

Increasing Anaerobic Capacity of Badminton Athlete Through Interval Footwork Training Method

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Abstract: The issue of this study is the needs of badminton players to have good VO₂max and good anaerobic capacity. The purpose of this research is to determine the effect of interval method of footwork training to increase of anaerobic capacity of badminton players. This experimental research Involved 35 UNP male athletes. The data were collected from a test of the 300 m run to measure anaerobic capacities. The data obtained in this study were analyzed using t-test. The results showed that footwork training was significantly influence the athlete's anaerobic capacity through interval training method of footwork.

Keywords: Anaerobic, badminton, footwork training method

INTRODUCTION

Badminton is a sport in its development history of the tribe of Poona in India. But in the history of its development, the United States of a role to develop this game into a modern badminton as today. The popularity of badminton is not inferior to his elder brother the tennis sports field. Badminton enthusiasts increasingly popular and has more than 200 thousand people.

With the first official game played badminton at the 1992 Olympics in Barcelona, Spain, practical appeal and the level of competition is increasingly competitive games (Collection, 2017), Badminton game demanding requirements of physical condition with energy system is a combination of aerobic (60-70%) and anaerobic (40-30%) (Phomsoupha & Laffaye, 2015), Other aspects such as speed, agility, flexibility becomes a physical condition that is quite dominant in this game (Cabello Manrique & González-Badillo, 2003), In the duration of the game 30 to 60 minutes maximum heart rate players can reach 96.8% of the maximum heart rate (Alcock & Cable, 2009),

As one of the fastest racquet sport (it can reach 400 km / h) with an average speed ranging between 25-50 shuttlecock. m / sec requires excellent ability to be able to move quickly in a relatively long time. (The longest match reached 161 minutes) (Verma, Desai, & Mittal, 2013), In a longitudinal study conducted by Laffaye and colleagues who analyzed the final official video of the Olympics start of the year (1992) up to the Olympics London (2012) concluded that an increase in the frequency of stroke by 34%, decrease in the density of employment, reduction of game time effective, means an increase in the intensity of the game and increase the time intervals between rally (Laffaye, Phomsoupha, & Dor, 2015),

By comparison between the average time of 12 seconds rally and rally around the time interval between 24 seconds and 1.26 strokes per second clearly signaled requires work at a high intensity and anaerobic capacity the better course. Although the anaerobic energy system needs only 30%, but is an important requirement to still be able to play this game at a brisk pace with a high intensity and duration of rest periods specified (Goktepe, 2007),

In addition to the physical condition, some aspects of the techniques in badminton game also need to master in order to be able to play and win this game effectively and efficiently. Some techniques dominant in badminton games like mastery of various blow (stroke badminton) (Wang, Guo, & Zhao, 2016), Mastery of the skill in the foot if good step in approaching, when hitting and restore blow if the technique requires a good foot or footwork anyway (Wang et al., 2016), In contrast with a run that has the structure of the movement relatively stable, footwork in badminton is a series of movements choppy suddenly, either moving

forward, rewind, stop suddenly, lunging, jumping in an effort to put the body in the pursuit and control punch (Lin et al., 2007)

As one of the important techniques in the game of badminton footwork has characteristics similar to running the same activity uses the large muscles. Assuming the dominant use of large muscles with various considerations that footwork exercise using the interval method can improve various aspects of the physical conditions in the game of badminton.

Interval training is an exercise that can increase endurance and speed by combining the loading time and rest periods. Some of the principles that need to be considered in the implementation intervals particularly High Intensity Training is first necessary heating and cooling is sufficient, held 2-3 times a week, should not be held on consecutive days, the intensity intervals should not exceed 2-4 minutes. (Herodek, Simonovic, and Pavlovic, 2014)

Footwork technique combines exercise with interval method is one option that is intelligent enough to be able improve stepped technique well while doing efforts to improve the physical quality of one of them is the anaerobic capacity

METHOD

This type of research is quantitative, while the methods used in this research is the Pre-Experiment. According to (Sugiyono, 2010) that the pre-experimental research results constitute the dependent variable is not solely influenced by independent variables ". This can occur in the absence of the control variables and the sample was not chosen randomly. The design of the design used in this study is one group pretest posttest design. In this case that is before the treatment given first samples are given pre-test (initial test) (Argilés, Zegrí, Arbós, García, & López-Soriano, 1992), Data description and testing of this hypothesis is processed using descriptive and inferential statistics with the formula t test. Before the t test analysis, first tested the requirements analysis, the data normality test and t test can only be used to test the mean difference of samples taken from a normal population. After normality test, t test analysis performed for the first and second hypothesis, the t formula related sample (Suharsimi, 2006).

The population in this study are all Nikken UNP badminton athletes who are members of the UNP Nikken badminton club numbering 38 people of which 35 athletes male and 3 female athlete. The sampling technique used in this study purposive sampling technique that only students 20-23 year-old son, actively participated in badminton practice with the number 30. Furthermore, the athletes are given the treatment in the form of footwork drills with Interval method during 16 sessions where exercises carried out 3 times a week. At the end of the treatment (exercise) samples are given post-test (final test). This design is used in accordance with the goals to be achieved is to determine the effect of footwork exercises with interval methods to increase the anaerobic capacity badminton athletes. (Heerden, 2005), The data taken is the best data from two experiments carried out if each athlete. Test run 300 meters is implemented using an athletic track.

RESULT

From the description of the data is visible increase in the mean data from athletes who were treated with Footwork using the method that is the pre-test interval of 54.44 seconds and increased by 3.07 points to 51.37 seconds. Based on testing using the normality test Liliefors obtained, for the pre-test value L_0 of 0.1191 and the value of L_0 Post test for 0.0891. L_{table} table Liliefors Test Critical Value is based on a sample of 30 with a significance level $\alpha = 0.05$ in can $L_{tab} = 0.1610$. The test criteria is if L_0 is smaller than L_{table} means Means L_0 (0.1191) $< L_{table}$ (0.1610) for the pre-test, and L_0 (0.0891) $< L_{table}$ (0.1610) to post-test), so it was concluded that the sample data derived from population which normally distributed.

Furthermore, different test analysis results mean that states there are significant Footwork exercises with methods to increase the anaerobic capacity significantly (X_1). This is based on the results of the analysis of the mean difference test, which gained $t = 4.96 > t_{table} = 2.045$ at significance level $\alpha = 0.05$ can be concluded that there are significant Footwork exercises with interval method to increase anaerobic capacity Nikken UNP badminton athletes significantly.

The decline in average length of time of the game and increased intensity of the game makes the game of badminton into the game full speed. You can imagine with a smaller field size of a tennis court but the speed of the shuttlecock can reach 400 km / hour over the speed of service harshest tennis athletes which only reached 160 km / h. Durability is engaged in a long time in a high intensity become a necessity of modern badminton which can play this game for a long time with the tempo of the game remained high and also The concentration remains high. Is a strong correlation between the fatigue factor or power levels The

concentration(Maso, Lac, Filaire, Michaux, and Robert, 2004), Badminton became very explosive sport, combining technique very specific movement and the relatively small space.

The match was won usually by the readiness of the physical, mental attitude, courage, intelligence and technical skills of the players and the effective and efficient(Maso et al., 2004), Good physical condition as fundamental for the player in moves to change, rotate, stretch in the breadth of the movement as well as a combination of visual acuity and speed of reflexes are good at anticipating the shuttlecock moving so fast(Ooi et al., 2009), Characteristics of the use of footwork exercises with interval method is an exercise that is very appropriate and specific to the characteristics of the movement in badminton where the player is guided using a good stepping techniques (forward, backward, crashing, jumping, etc. in combination between loading time and rest periods.

Some studies have found that almost all the badminton movement performed with a very high intensity so that the forms of exercise and energy system should be directed to either high intensity aerobic high intensity (70-90 of VO₂max), aerobic very high intensity (90-100% of VO₂max) as well as anaerobic capacity (Ømosegaard, 1996), From the overall analysis shows that an increase in anaerobic capacity after the athlete was given treatment Footwork exercises with interval method.

This is in line with research conducted by Sabata and his friends who were summarized in a journal titled "Effects Of Moderate-Intensity Endurance And High-Intensity Interval Training On Anaerobic Capacity And Anaerobic" where Tabata and his colleagues concluded that interval training can provide Aerobics positive influence on the increase as well as to increase anaerobic capacity.(TABATA et al., 1996),

Another study conducted by Helgured and his friends were published in the journal entitled High-Intensity Aerobic Intervals Anaerobic More Than Moderate Improv Training showed that interval training was significantly more effective than the total activity in the lactate threshold or HR Max 70% in improving anaerobic. Anaerobic corresponding changes also with changes in stroke volume (SR), which shows the close relationship of the two(Helgerud et al., 2007),

Footwork is a method implemented by combining interval between loading time and recess time. Do loading time given for 60 seconds, 45 seconds, 30 seconds and 15 seconds. To determine the intensity of the exercise is to take the best capabilities of the implementation of the amount of footwork in time ditentuan earlier. To of the best capabilities of each footwork for 60 seconds, 45 seconds, 30 seconds and 15 seconds is the intensity of 100%. As for the intensity interval used was 70% -90% of the best capabilities with a ratio between the time of loading (work) with a rest period (rest) is 1: 3 to 1: 4, the higher the intensity is given the greater the ratio between the time work and rest periods. It is by considering some of the benefits of interval training system that is (a). More rigorous in controlling its intensity (b). As a systematic approach day by day, enabling easy in observing the progress, (c). Faster fix potential energy than other methods of exercise conditions. (EL Fox, 1993).

From the results of research conducted by Jacob S. Thum and colleagues published in a journal called High-Intensity Interval Training elicits Enjoyment Higher than Continuous Moderate Intensity Exercise shows that the method Although high intensity interval with more physically demanding activities that are more severe than in MICT (Moderate Intensity Continuous Exercise) but more fun for more efficiency in the use of time as well as loading varied stimuli. Thus, in the study 92% prefer the interval of the MICT(Bartlett et al., 2011),

In the implementation of treatment provision footwork exercises with interval method looks more challenged athletes and eager to do the exercises because they are challenged with a target which must be made in each loading and also they like the variety of the various forms of footwork exercises they do.

Interesting things related to the method of interval training that turns interval safer if done by loading rational. The study shows that the control of the intensity of exercise has an important role in preventing and controlling hypertension. The most important thing is how to control the loading duration, intensity and recovery time.(Ciolac, 2012),

As one of the techniques in the game of badminton purpose of the footwork is bringing the body in a good position when performing a punch and take a hit. Good footwork will provide effectiveness and efficiency in the use of power in the game of badminton. Exercise footwork is considered important because it is the basis for determining the quality of a blow. Good footwork allows the athlete to move more quickly and efficiently and be better prepared to receive or deliver a blow is more varied and quality.

Characteristics of the game of badminton is a game that is implemented in a period that is long enough duration 30 minutes in which there are interspersed with intervals of time between the rally. The rally-rally in the player will move according to the direction of the ball by using a good stepping technique. Victory is determined not only by the high quality of the possessed, but the level of play that is balanced victory is often determined by the ability to play with a long time with high intensity.

Giving footwork exercises with interval in the interval method is technically gives the advantage that technically makes moving quickly trained athlete, tactical technique a good step. Physiological basis footwork exercises with interval method to provide precise control may increase more specific anaerobic capacity in accordance with the needs of badminton game that combines the loading time and rest periods rationally

CONCLUSION

Based on the overall results of a calculation which has been done in this study, it can be deduced that that there are significant Footwork exercises with interval method to increase anaerobic capacity Nikken UNP badminton athletes significantly.

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