

Effects of the Use of Placebo on the Endurance

S Hardiansyah

Faculty of Sports Science, Universitas Negeri Padang, Prof. Dr. Hamka Street, Padang, Indonesia

*Corresponding author. Email: hardiansyah@fik.unp.ac.id

ABSTRACT

This study aims to assess the effect of the Placebo on the endurance. This research is a comparison study with the sample of 18 students. This study uses the cooper test as the instrument and conducts the t-test of the dependent sample. The result of this study concluded that the use of Placebo has the significant effect on the improvement of endurance, with $t_{cal} < t_{table}$ of 4,31 < 1.74. therefore, the placebo able to improve the endurance.

Keywords: *Placebo, endurance*

1. INTRODUCTION

Endurance is one part of the element of physical condition. Endurance is needed so that the body can carry out all physical activities without experiencing significant physical deterioration. Students in running all activities really need good endurance, because in addition to college students are also mostly athletes in their respective sports, because it requires good endurance. To obtain good endurance, it is necessary to make an effort to improve endurance capability. One of the things you can do is to use the practice method. In an effort to improve endurance capabilities, the training method does not stand alone but can be influenced by other factors, namely psychological factors. With a good psychological state, the effects given by the training process will run optimally even with a strong psychological state (belief), so someone will be able to carry out activities beyond normal abilities. One way that can be used to help in changing a psychological state is by giving a placebo. Placebo will provide positive suggestions so that it will have a good impact and will likely be able to help students improve endurance. Therefore this study aimed to determine the effects given by placebo on endurance.

1.1 Endurance

Endurance is a person's survival ability from fatigue caused by work or physical activity, Hardiansyah (2017). Weineck (1985) interpreted that endurance as an athlete's ability to overcome physical and psychological fatigue (mental). From the two opinions above, it means that endurance is the body's ability to overcome physical and psychological fatigue caused by physical activity.

Endurance is the main need for humans to be able to undergo all daily activities without being blocked by fatigue. Endurance is basically owned by everyone, but how well endurance depends on the person himself, the more a person is doing physical exercise, the more

endurance tends to be. Many training methods that can be used to improve endurance capabilities include:

- The fartlek method is an endurance development method where the change of running speed is adjusted to individual needs. According to Bompa (2009) the fartlek method (speed play) is a classic method for endurance development. whereas according to Letzelter (1978) the fartlek method is the main method for improving endurance.
- Interval method, carried out based on the principle of interval means that there is a recovery interval between loading and subsequent loading. There are three forms of interval methods, namely: extensive interval, intensive interval and repetitions.
- Competition and control methods
- This method is only used to improve and adjust the endurance capabilities needed in a match.

In the process of increasing endurance capabilities, it is necessary to consider the factors that influence the endurance so that the training program is well organized and has a maximum impact. According to Jonath et al (1981) endurance ability influenced by (1) the ability of heart function, (2) circulatory system, (3) body metabolism, (4) nervous system, (5) ability of organs, (6) coordination of movements and motivation.

1.2 Placebo

Placebo is an empty drug that is usually given to patients to cure certain diseases. Placebo is something that can change a person's psychological response (Stewart-Williams, 2004). Placebo is also often referred to as an empty drug because placebo does not contain active ingredients intended to improve bodily functions. The purpose of Placebo shows that the power of the mind is the most important factor in function in the human body.

Psychological conditions are one of the elements that exist in humans apart from physiological elements, these two elements are interrelated and needy. Placebo given in this study is a substance that does not contain elements that can increase endurance but only ordinary substances, but with the explanation given to students first it is believed that they will be able to give suggestions to students that these substances can help students to improve their endurance.

2. METHOD

This type of research is comparative. This study will compare the average endurance without placebo with the average endurance using placebo. The sample in the study amounted to 18 people with a simple random sampling technique. The instrument used to measure endurance ability is cooper testing, which is a 2400 meter run. Data were analyzed using dependent sample t test.

3. RESULT AND DISCUSSION

3.1 Before Using Placebo

Based on measurements made on endurance ability for all samples before using placebo, the endurance average was 13.37, median was 12.18, standard deviation was 3.10, highest score was 21.43 and lowest score was 10.17. The results of data distribution can be seen in table 1.

Table 1. Endurance Before Using Placebo.

Interval Class	Frequency Absolute	Frequency Relative	Category
>15.31	3	16.67	Very Poor
12.11-15.30	5	27.78	Poor
10.49-12.10	7	38.89	Average
09.41-10.48	2	11.11	Good
08.37-09.40	1	5.56	Very Good
<08.37	0	0.00	Excellent
Total	18	100	

Table 1 shows that there are 3 people who have endurance in the Very Poor category (16.67%), in the poor category there are 5 people (35.71%) and in the Average category there are 7 people (38.89%) and 2 people (11.11%) have endurance in Good category, 1 person (5.56%) has endurance in the Very Good category, while in the no student has endurance ability in excellent category. The data is then presented in the following bar diagram.

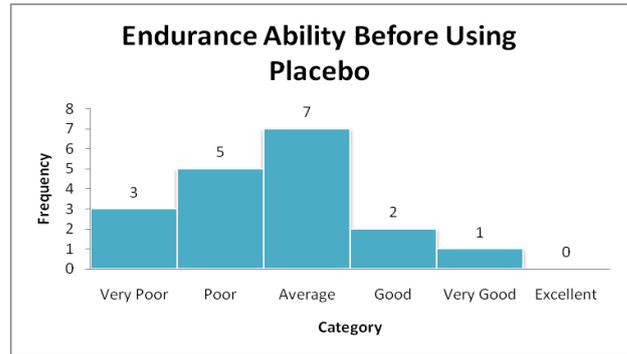


Figure 1. Endurance Ability Categories Before Using Placebo.

3.2 After Using Placebo

Based on measurements made on endurance ability for all samples after using placebo, the endurance average was 12.34, median was 11.25, standard deviation was 2.77, the highest score was 19.11 and the lowest score was 9.47. The results of the distribution of data can be seen in table 2.

Table 2. Endurance After Using Placebo.

Interval Class	Frequency Absolute	Frequency Relative	Category
>15.31	1	5.56	Very Poor
12.11-15.30	4	22.22	Poor
10.49-12.10	8	44.44	Average
09.41-10.48	4	22.22	Good
08.37-09.40	1	5.56	Very Good
<08.37	0	0.00	Excellent
Total	18	100	

In table 2, we can see samples that have endurance in the Very Poor category of 1 person (5.56%), in the Poor category as many as 4 people (22.22%) and in the Average category of 8 people (44.44%) and 4 people (22.22%) have endurance in Good category, 1 person (5.56%) has endurance in the Very Good category, while in the no student has endurance ability in excellent category. The data is then presented in the following bar diagram.

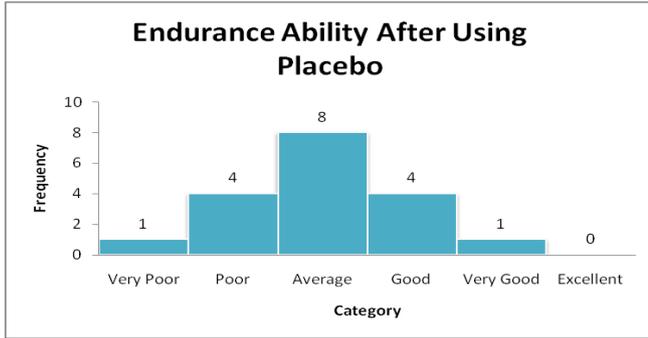


Figure 2. Endurance Ability Categories After Using Placebo.

3.3 Research Hypothesis Testing

The hypothesis in this study was that placebo had a significant influence on increasing endurance. Based on endurance measurements and data analysis that has been done, obtained t_{calc} of 4.31 and t_{table} at α 0.05 dk: $n-1$ is 1.74. therefore t_{calc} 4.31 > t_{table} 1.74, it can be concluded that the hypothesis proposed in this study was accepted.

3.4 Discussion

Endurance is the body's ability to overcome fatigue caused by physical activity. Endurance is something that is very much needed in life (Hardiansyah, 2017) by having good endurance, a person will not get the meaningful interference related to physical problems, therefore students really need good endurance skills to undergo daily routines. The low endurance ability possessed by sports education students based on preliminary data is that most students have endurance abilities at intervals of 10.49-12.10 with an average category which of course will be a problem for students, therefore this needs to be improved.

Low endurance can be improved through several methods of physical training that have been proven to improve the ability of physical conditions, especially endurance through several previous studies including circuit training methods, interval training methods and many other training methods. However, the effects of the training process can be influenced by several factors such as: psychological factors, physical activity outside the training schedule, lifestyle, food consumed and other factors.

The psychological factor is one of the main factors that can affect someone in everyday life. If the psychological state is good then someone tends to be able to do all the activities to the contrary otherwise if the psychological state is not good then all activities will be disturbed. In endurance measurements using the cooper test, which is running as far as 2400 meters

students often experience fatigue caused by muscles which lacking oxygen due to physical activity, but based on the research that has been done, it can be said that fatigue can reduce by giving students confidence in their abilities. Placebo is an empty drug that does not give any benefit to the physical condition, but with the placebo the students who are the samples in this study believe that they will be able to increase energy so that fatigue can be anticipated or reduced. Geers et al (2006) stated that expectations on placebo underlie the placebo response. This means that a person's expectations for placebo will affect the reaction of the person. Placebo will give suggestions that someone is able to overcome fatigue due to consuming substances that can improve endurance, therefore the suggestion makes students able to overcome fatigue due to the belief in the effects of placebo, this is in accordance with the opinion of Stewart-Willians et al (2004) physiological and psychological effects. The placebo effect will stimulate the mind with positive things so as to provide a psychological improvement in a better direction.

With a sample of 18 people, of course, not all samples have the same suggestion and also do not experience the same increase. Geers et al (2006) stated that expectations on placebo did not always have an impact. So the presence or absence of the impact of placebo depends greatly on the suggestion of the placebo itself. From this study, recommendations can be given to trainers or teachers to provide motivation to athletes/students to instill suggestions that athletes/students can do something beyond their limits.

4. Conclusion

From the results of measurements and analyzes that have been carried out and the discussion in the previous section, it can be concluded that placebo has a significant influence on the increase in endurance.

REFERENCES

- [1] Andrew L. Geers, Justin A. Wellman, Stephanie L. Fowler, Heather M. Rasinski, Suzanne G. Helfer. 2011. Placebo Expectations and The Detection of Somatic Information. *J Behav Med* 304:208-217.
- [2] Bompa, Tudor O and G. Gregory Haff. 2009. *Periodization, Theory and Methodology of Training*. Fifth Edition. USA: Human Kinestics.
- [3] Jonath, Ulrich und Rolf Krempel. 1981. *Konditionstraining*. Hamburg: Rowohlt Taschenbuch Verlag GmbH.
- [4] Hardiansyah Sefri. 2017. The Influence of Circuit Training Method On The Enhancement Of Physical Fitness of Sports Education Department Students. *Proceedings The 1st Yogyakarta*

international seminar on health, physical education, and sports science: Yogyakarta.

- [5] Letzelter, Manfred. 1978. *Trainingsgrundlagen*. Hamburg: Rowohlt Taschenbuch Verlag GmbH, 1978.
- [6] Stewart-Williams, S., & Podd, J. 2004. The placebo effect: Dissolving the expectancy versus conditioning debate. *Psychological Bulletin*, 130, 324–340.
- [7] Stewart-Williams, S. 2004. The placebo puzzle: Putting together the pieces. *Health Psychol.* 23: 198–206.
- [8] Weineck, Jurgen. 1985. *Optimales Training*. Erlangen: perimed fachbuch Verlagsgesellschaft mbH.