Futsal Training Model with Futsal Measurement Tests for College Student-Athletes

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Abstract

This study aims to develop futsal training models and measurement tests for Universitas Suryakancana athletes. Besides, this research and development study is carried out to obtain in-depth information about developing and implementing training models and testing the effectiveness and efficiency models created. The method of this study is to use Research & Development (R&D) from Borg and Gall with subject to the 30-futsal students of UKM Universitas Suryakancana, starting from December to February 2020. The target in this research that researchers do is intended for adolescents (students) and adults. The subject taking technique applied in this study is purposive sampling, which is also known as sampling consideration or based on certain considerations. To test the effectiveness of the model, the value analysis use t test with a significance level of 0.05. The findings suggest that the average value of the exercise and measurement tests were different between pre-test and post-test, 7.06 and 8.44 respectively. The significant value is <0.05, which can be concluded that the training model and measurement tests for athletes at Universitas Suryakancana students could be applied effectively and efficiently to improve futsal playing skills.

Keywords: Model, Futsal, Development, Measurement test

Introduction

Futsal is one of the sports that have developed not only in urban cities but also in rural areas in Indonesia. Futsal is getting more and more fans from adults, students, school children, women, men. Futsal is more focused on skills with smaller and lighter balls that being good instruments and helping to develop individual techniques (Manescu, 2016; Naser et al., 2017). It is mainly because players can be more skillful in controlling the ball. The small number of players on the team becomes very important for all players in defensive attacks with some very good futsal practice models and measurement tests (Polidoro et al.,
It is believed that the successful futsal team depends on the cooperation between the players who are a single entity not dependent on individual players. The fact, if the player takes too long to control the ball, it will usually be easily taken by the opponent and will harm the team.

Futsal has currently become a "lifestyle" and the sports community by citizens. In futsal, teams who want to achieve high achievements must do routine training and are well programmed. Training as the main asset in shaping the character of the game is almost the same as training in large field soccer, but there are some adjustments, such as the size of the playing field, the number of players, the ball size, the stopped time, length of play and substitutions. Also, Manescu (2016) suggests that futsal are required to play attractive games, good cooperation, mastery of the basic techniques of the game, and speed.

Some benefits can be obtained by playing futsal such as smaller field yards, more flexible, indoors without being disturbed by weather conditions, the relatively easy rules as almost similar to general football, and there are only slight differences such as the number of players and the size of the ball. However, the rules of futsal can be learned easily because most of them adopt large field football. Futsal can be a place to develop talent abilities. Players can master some game skills in futsal such as ball possession, a combination of attacks, and defense. For children and adolescents, futsal will help them to develop their instincts and skills.

Futsal is more emphasis on skill ability. With the contribution of coordination, the harmonious relationship of various factors occurs in a movement. Coordination is the integration of several parts of the body to make an appearance of motion. Coordination is an important component in sports with a variety of complex movements (see Campo et al., 2016; Tabacchi et al., 2019). Thereby, in futsal coordination is also very important when baiting and kicking into the goal. Smaller and lighter balls are good instruments and help develop individual techniques because players can be more mature and mastering the ball. The small number of players in a team is crucial for all players to defend in attack with several models of coordination-based futsal skills. There are no particular positions, but all players must help each other and must have the mental and defensive and attacking character and the individual technical abilities of each player.

The number of Futsal competitions is exhibited on a local, national and international scale, both amateur clubs and professional clubs. It happens with Futsal Schools, which were initially only for doing hobbies, but it can make the name of the Indonesian people proud. In general, all Futsal teams from schools, universities, amateur clubs, professional clubs, and the national team try their best to achieve their goal.

Furthermore, we must improve the skill and talent of young players so that Indonesian Futsal becomes more popular internationally. To be able to play futsal properly and correctly, futsal players must master the basic techniques since their life in school. The student players can be trained through the student activity unit program (UKM) at school or practicing in a local club. Therefore, it is also crucial to have a futsal coach that master in proper training, measurement, and know the training model to be used with some supporting futsal training. The study develops a futsal training model with a futsal measurement test (Kartal, 2016), of which the existing training models in the form of conventional training models with less variable variations and challenging. Through practicing model and futsal measurement tests (Naser et al., 2017), it is hoped that it can enrich the treasury of knowledge in the field of sports achievements, especially futsal practices in colleges, schools, and professional clubs.

Based on the explanation above, we conducted interviews about training futsal in UKM (Student Activity Unit) futsal Suryakancana. The results of interviews with the head coach of UKM (Student Activity unit) futsal Suryakancana found that the material provided while doing exercises and measurement tests are difficulties, and there was no seriousness
when practicing due to lack of training models. The response of futsal student activity unit students to defensive training was very lacking. It can be seen from several matches that the result always loses in the last 8 rounds in the 2019 rector Pakuan cup in which the University of Suryakancana lost in the last 8 with a poor defensive pattern with the opponents able to score a lot of goals. The coach when training uses a direct emphasis on several players and is an example for the players in the futsal student unit of Suryakancana University.

The development is supported by good training and skill possessed by the Futsal coach to provide training techniques as well as the correct measurement test and training model that starts from the easiest level, then the player will automatically have the ability to quickly master the material practice. Also, training in compiling mastery training and good results in testing futsal measurements on every good player is indeed very difficult. Therefore, the players must be given serious attention and drill exercises more from the coach, by providing easy training material and motivating the players so that they do not feel pessimistic and always eager to practice.

Hence, we make it into a module package through the exercise module, the measurement apparatus test book, and the video results of the development of the same model. It is expected that with the development of a training model and futsal measurement test, the exercises will be quickly effective and efficient by using the module media as well as proper measurement and supported video that makes the process of training easier for the players of UKM players of Universitas Suryakancana. There are two general objectives in this research; first how important are the training model and measurement of the futsal university; and what are the constraints and supports in the development model of training and measurement of futsal measurement in Universitas Suryakancana.

The Development of Concept Model

The model describes the broadest level of educational practice and contains a philosophical orientation of the training (Rothstein et al., 1991; Unicef, 2007). Model is something that illustrates the pattern of thinking, in which the whole concept is interrelated. It may then develop us as the designed model will support the progress of sports in Indonesia and as a material for the attention of coaches and sports activists.

The concept of this training model uses the concept of exercise and futsal measurement test sports that require high speed and skills (Bocalini et al., 2008). Since the skills in this sport are very useful in the game and to move quickly in controlling the ball. Skills are not the only required in futsal, but a good measurement test is also a needed aspect of the bio-motor in physical conditions to support an athlete with achievement. Hence, futsal training requires measurement tests that are very supportive in all fields of sports because this is the supporting factors of athlete achievement progress.

The futsal sport, in particular, is very rapidly developing and it globally attracts many people. Because futsal is played with a very fast and efficient game, futsal is very important to be supported by good coordination, hence we are interested in attracting the concept of developing futsal training models and measurement tests as the training material and futsal measurement tests to improve futsal capabilities.

This training model was developed with a systematic training arrangement in the form and ruled training. The training model has described the forms of futsal skills training combined with the coordination movement, with the design using the R&D development approach method with 10 design as the study that produces a product and CD have first analyzed the effectiveness level in the exercise (Nobelius, 2002; Ruegg & Jordan, 2007). Based on the theory described above, we studied the research on the development of the model with a focus on the futsal training model and the measurement of the test. Therefore, exercise can be defined as systematic participation and aims to increase physical functional
capacity and endurance of the exercise because in the field of sports the ultimate goal of training is to improve sports performance (e.g. Cooper, 2006; Haugaasen & Jordet, 2012; Ruegg & Jordan, 2007). Exercise is all in the process of improving the body (including all efforts in the process of maintaining performance) and increasing the stimulation through directed and systematic movements to adjust the muscles and functions of the organs of the body. The purpose of the exercise is to activate the genetic equipment of a cell so that it can produce more protein.

**The Measurement Tests**

Generally, a test is a data collection tool and as a basis for assessment in the educational process, in the form of assignments that must be done by students to produce a value about behavior (Apriyanto & Anum, 2020). A test is a tool or instrument used to obtain information about a person or object. Educators can obtain precise information about the state of their students through certain tests, whether in a low, medium, or high ability. While the measurement is the process of collecting data/information about individuals and certain objects. Tests and measurements are a unit that can be used as a more complete discussion. A test is a tool used to measure some performance and to collect data. A test must be valid, which means measuring what should be measured and must be trusted, which means it can be repeated many times.

Test and measurement is a tool to collect data or information about what you want to achieve (Decleve et al., 2020). Measurements in the evaluation process indicate things that are precise, objective, quantitative, and the results can be processed statistically because the data are numbers (e.g. Mesly, 2015; Rothstein et al., 1991; Schiffer, 2009). The measurement results themselves are meaningless, only mean after being processed and interpreted based on existing data. 1. The activity itself. These activities must be assessed for special needs needed in the environment. 2. Athletes. Knowing the condition of students regarding muscle strength, speed, balance, dexterity, flexibility, body fat, heart awareness, and breathing levels to find out how harmony they are.

Measurement is a measure of sports performance or the ability of athletes. Besides, in support of athlete ability tests, measurement and evaluation are an integral part of various human activities as well as in teaching and training sports. Assessment and evaluation are one of the most useful things for tests and measurements because by doing these three things we can find out the developments and shortcomings (Bull, Ray; Valentine, Tim & Williamson, 2009; Johnson, 2020; Wiliam, 2011) so that finally we can make the right decision. Sports teaching and training is a dynamic process and teachers and coaches face a variety of problems that require resolution. The more comprehensive the information obtained (through tests and measurements), the better the decision is taken. In the implementation of tests and measurements, we can use standardized tests that already exist or can be made by ourselves. Questions that must be asked by physical educators in planning the measurement program are: (1) what goals in physical education do I try to fulfill? (2) What administrative should I use to fulfill this purpose? (3) How can tests and measurements make this program effective? Tests and measurements must be considered as administrative tools to help physical educators serve students better. There are different measurements in sports studies. Implementation of tests and measurements will be very useful to meet the needs of training programs, including stimulating trainers to achieve goals, doing feedback for coaches and athletes, generating motivation to practice, assisting athletes in assessing their abilities, assisting the trainer to rearrange the given material, determining the classification or grouping of athletes. As a tool to obtain objective data, the purpose of diagnosis (body mechanics, physical fitness, and movement skills), is to determine the selection of athletes fairly.
Teachings tests and measurements

1. Determining status in education must be considered in the development of the student, then the sports coaches should know where the development occurs, how it progresses over time.

2. Classification of sports is usually done based on grade level, not based on the skills or abilities of children.

3. Diagnosis and Guidance are intended for each student to get away in dealing with the difficulties experienced, and guidance requires an evaluation of the student's capacity and ability (Bocalini et al., 2008). In a diagnostic test with weaknesses and virtues, a particular program to be able to meet their needs must follow it.

4. Motivation in sports can be a stimulus for children (Haugaasen & Jordet, 2012). This objective measurement can be used to determine a student's level of ability at that time and not based on the subjective view of the teacher.

5. Improvements to train or teach based on testing and evaluation is a part of teaching that have the right place in a sports program.

   Benefits of sports tests and measurements including (Manescu, 2016):
   1. Validity. It means the extent to which the accuracy and accuracy of a measuring instrument in carrying out its measurement function.
   2. Reliability. Have a variety of understandings namely trustworthiness, reliability, constancy, stability, consistency, and so on.
   3. Objectivity. There is a degree of similarity in the results of two or more test takers.
   4. Norms. The norm reference is to show the position of a test participant among his group

Methods

The approach used in this study is qualitative and quantitative (Creswell, 2014; Leavy, 2017); the subjects of this study are futsal students of UKM Suryakancana University of 30 students. Data collection instruments in this study used observation techniques, interviews, and open-ended questionnaires of test instruments (e.g. Flick, 2014; Thanh et al., 2015; Matsumoto, 2008; Apriyanto & Nurhayaty, 2019). The data analysis technique used in this study is a qualitative and quantitative descriptive analysis technique in the form of a percentage. The time in research and development research is from December to February 2020 and the target in this research is intended for adolescents (students) and adults. The subject taking technique applied in this study is a purposive sampling (e.g. Goodman & Martschuk, 2018; Silverman, 2013), which is also known as sampling consideration or based on certain considerations.

The research and development in this exercise model uses a qualitative and quantitative approach and uses the Research & Development (R&D) development model consisting of ten steps in the figure below (see Mason, 2002; Nobelius, 2002; Olsson & Meek, 2013).
Findings and Discussion

The results of the development are written in manuscript form that can be presented in the form of skills models. There are two general objectives to be known in the needs analysis study. First, how important is the futsal training model with measurement tests futsal for students in Suryakancana student activity units effectively and efficiently and can increase passion in practicing physical aspects and skills. Second, what constraints and support found in the development of the futsal training model with the futsal measurement test for students of the Suryakancana student activity unit. The futsal training model and measurement test that will be made are the results of problems discovered by researchers in the field through the observation process and interviews through the questionnaire given by researchers towards trainers. Referring to the results of observations and interviews in the field, we try to provide solutions and problems by developing a model of exercise and measurement in futsal.

1. Analysis Results of Need

The training model and measurement test that will be made are the results of problems found by researchers in the field through the observation process and interviews through questionnaires given by researchers to the trainer (e.g. Alison et al., 2013; Kartal, 2016). Referring to the results of observations and interviews in the field, researchers will try to provide solutions and problems by developing a training model and a futsal measurement exercise model. The results of the data collected by researchers through interviews and questionnaires to 30 students were then processed and described. The research formulation conducted to students carried out from December to February 2019, where the analysis of the needs of questionnaires. The results of the needs analysis are found including:

1) Students are very interested in futsal training activities.
2) Students are bored with the variety of skills training provided.
3) Students agree if skills training models are developed by high schools.
4) Futsal extracurricular trainers need skills training models.
5) The trainer needs media references in the form of electronic and non-electronic books.

2. Planning for a survival training model

The results of the preliminary study or field findings are further described and analyzed so that these results are described and analyzed concerning the purpose of the preliminary study. The next step is to make an initial product in the form of a series of development models that can later be used as guidelines or instructions to maximize the results of the basic techniques of futsal. The initial product is outlined in an exercise model.
Development of training models and measurement tests are expected to be products that can be developed systematically and logically (Alison et al., 2013) so that these products have the effectiveness and efficiency that are appropriate to use. In the product model developed by researchers, we must consult the product with experts to produce the perfect product.

3. Model Feasibility
After we have conducted the data collection and drafted the stage of the exercise model and measurement test, the next step is that we conduct an expert test intending to obtain the feasibility or validity of the model created by a direct assessment from the experts (see Apriyanto & Anum, 2020; Glogowska, 2011; Halcomb & Hickman, 2015; Philibert, 2018). We create 3 experts in the assessment of the feasibility of a survival training model that was made, where 3 experts work as lecturers and sports trainers.

4. Small-Group Trial Results
The development of this futsal training model and measurements is made after expert evaluation (Kartal, 2016; Polidoro et al., 2013), based on the evaluation of small group trials with 15 subjects. The results of this group test results from the field notes from the results of the model trials. The results of the input from small group trials are used as material to improve the exercise model. The exercise model and measurement test are by using a treatment for one week and the results are very effective and efficient. The results of respondents conducted on players in small groups are the second evaluation after the evaluation of previous experts and get the results of the revision of the product given the results of the product revision.

5. Product Revision
Input from the results of the questionnaire and field notes on the small group test are used to revise the product. This is done to improve the model that has been felt and experienced for the subject for the next group test. The study conducted by researchers can be concluded as follows:

1) All variations of the training and measurement model, which need to be considered are the training model starting from easy to difficult levels so that the student's skill model improves.
2) It is necessary to have examples of movements first in each exercise model so that it is easy to understand the series of movements.
3) When applied the training model and measurement test on the field the athlete does not pay attention so the coach's task must often monitor so that the training objectives and training targets are achieved.

6. Results of Large Group Trials
After the results of developing skills training products for student-athletes have been tested on a small scale and have been revised (e.g. Hallas, 2008; Olsson & Meek, 2013), the next step is to conduct a large group trial. Provision of treatment is carried out within a period of 1 month, 1 week starting from December to January 2019 with 16 meetings, Monday, Tuesday Thursday 3 times a week. During the study, it was carried out the treatment, and groups were given 10 training models and futsal measurements each time meeting. Before giving the treatment of research subjects in the initial test using the game cognitive test instrument to survive in the futsal game research subjects before and after treatment.

7. Product Revision
The conclusions from the field trials are the last foundation of the improvement and refinement of new products in UKM Futsal Universitas Suryakancana. The results of the
response of the players after doing the exercises are directly given input to the evaluation of improvement in the development of the model. Based on the results of small group trials that have been evaluated by experts, the researchers then revised the initial product and obtained 36 Suryakancana University Futsal Endurance Training Models that will be used in large group trials. The next step after the model underwent the second stage of revision by the experts then proceed with testing the product to a large group by using research subjects 30 different students in each faculty/study program. The next step after the model underwent the second stage of revision from experts and small group and large group trials are then continued by testing the product using 30 research subjects. Evaluation at this stage is the final evaluation of the training model and measurement test after improvement according to input from the field test, then the product of this training model is considered to be distributed or applied.

8. Effectiveness Test

Data analysis to test the hypothesis in this study used parametric statistical analysis, which is the t-test (paired t-test).

**Table 1** Results of Paired Samples Statistics (Pre Test), and After Treatment (Post Test) Exercise model and measuring test

<table>
<thead>
<tr>
<th>Paired Samples Statistics</th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1 Pre_Test</td>
<td>7.0600</td>
<td>30</td>
<td>1.51738</td>
<td>.21459</td>
</tr>
<tr>
<td>Post_Test</td>
<td>8.4400</td>
<td>30</td>
<td>1.21487</td>
<td>.17181</td>
</tr>
</tbody>
</table>

Based on the table above, the average value of the game results in futsal before being given a training model and a measurement test is 7.0 times and after being treated with the exercise model and Futsal measurement test is 8.4 times. This means there is an increase in the results of the game to survive futsal so it increases.

**Table 2** Results of Paired Samples Correlations (Pre Test) and After Treatment (Post Test) Exercise model and measurement test

<table>
<thead>
<tr>
<th>Paired Samples Correlations</th>
<th>N</th>
<th>Correlation</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1 Pre-Test &amp; Post-Test</td>
<td>30</td>
<td>.694</td>
<td>.000</td>
</tr>
</tbody>
</table>

The significant value is 0.00<0.05 and it is concluded that the training model and measurement tests for Suryakancana University student-athletes were developed. The Model of the training and measurement tests at Suryakancana University was based on using a bar diagram as follows:
9. Product Revision

This product revision is carried out if in use in testing a wider model there are shortcomings and weaknesses. Therefore the model developed can be improved to optimize its use. Making Mass Products have been declared effective in several tests for large group results, therefore this training model product can be applied to the public.

10. Mass Product Manufacturing

This product is ultimately in the form of a training model of defensive in futsal training, which is distributed to players and coaches in the university environment of Syria and contribute to the Region of Cianjur.

Discussion

The results of the interview revealed that there was no model-training and measurement of futsal in an exercise program and an appropriate measurement tool. Training is needed to improve the ability of futsal players in the University of Suryakancana. The second stage is the initial product development stage. The initial product design in which the training and measurement models are based on theoretical studies so that they are formulated as follows: (1) General Futsal theory, (2) Analysis of futsal needs, and futsal measurements, (3) Futsal exercises and gauges on futsal (4) Futsal training programs. (5) Evaluate the ability of strategy in futsal games.

The design of the training model product is arranged in the order in which the systematic training is carried out and the order in which the product is presented (Brown, 2014; Olivarius et al., 2010). The third stage is product testing. The first trial was an expert trial using three futsal experts by using and testing small groups. The development of this futsal training model that researchers made after being evaluated by experts is based on the evaluation of small group trials with 15 subjects and the results of the model trial are from filed not from a trial model test. The results of the input from small group trials are used as material to improve the exercise model. The exercise model and measurement test use a treatment for one week and the results are very effective and efficient. The results of respondents conducted on players in small groups are the second evaluation after the evaluation of previous experts and the results of the revision of the product given the results of the product revision.

Fig. 2 Futsal Training and Measurement Test

<table>
<thead>
<tr>
<th></th>
<th>Pre Test</th>
<th>Post Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>7.06</td>
<td>8.44</td>
</tr>
</tbody>
</table>
Large Group Trial Results

After the results of the development of the skills training product for high school athletes have been tested on a small scale and have been revised, the next step is to conduct a large group trial. Provision of treatment is carried out within a period of 1 month, 1 week starting from December to January 2019 with a total of 16 meetings, Monday, Tuesday Thursday 3 times a week. During the study carried out, the treatment groups were given 10 training models and futsal measurements from the University of Suryakancana each time meeting. Before giving the treatment of research subjects in the initial test using the game cognitive test of the defensive game in the futsal in which the research subjects are before and after treatment.

The next step after the model underwent the second stage of revision by the experts then proceed with testing the product to a large group by using research subjects of 30 different students in each faculty/study program. The next step after the model underwent the second stage of revision from experts and small group and large group trials are then continued by testing the product using 30 research subjects. Evaluation at this stage is the final evaluation of the training model and measurement test after improvement according to input from the field test, then this training model product is considered to be distributed or applied.

Product Improvement

Test results before and after treatment can be concluded that the futsal training model with the futsal measurement test for students in the Suryakancana student activity unit is feasible and effective for improving the skills of high school athletes. In the significance test, the difference with SPSS 19 is obtained from the data that the difference between the pre-test and post-test (1) futsal skills test and measurement test 0.00<0.05. It is concluded that there is a significant difference between before and after the effect of the treatment of the futsal training model with the futsal measurement test for students in the Suryakancana student activity unit. Based on the results of the study it can be concluded that the Futsal training model with the Futsal Measurement Test for Students in the Suryakancana Student Activity Unit has significant effectiveness. From the shortcomings and benefits of the product created, there are some inputs that we offer to achieve the completeness of this product, they are it is necessary to improve the image of the model to the readers are more interested to read and it is necessary to improve the training model more varieties and innovative.

Product Analysis

Researchers to assist the trainers in varying skill training and increasing athlete’s capabilities for the senior players as training reference create the Futsal model with the measurement test for UKM Futsal Suryakancana. The model created is because of the necessity of futsal students. The product has been validated on its shortcomings that should be improved. Hence, it is stated that some advantages of these products are to increase the capability of senior athletes with a more effective and efficient training model (Liu & Park, 2015; Nobelius, 2002). The model applied is very varieties that can attract more enthusiasm of students in training. The senior athletes can comfort themselves in the process of futsal training and can also use its test. This model can be a turbo booster motivation for students, particularly their endurance. The trainers from schools can also get benefit from the offered model, and it is also our contribution to sports education in Indonesia.

Product Limitation

The study is conducted as our best in doing research. However, we do realize in this study some limitations should be revealed as the consideration to generalize the study results
achieved. The limitations are including; the time frame should be done with a long time; the limited equipment and venue of training sports center; and the explanation in training model image is relatively less clear.

Conclusion

According to the data obtained, the field trial test, and the discussion of the research, it is concluded that the futsal training model with the futsal measurement test for UKM Futsal Suryakancana Students effectively and efficiently can improve the intention in practicing physical and skill aspect. The product of improvement can be applied as a reference for futsal trainers, teachers, athletes, and students. It is highly recommended to consider the situation, condition, equipment, and sports venue for its use. Before being widely used, the model should be redesigned to get a more advanced model, including cover and aspects from the training model variation developed by the researcher. For further research, the subject should be done for a wider subject, both from the number of subjects and objects as the group of trial tests.

References


