

EFFECTIVENESS TEST OF PLAY-BASED FOOTBALL WARM-UP MODEL

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Abstract

Effectiveness test of play-based football warm-up model involves students of University of Singaperbangsa Karawang who take football courses as research subjects consisting of 150 students. This study was using a quantitative approach. The test was carried out after treatment using True Experimental Design in the form of Pre-test-Post-test Control Group Design. Instrument used in this research and development was a warm-up instrument that was used to collect subject data. The validity test of the instrument sit and reach is 0.979, Static Flexibility Test - Ankle is 0.913, Standing Balance Test is 0.942 while the result of sit and reach reliability test, Static Flexibility Test - Ankle, and Standing balance are 0.940. From the result of validity and reliability test, the warm-up instrument is feasible. Effectiveness test of the model using warm-up tests is needed to determine the readiness of the muscles, joints and body balance, so as to avoid injury after treatment of the model developed. Based on data analysis obtained t -table value is 1.993 with a significance level of 0.05. Because of t -count value 27,765 > t -table value 1,993 then H_0 is rejected. Based on this information it can be said that the play-based warm-up model in football is effective and can prepare muscles, joint flexibility and body balance so that core activities can be carried out optimally and avoid risk of injury.

Keywords: *Effectiveness Test, warm-up models, football, play*

Before the implementation of core training activities and football matches, heating must be done. Good warm-up is fundamental in ensuring productive training sessions. Football players can adapt to a climate that may be different from the climate in their home region. Environmental conditions such as temperature and humidity must be included in the calculation. Less heating can also pose a risk of injury during exercise. As a general guideline, heating with adequate intensity must be carried out until sweating. Sweat signifies increased muscle temperature. Warm and stretching are the most important parts of every sporting activity, both during practice and during competition. A proper warm up will take between 10 to 40 minutes and with time it must be structured into the planning of the event or match. Senior athletes usually take an hour or more to warm up and prepare for the match.

The main purpose of warm-up is to prepare emotional, psychological, and physiological to do various kinds of training activities and matches. In each exercise and match, warm-up provides an important role in bringing players or instilling first impressions on players about what will be done at the core of the training and competition.

In addition, flexibility and stretching exercises aim to progressively and permanently increase range of motion. Before stretching exercises are carried out, you should first do a warm up exercise. There are three forms of routine warm-up training, namely: 1. Passive warm-up, is a warm-up exercise using equipment such as the use of heating pads, sauna (hot shower). 2. General warm-up, this technique uses several movements that vary and are indirectly related to the movements used in the exercise itself. 3. Formal warm-up (specific warm-up), heating which includes movements that mimic the movements used in real sports activities, with reduced intensity.

One effort to understand and know about warm-up in football is through movements carried out by referring to the technique of playing football both with balls and without balls. Players will

focus on warm up because it is made with a lot of variations and with media balls. The warm-up model will be developed in 3 parts: 1) General warm-up with a ball with 5-7 minutes, 2) specific warm-up exercises focusing on the components of strength, pliometrics, balance and agility with the ball with time 10-15 minutes, 3) Football specific movement and speed with 2-4 minutes.

From observations on the field, it can be seen that the warm-up of playing football that has not yet achieved readiness to move will be seen in the muscles and joints and the balance of the player's body when performing core activities. Then the results of observations of researchers on the training program made by the trainer, there is no warm-up as part of the exercise. When the warm-up session is carried out without any direction from the coach and it seems not done well. In another place the researchers also observed that the exercises were carried out without warm-up and immediately played 11 v 11. Many injuries were experienced by players and the effects after playing the players felt cramps in their muscles.

Based on these findings and the background of the problems described above, researchers want to see the effectiveness of play-based football warm-up models. The type of warm-up that is done so that it is not saturated and implemented in accordance with the needs of training and competition focuses on mastering the player's own ball, thus helping players to carry out the training material provided by the coach. The purpose of this study is to find out about: How is the effectiveness of play-based football warm-up models?

1. Warm-up

The definition of warm-up is very broad, Burke Edmund R (2001) defines warm-up as a number of body preparatory movements to carry out more strenuous activities by doing a few simple exercises before carrying out the core of the heavier activities. While Byl Jhon (2004) argues that warm is a movement that aims to increase the frequency of the heart slowly, so that there is enough time to fill the muscles that work with oxygen-rich blood. The other side of warm according to Rusli Lutan (2000) is one form of emotional, physiological, and psychological preparation to carry out various types of exercises.

From some opinions about the definition of heating, it can be concluded that warm is a body preparation activity to increase the frequency of the heart and stretching muscles which aims to prepare emotional, physiological, and psychological to do various types of exercises.

2. Football Warm-Up

To present football warm-up, it is necessary to plan a proper method of heating movements to achieve the goal of preventing sports injuries, increasing body temperature and increasing muscle work. This method in the AFC, C License Award (1999) was directed so that football players really do a warm-up movement in accordance with the demands and concepts that have been presented by the coach. First, the players understand the benefits of heating and the consequences of lacking / not warm up. Second, the idea of movement with elements that support the game to improve the ability of soccer techniques.

There are a number of warm-ups conducted before the training and football matches that have developed both conventionally and FIFA 11+ warm-ups. The concept of conventional models that are often used in heating are static movements and dynamic movements. While the concept of the FIFA 11+ warm-up model contains a comprehensive heating method developed by those who have great attention to football-medicine. FIFA 11+ consists of 3 parts according to FIFA (2012), first combining low speed running with controlled body contact with the theme of training. The second part involves 6 different types of exercises to increase strength and balance. The last part is training with high speed running combined with specific football movement both by passing, herding or kicking the ball.

3. Play-Based Football Warm-Up Model

The concept of a play-based football warm-up model according to Qorry (2017) is: a) General warm-up, this uses several movements that are varied and indirectly related to the movements used in soccer practice. This technique is the calisthenics movement, brisk walking, jogging and jumping, b) specific warm-up, heating which includes movements that mimic the movements used in football both with the ball and without the real ball, c) specific football movement good by passing, herding, kicking the ball, heading and throwing and catching for the goalkeeper.

4. Football

In playing football the most dominant aspect that needs to be considered from the instructor / trainer is mastering the basic skills of the player himself, which is a requirement to achieve the best performance from each player. There is no shortcut to getting a good team besides doing repetitive exercises for a relatively long time. According to Aang Witarsa (1984) The basic technique of playing football is all movements without balls and movements with the ball needed to play football.

The basic technique of playing football is used based on the principle of attack, and the principle of survival. The basic techniques of playing football according to Sean Callery (1991) are: (1) passing the ball, (2) dribbling, (3) shooting, (4) control, (5) heading, (6) tricking, (7) specifically guard goal. Another opinion from the AFC stated that the training material for football was as follows: (1) dribbling, (2) ball feeling, (3) passing and support, (4) controlling, (5) running with the ball, (6) tackling, (7) shooting, (8) creative football, (9) goalkeeping, (10) small side games, (11) defending play, (12) attacking play, and (13) organization team in 11 versus 11.

Soccer training must pay attention and understand the principles of training that are studied in physiology, the theory of growth and development of children, psychology, nutrition and also pedagogically so that peak performance can be achieved in accordance with the plan. Besides that the aspects of the exercise that need to be developed are mainly basic motion skills that are right with good basic physical abilities. Each trainer is required to understand the stages of the aspects of the exercise so that they know the training portion for multilateral and specialization.

5. Playing Theory

Bruner in Hurlock's book states that playing is a serious activity, then he explained that play provides opportunities for many forms of learning. Two of them that are very important are problem solving and creativity. Without playing the basis of creativity and basic problem solving can not be put before the child develops the habit of dealing with the environment in a creative way. And added by Hurlock that playing is an activity carried out for the pleasure that is generated without considering the final results.

Hetherington and Parke mention three main functions of play namely:

- a. Cognitive play functions that help cognitive development of children. Through this play, children will more easily explore the environment and learn the objects around them and learn to solve the problems they face.
- b. The social function of play is that it can improve children's social development, especially in fantasy games by playing a role. Children learn to understand other people and the roles they will play in the future after growing up to become adults.
- c. The emotional function of play allows children to solve a part of their emotional, learning to overcome anxiety and inner conflict. Because playing allows children to release excessive physical energy and free up hidden feelings.

METHOD

In a dissertation study entitled the development of play-based football warm-up models using a research and development model from Borg and Gall (1983: 775). This study aims to (1) to find out whether the design of the model has been applied properly and correctly by the trainer, and (2) how effective the results of the application of the model to the objectives of this study. Thus in this study using a quantitative approach. The test is carried out after treatment using True Experimental Design in the form of Pretest-Posttest Control Group Design (Sugiyono, 2009: 112)

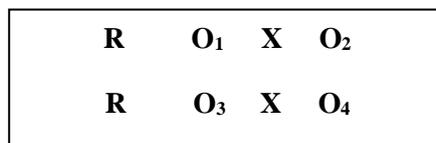


Figure 3.1 Research Design in Model Effectiveness Test

The steps taken in this trial include; (1) determine the research subject group; (2) carry out the pre-test (O1); (3) try the model that has been developed; (4) carry out post-test (O2); (5) looking for the average score of the pre-test and post-test and compared between the two; (6) looking for the difference in the second difference between the average through the statistical method (t-test) to determine whether there is a significant effect of the use of the model.

Population and Samples

The subject of this study was taken from sampling from students of football learning subjects in the 2018 Physical Health and Recreation Education study program. The number of samples taken was 150 students divided into 2 groups, and consisted of 75 experimental groups and 75 controls.

Data Collection Techniques

The procedure for collecting data is in accordance with the research design of the Control Group Design Pretest-Posttest, namely: 1) pretest 2) Treatment / treatment, 3) Posttest. The pretest was conducted to find out the initial condition of the subject before being given treatment using a test instrument then the 150 subjects were divided into 2 groups 75 subjects in the experimental group were given play-based warm-up model treatment and 75 control group subjects were given conventional warm-up. After giving treatment the two groups were given post tests to find out the difference in subject conditions after being given treatment.

Research Instruments

Since the data needed in this study is primary data, data collection is carried out by carrying out tests. Tests that will be carried out are sit and reach tests, Static Flexibility Test - Ankle, and Standing balance. Research instruments and implementation processes are arranged based on indicators of the needs of warm-up in football and are adjusted for the age of students. Then test the validity and reliability of the instruments that will be used for research.

Data Analysis Techniques

Data obtained as individual scores from the results of sit and reach tests, Static Flexibility Test - Ankle, and Standing balance, are then processed using statistical procedures to prove the effectiveness of play-based football warm-up models. In quantitative research, data analysis is an activity after data from all subjects are collected. The data analysis technique in quantitative research uses parametric test statistics starting with finding the average value, standard deviation, Normality

Test and Effectiveness Test (t-Test). Search for t-count using the t-test formula with a significance level (α) of 5% (0.05).

RESULTS AND DISCUSSION

1. Instrument Validation Test Results

Correlations

		Sit_and_Reach	Fleksibility_Angkle	Standing_Balance	Skor_Total
Sit_and_Reach	Pearson Correlation	1	.846**	.924**	.979**
	Sig. (2-tailed)		.000	.000	.000
	N	20	20	20	20
Fleksibility_Angkle	Pearson Correlation	.846**	1	.745**	.913**
	Sig. (2-tailed)	.000		.000	.000
	N	20	20	20	20
Standing_Balance	Pearson Correlation	.924**	.745**	1	.942**
	Sig. (2-tailed)	.000	.000		.000
	N	20	20	20	20
Skor_Total	Pearson Correlation	.979**	.913**	.942**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	20	20	20	20

** . Correlation is significant at the 0.01 level (2-tailed).

Basic decision making:

$r_{hitung} > r_{tabel} = \text{valid}$

$r_{hitung} < r_{tabel} = \text{invalid}$

$r_{tabel} = N = 20 = 0,444$

Decision of Instrument Validity Test, Test of Effectiveness of Football Warm Up

No	Test Item	rx _y	R _{tabel} 0,05(20)	Remarks
1	<i>sit and reach</i>	0,979	0,444	valid
2	Static Flexibility Test – Ankle	0,913	0,444	valid
3	Standing balance tes	0,942	0,444	valid

The conclusion of the table above, $r_{count} > r_{table}$, then the three instruments Effectiveness Test of Football Warm Up are declared valid.

2. Reliability Test

Reliability Test Results, Instruments Effectiveness Test of Football Warm Up

Case Processing Summary

	N	%
Cases Valid	20	100.0
Excluded ^a	0	.0
Total	20	100.0

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded ^a	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.940	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Sit_and_Reach	7.50	2.158	.948	.854
Fleksibility_Angle	7.50	2.579	.813	.959
Standing_Balance	7.50	2.474	.872	.915

Basic decision making :

$r_{hitung} > r_{tabel}$ = consistent

$r_{hitung} < r_{tabel}$ = inconsistent

$r_{tabel} = N = 20 = 0,444$

Decision of Validity Test, Instrument Test of Effectiveness of Football Warm Up

No	Item Tes	Cronbach's Alpha	Rtable 0,05(20)	Keterangan
1	<i>sit and reach</i> , Static Flexibility Test – Ankle, dan Standing balance tes	0,940	0,444	Konsisten

Conclusions from the table above $r_{count} > r_{table}$ then the three instruments, Effectiveness Test of Football Warm Up is stated to be Consistent.

3. Test data analysis requirements

The data obtained from the research results need to be tested before being analyzed by the normality test as a requirement for data analysis. Based on the results of the normality test of the data on the treatment group's initial test data, the L-count -0.089 value is smaller than L-Table 0.102, it can be concluded that the initial treatment group test data is normally distributed. The results of the treatment group final test data obtained a value of L- Count 0.096 smaller than L-Table 0.102, it can be concluded that the final test group treatment data were normally distributed.

While the results of the normality test of the data on the control group's initial test data obtained an L-count value of -0.095 smaller than L-Table 0.102, it can be concluded that the initial test data of the control group were normally distributed. The results of the control group final test data obtained a value of L- Calculate 0.098 smaller than L-Table 0.102, it can be concluded that the final test data of the control group is normally distributed.

4. T-Test

After normality testing, it is followed by a t-test to find out the play-based football warm-up model. The calculation results are presented in the table below:

Test Table for Differences in Effectiveness of play-based football warm-up model

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Post-test of treatment group	11.19	75	1.908	.220
	Pre-test of treatment group	6.15	75	2.011	.232

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Post-test and Pre-test of treatment group	75	.679	.000

Paired Samples Test

		Paired Differences					t	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Post-test of treatment group Pre-test of treatment group	5.040	1.572	.182	4.678	5.402	27.765	74	.000

Based on the data analysis, the initial average test score was 6.15 and the final test average was 11.19, the initial standard deviation test was 1.908 and the final standard deviation test was 2.011, the initial test average and the final test 5.040 and the standard deviation of 1.572. the value of t count is 27,765.

Based on the table above $df = 74$ so that the t-table value is 1.993 with a significant level of 0.05. Because the value of t-count is $27,765 > t\text{-table } 1,993$ then H_0 is rejected. Based on this information it can be said that the play-based football warm-up model is effective and can prepare muscles, joint flexibility and body balance so that core activities can be carried out optimally and avoid risk of injury.

This discussion will report the stages of research that have been carried out by the researcher. The researcher has tested the research instrument in the form of a test instrument for the effectiveness of Football warm-up. This test is a measuring tool to see the effectiveness of a football warm-up model. based on research variables and indicators and refers to the study of the theory put forward.

The results have been achieved, the researcher has conducted the initial test (pretest) before being given treatment. After that, a random sample of 75 study groups and 75 control groups were grouped. After treatment for 16 times the final test (posttest) was conducted. All data that has been obtained is being verified to be processed and analyzed which will later be made research reports.

The play-based warm-up football model can be used in soccer learning and training for students of football courses and is feasible and effective to avoid the risk of muscle and joint injuries.

The superiority of play-based football warm-up model is seen by the existence of a guidebook in the form of final products and play-based football warm-up media that focuses on students and athletes. Football coaches and lecturers will be greatly helped by the existence of a play-based guide book and play-based football warm-up media to avoid the risk of muscle and joint injuries.

In addition, a video of play-based football warm-up must be made so that coaches and lecturers of football can understand variations of the model more easily. So that the goal of warming can be achieved.

The weakness of this play-based football warm-up model is that each variation of the warm-up model is interrelated so subject must do it gradually. If one variation of the warm-up model cannot be done it will have an effect on the risk of muscle and joint injury. The superiority of the play-based football warming-up model is arranged in a combination of easy and difficult movements so students must focus more on the warm-up process.

The product developed aims to prepare muscles, joint flexibility and body balance so that the performance of core activities can be carried out optimally, so as to avoid the risk of muscle and joint injuries and is very beneficial for the trainers. This indirectly motivates the writer to create a play-based football warm-up model.

The enthusiasm of a number of subjects in universities that were used as small trial sites and large trials made it easier for researchers to carry out a series of research processes and data collection processes. The importance of the usefulness of play-based football warm-up models motivates writers to complete this model so that trainers and lecturers can use this model to prepare muscles, joint flexibility and body balance to avoid the risk of muscle and joint injuries.

This research has been maximally pursued in accordance with the ability of researchers, but in this study there are still a number of obstacles that must be recognized and put forward as material for consideration in generalizing the results of the research achieved. The inhibiting factors include the following: (1) Field trials of this study were only carried out in 3 regions and 3 universities, namely: Siliwangi University Tasikmalaya, STKIP Cimahi and Universitas Singaperbangsa Karawang. (2) The time for giving very little treatment so as not to interfere with the implementation of football lectures (3) The implementation of a treatment that is not optimal due to inadequate football field conditions. (4) Budget for conducting very little research and (5) The existence of psychological factors that are thought to influence the results of research that cannot be controlled, among others: interest, trust, and other psychological factors.

Based on the conclusions above, the authors provide suggestions that can help overcome the problems encountered in the implementation of play-based football Warm-up models, namely: a) The final product of this development is a play-based football warm-up model that can be used in activities training at the club. In utilizing it, it is very important to consider the environmental situation, weather and infrastructure. b) Before being disseminated, the Play-based football warm-up model should be prepared to be improved again, especially for the model packaging and contents of the Play-based football warm-up model developed. c) In order that this play-based football warm-up model can be used and help club coaches, it must be printed and produced widely, so that the trainers know and understand the content of the warm-up model developed. d) The subjects used must be wider than various regions to be used as a trial group. e) The results of making this Play-based football warm-up model can be disseminated to all institutions and clubs in Indonesia

CONCLUSIONS

The conclusions in this study are: (a) Play-based football warm-up models can be developed and applied and improve butterfly-style swimming skills. Warm-up models are prepared based on the principle of warm-up in preparing muscles and expanding joint motion so as to avoid the risk of injury. (b) The warm-up model that has been developed, obtained the results of effective data data. The play -based football warm-up model is very simple, easy to understand and can be applied in terms of suitability, variety, and very attractive packaging of book products that are equipped with warm-up media making it easier for trainers and athletes to understand the warm-up material.

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