Strongly Invalid, (2) Not Suitable/not valid, (3) Fair/Valid, (4) Very Suitable/Very valid

3 RESULT AND DISCUSSION

3.1 Materials Expert Validation Result

The validation assessor of material expert in this research is Dr. Or. Mansur, MS.

Table 2: Materials expert scoring result data

No	Assessed Aspects	Counted Score	Criteria Score	%	Category
1	Content Validity	26	40	65%	Fair
2	Truth Concept	11	16	68,75%	Fair
TOTAL		37	56	66%	Fair

3.2 Materials Expert Validation Result

The media expert that became the validation assessor in this research was Dr. Or. Mansur, MS.

Table 3: Media expert scoring result data.

No	Assessed Aspects	Counted Score	Criteria Score	%	Category
1	Display	21	28	75%	Fair
2	Grammar	15	24	62,5 %	Fair
3	Programming	11	16	68,75%	Fair
4	Application	11	20	55%	Poor
TOTAL		58	88	65,90%	Fair

The application of android-based football muscle strength training went through one revision from the media and materials experts. After the revision, thus the application was stated as valid and was able to continue to the respondents' trial to the early age football players based on the age characteristics on the research's title.

3.3 Small Group Trial

After going through the validation from the experts and doing several revisions from the media and materials experts, so that the android-based football muscle strength training application was valid to be tested. Translated by Sugiyono stated that field trial test is done by conducting the test in 1-3 places by each subject of 6-12 respondents. In this case, the researcher took the small group trial test that has the background in playing football for the number of 12 respondents which are grouped by the age group 4 persons in u-12, 5 persons in u-13, and 3 persons in u-14 (Borg and Gall, 1983).

The result of the small group through the android-based of football muscle strength training application was as follow:

Table 4: Small group trial test.

No	Assessed Aspects	Counted Score	Criteria Score	%	Category
1	Display	331	384	86,19%	Good/ Valid
2	Grammar	84	96	87,5%	Good/ Valid
3	Programming	432	528	81,81%	Good/ Valid
4	Application	165	192	85,93%	Good/ Valid

The result from the small group trial test about the android-based of football muscle strength training application obtained the score of 86.19% in display validity, which means that the application is good/ valid., from the grammar aspect, this application obtained the percentage of 87.5% and categorized as good/ valid, meanwhile from the programming aspect, this application obtained the score of 81.81% which categorized as good/ valid, from the application aspect, the score obtained was in the percentage of 85.93% and categorized as good/ valid. The total of the small group trial test about the android-based of football muscle strength training application was 84.3% which included into good/ valid category, thus this means that this application was able to be tested to the next level.

3.4 Large Group Trial test

After going through the small group scale trial test and conducted several revisions, the android-based of football muscle strength training application is valid to be tested for the larger group.

Translated by Sugiyono in the 6th points that the large group field trial test should be tested in 5 to 15 places with the 30-100 subjects. In this study, the researcher took the large group trial test sample from the football players of two different football schools with the quantity of 7 u-13, 14 u-12 and 9 u-14 and the total were 30 respondents (Borg and Gall, 1983).

The result of the large group trial test about the android-based of football muscle strength training application was as follow:

Table 5: Large group trial test result.

No	Assessed Aspects	Counted Score	Criteria Score	%	Category
1	Content Validity	1154	1320	87.42%	Good/ Valid
2	Grammar	224	240	93.33%	Good/ Valid
3	Display	1259	1320	95.37%	Good/ Valid
4	Application Validity	442	480	92.08%	Good/ Valid
	TOTAL	3079	3360	91.63%	Good/ Valid

The result of the large group about the android-based of football muscle strength training application obtained 87.42% for the validity content, which means this application is good/ valid, from the grammar aspect, this application obtained the percentage of 93.33% included into the good/ valid category, meanwhile for the display point of view, this application obtained the percentage of 95.37% which categorized as good/ valid. From the application validity, this application obtained the percentage score of 92.08% which is included into the category of good/ valid. The total test of the large group trial in the android-based application of football muscle strength was 91.63% categorized as good/valid, thus, it can be concluded that the application is valid for mass production and becomes the media to conduct the muscle strength in football.

Based on the trial test that is done in two stages, small group to large group test, the result obtained a raise from 86.19% to 87.42%, from the content validity aspect, from the grammar aspect, the incline was 80.41% to 93.33%, from the display aspect was 80.22% to 95.37%, and from the validity of the application raised from 85.93% to 92.08%, thus the total score of the raise from the small group to the large group was 84.3% to 90.44% or it can be simplified that the raise was 6.14%.

3.5 Discussion

The development of the android-based application of football muscle strength designed and produced as the training media that put the players age 12-14 years old at ease in comprehending and understanding how to do the football muscle strength training for the early age players in a well submission in order to avoid the accident jeopardy. Moreover, this application is easily accessed and

downloaded as the electronic media is also developed nowadays.

This research transpired some stages; those are the problem potential, data collecting, product design, product validation, product revision, small group trial test, product revision, large group trial test, product revision, and the final production.

This product developed by the cooperative action from the informatics technique expert. The application is easily downloaded since the capacity of the application places small memory by only saving the 5 MB of the device memory. The application is also easy to understand and comprehend since the content of the material of the application is in Bahasa Indonesia. The application is able to be updated or suited to the knowledge development today. The type of similar application in App Store is abundant and the way to distinguish between this application and others, that this application uses Bahasa Indonesia. Besides, the other thing you can observe to discriminate the application is by the specific materials derived in this application is specially design for certain ages. It is also completed with the determination of the training intensity. Nowadays, there are plenty of the training applications; however, the users may risk themselves by applying the training that is not suit to their ages and needs.

After the product was finished, the validation step from the material and media experts was performed to the product. The validation from the material expert obtained the percentage of 66% meaning that the product was valid sufficiently by some revisions such as changing the application design which seemed excessively bright evaluated by the expert. After the material validation, the application obtained the percentage of 65.90% from the media expert, meaning that the product was adequately good, however the product got some revisions by adding the measurement test, the warming up manual, and more communicative grammar.

The trial test for the application was conducted in two stages; those were the small group and large group test. Acquiring from the small group test, the product obtained the score in percentage of 84.3% included into the good/valid category. The application did not need any suggestion or improvement in small group trial test. Acquiring from the large group test, the product obtained the score in percentage of 90.44% included into the

good/valid category. The application did not need any suggestion or improvement in large group trial.

4 CONCLUSIONS

The android-based application of football muscle strength was created for the target of the children age 12-14 years old since the prior observation held before the research showed that there had not been any innovation about the strength muscle training for the players' age 12-14 years old. The application obtained a good response from the football players started from the material, grammar, display and application aspects. This research was emphasized by the trial test result from the large group which scored the validity percentage of 87.42% categorized as good/valid, from the grammar aspect scored 80.41% categorized as good/valid, from the display point of view, scored 80.22% categorized as good/valid, and application validity scored of 83.75% categorized as good/valid, with the total score of percentage 83.57% categorized as good/valid.

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