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## The Effect of Training Circuit Exercise on the Resistance of Badminton Game for the Atlet Club of Rtv Pekanbaru

**Slamet, AgusSulastio, Agus Wiranata**  
PendidikanOlahragaUniversitas Riau  
Email: syahriadipko@gmail.com

**Abstract:** Based on observations that the author has done at the Pekanbaru RTV Club during training and the match, the author sees and encounters several problems, namely: tiredness of the athlete in doing the exercises and matches so that the exercise is not maximal, the athlete not freely in moves and moves to another place due to excessive fatigue so that the movement is not maximal. The purpose of this study is to see the effect of training on endurance Badminton athletes at RTV Pekanbaru club. In this study, researchers took a population of 8 people. The sample in this study uses a total sampling technique, where all populations are sampled. Subsequently, the data obtained from the bleep test, and then, the data were analyzed using the t-test. Based on the research conducted on 8 samples by conducting a pre-test (initial test) bleep test. Then proceed with treatment (Circuit training) for 16 meetings, after which a bleep test was conducted, the results obtained from the pretest and posttest were analyzed by t-test based on the t-test analysis yielded tcount of 2.595 with t table 1.753 then  $H_a$  was received, at an alpha level ( $\alpha$ ) 0.05. It can be concluded that there is an effect of training circuit training on endurance Badminton athletes at RTV Pekanbaru club athletes.

Keywords: Circuit Training, Endurance

### 1. Introduction

Sport is a form of human effort directed and developed to improve the quality of human resources. Sports goals are not just to achieve physical and spiritual freshness, but also to foster a strong sense of national unity. In addition, sports activities can shape behavior, character, personality, discipline and high sportsmanship.

Sports coaching are a part that cannot be separated from coaching as a whole and is not only intended to improve the physical quality of the community. But also, it can make the name of the nation in the international world famous through events or matches. This means that sports have a very important role and cannot be ignored in order to realize the ideals of national development. In connection with this matter, the Government of Indonesia issued a Law concerning the National Sports System No. 3 of 2005 which explains "National Sports Development and Development can guarantee equitable access to sports, further it can improve health and fitness, improve performance, provide sports management who are able to face challenges and demands for changes in national and global life".

Besides being a necessity for every human being to obtain physical health and fitness, sports are also developed to gain achievement in each sport that is fostered and developed for the demands of the sport itself. To gain achievement is not an easy thing other than effort and hard work, the factors that must be owned by each athlete if they want to achieve maximum performance, namely: Physical development, technical development, tactics development, mental development and maturity of champions (Sajoto, 1995: 07). So that athletes can be fostered,

improved, centered with the aim that athletes can achieve maximum performance. Sports achievement is a sport that fosters and develops sports in a planned, tiered and sustainable manner through competition, and is supported by existing sports knowledge and technology. This is intended to achieve maximum achievement. Of the various sports achievements that have grown widely in the Indonesian community, one of them is the sport of badminton.

Badminton is one of the sports achievements because through this sport the name Indonesia is known worldwide, this is evidenced by the success of the Thomas Cup five times and the Uber Cup, eight times winning the men's singles title at the All England, Asian Games, Sea Games and many more achievements in other events (Marta Dinata, 2006: ii). but to achieve this achievement, of course, there are many things that need to be prepared, both athletes' readiness, trainers' readiness to build, and so on.

In addition, in badminton games, athletes can not only master techniques and tactics but also be required to have a good physical condition. To get a good physical condition, physical exercise must be done repeatedly and requires a long time because without good physical conditions the athlete will not be able to take part in the exercises especially the match well. The components of physical conditions include strength, endurance (muscular power), speed (speed), flexibility, agility, coordination, accuracy, reaction. (Sajoto, 1995: 810). One of the components of the most important physical condition in badminton is endurance.

Endurance is the ability of a person to carry out motion with his entire body, in a long time and with a moderate tempo until fast, without experiencing a feeling of severe fatigue. (Sajoto, 1995: 121-122). Physiologists are of the opinion that endurance training is very important for all sports including badminton because badminton is a game that takes a long time to require endurance. In addition, if endurance is less than the athlete will find it difficult to survive in a long game and as a result athletes will experience excessive fatigue, and eventually will not be able to do various things such as moving and reacting to explore every corner of the field during training and matches, as well as the difficulty of doing movements. - moves like jumping forward, backward, sideways, hitting while jumping, making wide strides suddenly in the game and this benefits the opponent.

An observations that the authors have done at the Pekanbaru RTV Club during training and during the match, the author sees and encounters several problems, namely: tiredness of the athlete in doing the exercises and matches so that the exercise is not maximal, not free or not the athlete moves and moves due to excessive fatigue so that the movement is not maximal, so that it can easily be defeated by the opponent. To overcome this problem treatment is given, which treatment is in the form of exercise. The training exercises that can be given to improve endurance are interval training exercises, circuit training exercises, fartlek exercises, etc. (IcukSugiarto, 1993: 134).

In accordance with the purpose of the study, namely to determine the effect of circuit training on endurance in badminton games, this study used an experimental method. Thus the experimental research method can be interpreted as a research method used to find the influence of certain treatments on others in a controlled position (Sugiyono, 2008: 107).

## **2. Methodology**

Because this study did not use a control group, this study used the one group pretest-posttest design approach. In the design, there was a pretest, before being given treatment. Thus the

results of the treatment can be known to be more accurate because it can be compared with the conditions before being treated and after being treated (Sugiyono, 2008: 109-110). This design is described as follows:

Table 1. Research design

|                        |                             |                        |
|------------------------|-----------------------------|------------------------|
| <i>Pre-Test</i>        | Treatment                   | <i>Post Test</i>       |
| <i>(O1) Bleep Test</i> | <i>(X) circuit training</i> | <i>(O2) Bleep Test</i> |

Furthermore, the first step was to do a pretest, namely the Bleep Test to measure the ability of the athlete before being treated. Then the sample was treated with circuit training (circuit training) for 16 meetings. Then the final test was posttest with the Bleep test to see if there was an increase after the treatment was given.

The population of this research was the whole subject of the study (Arikunto, 2002: 108) and the population in this study was the son of RTV Pekanbaru club members consisting of 8 people. Samples are part or representative of the population studied (Arikunto, 1998: 117). So, the sample in this study was amounted to 8 people. However, considering that the population was small, the entire population was sampled (total sampling). The instrument in this study used the bleep test.

### 3. Result And Discussion

#### A. Description of Research Data

The data obtained as a result of the research are quality data through pre- and post-treatment tests. Circuit training exercises on endurance Badminton games for athletes at RTV Pekanbaru club. The variables that exist in this study are training circuit exercises which are represented by X as the independent variable, while with Durability denoted by Y as the dependent variable.

##### 1. Results of Pre-test Endurance (bleep test)

After the endurance test is carried out before the training method is implemented, the initial data is obtained with details in the endurance test results in Table 2 as follows:

Table 2. *Pre-test* analysis of prevention

| No | Data Statistic        | <i>Pre-test</i> |
|----|-----------------------|-----------------|
| 1  | <i>Sample</i>         | 8               |
| 2  | <i>Mean</i>           | 28,85           |
| 3  | <i>Std. Deviation</i> | 2,22            |
| 4  | <i>Variance</i>       | 4,95            |
| 5  | <i>Minimum</i>        | 26,8            |
| 6  | <i>Maximum</i>        | 32,9            |

From the Pre-test Analysis table above, it can be explained that the pre-test results of endurance (bleep test) are as follows: the highest score is 32.9, and the lowest score is 26.8, with the mean

(average) 28.85, standard deviation 2.22 and variant 4.95. Analysis of data contained in the frequency distribution as follows:

Table 3. Interval Data for Pre-test

| No  | Class Interval | Absolute Frequency | Relative Frequency |
|-----|----------------|--------------------|--------------------|
| 1   | 26,8-28,2      | 4                  | 50                 |
| 2   | 28,3-29,7      | 1                  | 12,5               |
| 3   | 29,8-31,2      | 2                  | 25                 |
| 4   | 31,3-32,7      | 0                  | 0                  |
| 5   | 32,8-34,2      | 1                  | 12,5               |
| Sum |                | 8                  | 100%               |

Based on the frequency distribution data above, the percentage of 8 samples turned out to be as many as 4 samples (50%) had endurance results with interval classes 26.8-28.2, then there were 1 sample (12.5%) having power hold with interval class 28.3-29.7, then as many as 2 samples (25%) had endurance results with interval classes 29.8-31.2, and 1 sample (12.5%) had endurance results with the interval class 32.8-34.2, while there are none for the interval class 31.3-32.7. For more details, see the following histogram:

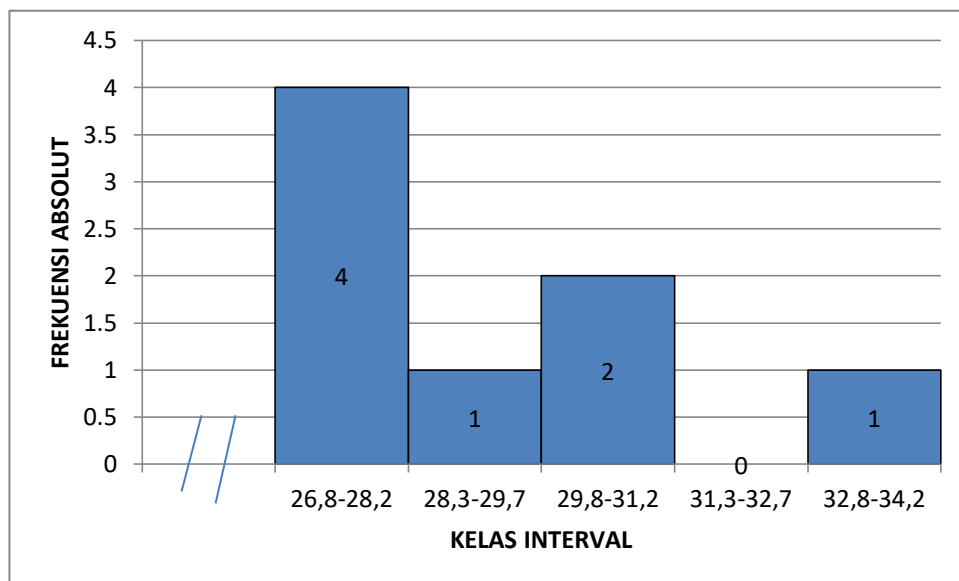


Figure 1. Pre-test Data Histogram Durability

2. Post-test results Endurance (bleep test)

After the endurance test and the training practice are applied, the final data is obtained with details in the Post-test Results analysis in table 3 as follows:

Tabel 4. Analysis result of endurance *Post-test*

| No | Statistic data        | <i>Post-test</i> |
|----|-----------------------|------------------|
| 1  | <i>Sample</i>         | 8                |
| 2  | <i>Mean</i>           | 31,78            |
| 3  | <i>Std. Deviation</i> | 3,39             |
| 4  | <i>Variance</i>       | 11,50            |
| 5  | <i>Minimum</i>        | 27,6             |
| 6  | <i>Maximum</i>        | 37,1             |

From the Analysis table above results it can be concluded that the results of the post-test endurance (bleep test) are as follows: the highest score 37.1 and the lowest score is 27.6, with a mean (average) of 31.78, a standard deviation of 3.39, and variance 11.59 Analysis of the data contained in the frequency distribution as follows:

Table 5. Interval Data for *Post-test of prevention*

| No  | Class Interval | Absolute Frequency | Relative Frequency |
|-----|----------------|--------------------|--------------------|
| 1   | 27,6-29,9      | 3                  | 37,5               |
| 2   | 30,0-32,3      | 1                  | 12,5               |
| 3   | 32,4-34,7      | 3                  | 37,5               |
| 4   | 34,8-37,1      | 1                  | 12,5               |
| Sum |                | 8                  | 100%               |

Based on the frequency distribution data above, the percentage of 8 samples turned out as many as 3 samples (37.5%) had endurance results with interval classes 27.6-29.9, then there were 1 sample (12.5%) has endurance with interval class 30.0-32.3, then as many as 3 samples (37.5%) have endurance results with interval classes 32.4-34.7, and 1 sample (12.5%) has the endurance results with interval classes 34.8-37.1. For more details, see the following histogram:

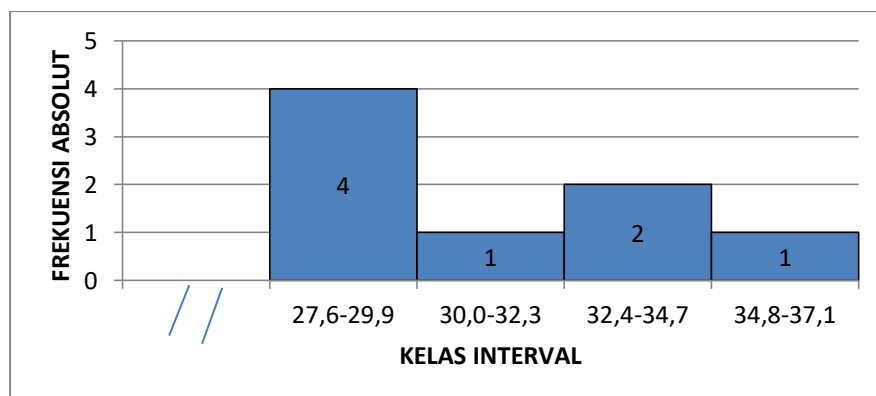


Figure 2. Histogram data of *Post-test*

### Analysis of Analysis Requirements

Testing requirements analysis is intended to test the initial assumptions that are used as a basis for using variance analysis techniques. Assumptions are data that is analyzed and obtained from samples that represent the population with a normal distribution. For that what the testers use is

the normality test. Normality test is done by lilliefors test with a significant level of 0.05 with the results of testing the following requirements:

The normality test is carried out by the Lilliefors test, the results of the normality test on the research variables namely resistance training (X) exercise (Y) can be seen in table 5 as follows:

Tabel 6. Normality test result

| Variable         | Calculated L | Tabled L |
|------------------|--------------|----------|
| <i>Pre-test</i>  | 0,212        | 0,285    |
| <i>Post-test</i> | 0,177        | 0,285    |

From table 5 above, it can be seen that the results of the pre-test durability after the calculation results in calculated L of 0.212 and tabled L of 0.285. This means calculated L < tabled L. It can be concluded that the dissemination of endurance data is normally distributed. For testing the results of the post-test durability data yield calculated L 0,177 < tabled L 0,285. So it can be concluded that the dissemination of the results of the post-test endurance data is normally distributed.

#### Hypothesis Test

The hypothesis tested in this study is, "there is an effect of circuit training on endurance Badminton athletes at RTV Pekanbaru club."

The data obtained were analyzed descriptively. Then the testing of the research hypotheses that had been proposed according to the problem was carried out: "there was an effect of the training on endurance Badminton athletes at RTV Pekanbaru club. Based on the analysis of the t test yielded t count of 2,251 and t table of 1,895. Means that t count > t table, - can be concluded that Ha is accepted.

From the results of the above analysis, it can be concluded that there is an effect of circuit training on endurance Badminton games for RTV Pekanbaru club athletes at alpha level ( $\alpha$ ) 0.05 with a 95% confidence level.

#### Discussion

Physical conditions play an important role in any improvement in performance other than technical, tactic and mental. One physical condition that is very necessary for football. The physical condition training program must be planned well, systematically and aimed at increasing the endurance and functional ability of the body system so that it can cause athletes to achieve better performance as expected.

One form of the physical condition that is very dominant by an athlete is the body's resistance. Endurance can be interpreted as a holding time, that is the length of time a person does an intensity of work or away from fatigue. Endurance is a physical ability that functions to fortify the body from the entry of germs.

Endurance training is very good for improving and influencing the cardiovascular system which includes the heart, lungs and blood circulation. Exercise will be useful if carried out properly

and correctly so that there is an influence on the development of physical fitness. The forms of training include training sessions.

Based on the theory above, to get good endurance results can be done by training. The following is an example of what can be done if it turns out that a particular player needs special training. This study uses a sample of 8 people who carried out the initial data collection and then given training circuit training, after which the final data was taken again. After getting the initial and final data, the data is analyzed.

Based on the t-test yielding t count of 2,215 with ttable 1,895 then  $H_a$  is accepted, at alpha level ( $\alpha$ ) 0,05. It can be concluded that there is an effect of training circuit training on endurance Badminton athletes at RTV Pekanbaru club athletes.

From the results of the research until the processing of the data after the research was carried out starting from the data collection until the data processing was finally used as a benchmark as a discussion of the results of the study as follows: there is the effect of training circuit training on endurance Badminton athletes at RTV Pekanbaru club athletes, this shows there is an influence between the two the variable above. Testing hypotheses that show that there is an effect of circuit training on endurance Badminton athletes at RTV Pekanbaru club athletes, this illustrates that endurance has an effect on circuit training.

So with the existence of a co-training training pattern on endurance Badminton athletes at RTV Pekanbaru club athletes, there is an increase in endurance. this means that training circuit training can be used to increase endurance.

#### **4. Conclusion**

This research originated from observations made by researchers on the badminton game of RTV Pekanbaru club athletes as many as 8 players. Before conducting the study, first took a bleep test, then performed circuit training exercises, the last was taking the final bleep test. From the results of the research until the processing of data after the research has been carried out starting from the data collection to the processing of data which is finally used as a benchmark as a discussion of the results of the study.

Based on the t-test analysis yielded tcount of 2.595 with t table 1.753 then  $H_a$  was received, at alpha level ( $\alpha$ ) 0.05. It can be concluded that there is an effect of training circuit training on endurance Badminton athletes at RTV Pekanbaru club athletes. This means that it can be concluded that there is an effect of the training circuit training on endurance. Badminton athletes at RTV Pekanbaru club athletes, meaning that training circuit training can be used to increase endurance.

#### **B. Recommendations**

Recommendations that might be useful in an effort to increase the muscle power of the arms and shoulders are:

1. For researchers, as input for further research in order to develop knowledge in the field of sports education, and research that intends to continue and develop this research.
2. For trainers to be able to apply the training method by using Circuit Training to be more effective in increasing endurance.
3. For readers, this research is useful as an input in developing a training strategy in sports that can improve the mastery of sports techniques among athletes

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