

Effects Of Pulse Recovery With Active Jogging And Rest: Young Boy Futsal Player

Ramli¹, Tri Aji², Abd. Cholid³, Moh, Hanafi⁴, Luqmanul Hakim⁵,
I Gede Dharma Utamayasa⁶, Gatot Margisal Utomo⁷

¹Faculty of Sports and Health Sciences, Makasar State University, Indonesia

²Sport Coaching Education, Semarang State University, Indonesia

³Sports Education Postgraduate Program Pgri Adi Buana University, Indonesia

^{4,5,6,7}Physical Education, PGRI Adi Buana University Surabaya, Indonesia

Abstract

Background: Exercise is very beneficial for the health of the body, by exercising the body becomes smooth so that the distribution and absorption of nutrients in the body becomes more effective and efficient. The purpose of this study was to determine the significant difference between recovering from jogging and recovering from being active on the speed of recovery of futsal players. In order to maintain an exercise routine, it is very important to fully recover after exercise. Recovery is a very important part of an exercise routine.

Materials and Methods The research method used in this study is the casual comparative method. The sample used is the Heart Rate Pattern Fit 7 test, Heart Rate Monitor with a sample of 12 people. Statistical analysis using t test. From the findings of this study, the jogging group had a mean of 13.00 and a standard deviation of 24.018.

Results: Then from the results of dynamic calculations have a mean value of 35.30 and a mean of 14.875. The t-test obtained is -1.887 while the sig (2 tailed) value or p-value is 0.119 which is greater than the probability value > 0.05. Because > 0.05, it means that H₀ is accepted, which means that there is no significant difference between the variable team recovery from jogging and recovery from dynamic origin at a probability of 0.05.

Conclusion: from this research is that after doing sports activities, especially futsal games, you can rest by jogging or resting dynamically to restore energy.

Keywords: sport performance; pulse recovery; active jogging and rest; futsal

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I. Introduction

Exercise is very beneficial for the health of the body, by exercising the body's metabolism becomes smooth so that the distribution and absorption of nutrients in the body becomes more effective and efficient. Sport is a necessity in human life, especially for those who want to improve their health. Most people exercise to benefit from their workouts, such as performance-enhancing sports, performance-enhancing sports, better endurance, less body fat, gain and even just feeling better. In order to maintain an exercise routine it is very important to fully recover after a workout. Recovery is a very important part of an exercise routine. It has been shown that during a competitive soccer match, an elite player can cover 10-12 km, attaining approximately 80-90% of maximal oxygen uptake ^[1]. Physical exercise is a remarkable stressor for the physiological and psychological aspects of the individual and monitoring recovery is important to identify the appropriate individual 's training loads to maximize performance, especially when training regimens include multiple daily sessions. Current technological developments in the field of wearable sensors enable steady improvement in the quantification of internal- and external-load indicators during activity physique and expand the variety of tools available to measure training responses. Current technological developments in the field of wearable sensors enable steady improvement in the quantification of internal- and external-load indicators during athletic activity and expand the variety of tools available to measure training responses.

The development of futsal in Indonesia is growing very rapidly. Almost every big city in Indonesia has a futsal field that can be used used as a training tool for many groups. Only with 10 people Futsal games can be played, this is different from football games which requires that there are 22 people on a soccer field. One of the characteristic of the game of futsal is that it is played with high intensity, this can cause very high fatigue for every futsal player. It takes a fast recovery phase for a futsal player to be able to play in top condition. Fast recovery is important part that must be considered so that the consistency of playing a player futsal stay awake. Excellent physical condition is required as athlete's foundation in achieving achievements. Therefore physical

exercise should be given early. Of course, adjusted to the program and portion according to the age of the athlete and carried out on an ongoing basis in order to obtain the expected results. Monitoring from the coach is needed so that when detect early if the athlete has a disorder that will result in less than optimal performance when competing.

In addition to high physical performance, futsal players are also faced with a hectic match schedule, where players are required to practice repeatedly in a short period. In the case of athletes, it is often only a day or two of rest between one race and another. It's actually not uncommon for athletes to perform several shows a day, especially during tournament time. The problem now being faced is how coaches can recover their athletes perfectly and quickly from one performance to the next. It is important to consider that although scientific evidence for certain recovery interventions may be lacking, this review does not dismiss the importance of anecdotal reports by elite soccer players^[2]. Recovery is an important part of sports training. This matter enabling people who exercise to be able to exercise more often and active again, without experiencing significant fatigue. However, when practicing we put pressure on our muscles. Super tiny rips in the muscles will occur and when resting our body will repair the tears and muscles in our bodies will become strong. This process will over and over again and will approach the goal of the exercise. So therefore, Rest is very important for recovery. Recovery aims to restore body functions after undergoing high-intensity activity or exercise to the condition normal and an athlete needs effective recovery techniques for the athlete is able to follow the next training session well without experiencing fatigue.

Fatigue will affect the appearance and quality of the movement and technique displayed, the quality or quality of the movement is called high if the performance shows high accuracy and precision as has been stated^[3]. The existence of high activity without regard to sufficient recovery time can cause a buildup of blood lactic acid which results in obstruction of energy intake from the aerobic system in muscle cells and fatigue. This condition results in decreased muscle performance. Based on the interpretation of the data between jogging for 10 minutes, there is a difference in the average decrease in lactic acid levels in the blood after anaerobic exercise (interval training)^[4]. This pulse measurement can describes the level of physical fitness of a person this measurement is done for 10 to 15 seconds. In healthy adults, while at rest then the normal heart rate is around 60-100 beats per minute (bpm). If you have a lower heart rate at rest, on generally indicates more efficient and better heart function. On Under normal circumstances and at rest, an adult's heart will beat regularly between 60-100 beats/minute.

During training and competition the body's energy system becomes weak as a result of the large amount of energy released during the activity. Many athletes train too hard for too long, which can lead to overtraining. This can happen when the muscles are not given the necessary recovery or recovery time. Active recovery can be applied immediately, right after the end of the activity (training or match), or can be delayed, in the next training session^[2]. Good recovery quality during the recovery period can reduce the bad effects of fatigue, including decreased physical ability and a high risk of injury to players, therefore it is important for athletes to take advantage of the recovery period to restore body mass during matches^[5]. Aerobic exercise intensity during Active recovery not more than 60% of beats maximal pulse, activities such as light jogging will reduce the accumulation of lactic acid 62% in the first 10 minutes and will increase by 26 % in the next 10 – 20 minutes.

When we do a tough match or practice, what needs to be considered is not just physical strengthening, but recovery is also very important in this case. Because of that human body have limits and need time to rest, as well as to restore muscle strength, also to regenerate the muscles that damaged during the training phase or competition, so that new muscle is formed which has a better quality than before. the recovery should either be done immediately after practice or after undergoing match, and must do a good recovery so that the body recovering to do the next practice or match. Everyone wants to be on top of the competition, but unfortunately the desire to improve often results in overtraining. This can happen when the muscles are not given the necessary recovery or recovery time. Muscles that don't get enough recovery time won't come back strong and can be fatal for an athlete, causing injury. There are basically 3 active recovery techniques that are applied in soccer: low-intensity aerobic activity (jogging, cycling, deep-water running); stretching; and muscle relaxation through mobilization and loosening of the limbs in pairs ('shaking down')^[6].

The recovery period is a stage that the body needs to return to its original state, the speed of the athlete's recovery can determine the achievements to be achieved. Recovery by using jogging can accelerate the decrease in lactic acid levels in the blood after anaerobic exercise (interval training), because lactic acid during active recovery (jogging) is converted back into energy that can be used in subsequent activities^[4].

The recovery period and the physical activity that will be used are closely related to the main energy system used. The higher the physical activity carried out by a person, the greater the ATP needed to meet his energy needs^[7]. In this case, the routine recovery cooling down procedure becomes important and should be an integral part of the training sessions. herefore, the part of the body which is involved during physical activity, during recovery, that part of the body will be given more time for active recovery. The recovery phase is one

of the most important aspects of sports training. In the recovery phase, there is a process to return the body to its initial state or condition before exercise. The purpose of this study is to find out whether there is a significant difference between recovering from jogging and recovering from being active on the speed of recovery of futsal players at the young boys club. Using time-motion analysis and heart rate monitoring, the aim of the present study was to examine the activity profile and physiological demands associated with the physical effort made by professional futsal players during competitive matches^[8]. On this occasion the researcher will examine the recovery of pulse conditions by jogging and active rest for futsal players at the young boys club.

II. Materials and Methods

The research method used in this study is the casual comparative method. The purpose of this study is to find out whether there is a significant difference between recovering from jogging and recovering from being active on the speed of recovery of futsal players at the young boys club at state junior high school 2 Wonoayu. The implementation of the sample getting ready outside the futsal field and the group has been divided into two groups, namely team A and team B. Recovery is actively jogging with an intensity of 50-60% HR_{mac}. The sample uses the Heart Rate Pattern Fit 7 test, Heart Rate Monitor (HRM).



Figure 1. Heart Rate Pola Fit 7

Participants

This research will be conducted in the gor participation in this study are members of futsal players in the young boys club, which are male and aged 13-15 years, the number involved in this study is 15 people.

Design and Procedures

The next step is data collection, directing the use of procedures and assessing the course of the research, after that the sample fills in the data that has been provided by the data taker outside the field before the test is carried out after preparing to do a futsal games research test for 2 x 20 minutes.

In this study, the heart rate monitor (Hrm) tool is used to measure a person's heart rate directly, or in real time to display the number of heart beats per minute directly during physical activity. chest, right near the heart, and this tool is also equipped with a calorie counting feature. The purpose of this study was to use this tool to find out and record the results of the heart rate ability until team A recovered from jogging and team B recovered from being active in this study.

Statistical Analysis

This research technique uses a descriptive test technique that is used to describe or describe a collection of data or results that have been carried out, a normality test is carried out with the aim of assessing the distribution of data in a group of data or variables, a different test using the t test, which is used to find differences between several sampled and analyzed on a computer in the SPSS version 20 program.

III. Results

This study was conducted to find out whether there is a significant difference between recovering from jogging and recovering from dynamic origin on futsal game recovery. After the data is collected, the following results are obtained.

Table 1. Data Description

Sample Group	Mean
Jogging	13.00
Dynamic	35.30

From the calculation results, the jogging group has a mean of 13.00 and a standard deviation of 24.018. Then from the dynamic calculation results have a mean value of 35.30 and a mean of 14.875.

Table 2. Independent Test Results Sample T-test

T	P
-1,887	0,119

Based on the table above, the t obtained is -1.887 while the sig value (2 tailed) or p value is 0.119 which is greater than the probability value >0.05. Because > 0.05, it means that H0 is accepted which means that there is no significant difference between the team variable recovering from jogging and recovering from dynamic origin at a probability of 0.05.

IV. Discussion

The value of the results of data processing, namely, recovering from jogging at 13.00 and recovering from 31.20. Specific and systematic further research or research must be needed due to the accuracy of the results of research data. These findings provide some scientific support for the use of these recovery interventions that could promote a feeling of well-being. From the results of the study showed that there was no significant difference in the results. In accordance with previous studies, namely that active recovery is better than passive recovery^[9]. Fatigue that occurs due to exercise requires time to rest to replenish the energy that has been drained during activities. There are two forms of recovery, namely active and passive, which are usually done before and after exercise.

The main findings of this were: (a) active recovery induced significant differences in CMJ performance 24 h after training session; (b) active recovery, after specific soccer training, did not have a positive effect on 20 m sprint and balsom agility test performance compared with passive recovery modality; (c) no significant differences were recorded between recovery conditions on preferred lower leg flexibility in the post test results^[10]. The average heart rate of futsal players when wading through a competition is 174 bpm and covering a distance of 4313 m in one match, with these results it can be seen the intensity of the futsal game that can be used as a reference for making training programs, the heart rate of the players really needs to be investigated which later will be taken into consideration in making a specific training program. undergo high-intensity activity or exercise towards the condition normal and an athlete needs effective recovery techniques for the athlete is able to follow the next training session well without experiencing fatigue. Light walking for 3-5 minutes can get the heart rate and rhythm. Breathing decreases gradually toward normal. In competitions that have repeated matches with short time lags^[11]. The duration of active recovery of 15 minutes is sufficient to eliminate lactate compared to passive recovery, as disclosed^[11]. The results showed that players who did active recovery immediately after a game had lower muscle soreness ratings and were closer to their pre-match vertical jump and short running performance measures two days after game than when no recovery was undertaken^[10].

Fatigues that occur in these athletes must be overcome, one way is by therapy that uses water as a medium known as hydrotherapy^[12]. In this study, exercise intensity was determined by monitoring HR, %HR max, La-and RPE levels during the SSGs, this study found that average %HR max responses to SSGs ranged from 86.4to 88%^[13]. The recovery phase is an important aspect of training. During the recovery phase, a process occurs to restore the body's condition initial conditions or pre-exercise conditions. The recovery phase is not exhaustion can lead to a state of overtraining that can negative impact on various bodily functions One of them is the accumulation of lactic acid. The recovery process is broad and complex processes, encompassing many types and levels, therefore the recovery phase is very important to do so that the muscles recover and can work again properly. There are many ways you can do to speed up recovery recovery after experiencing fatigue, one of which is jogging and massage. Jogging can improve circulation and circulation expedite the supply of oxygen which will help recycle acid lactate back into energy. With the availability of energy back derived from lactic acid will recover the impact on fatigue restore performance as before

This study was conducted to find out whether there is a significant difference between recovering from jogging and recovering from dynamic origin on recovering futsal club young boys players. The mean heart rate and percentage of maximum heart rate recorded during futsal play in the present study were generally higher than those recorded for football, handball, and basketball matches^[8]. The results of data processing stated that there was no significant difference. From the calculation results of the descriptive test, the team recovering from jogging has a mean of 13.00 and a standard deviation of 24.018. Then from the dynamic calculation results have a mean value of 35.30 and a mean of 14.875. And based on the results of the independent sample t test, the t value obtained is -1.887 while the sig (2 tailed) value or p value is 0.119 which is greater than the probability value > 0.05. because > 0.05 then the meaning that H0 is accepted which means that there is no significant difference between the team variable recovering from jogging and recovering from dynamic origin at a probability of 0.05. The main findings of the present study are that La- and RPE responses were significantly higher in the passive resting regime and players covered greater total distance in SSGs involving active rest^[13].

The recovery period and the physical activity that will be used are closely related to the main energy system used. The main results of the current report show that in the three conditions, that is, at rest, during exercise and during recovery from maximal exercise, both training programmes reduce SBP significantly and to a similar extent^[14]. In training, especially in matches, this recovery factor plays a very important role. The loss is not because the technique is lagging but running out of energy, especially if the energy reserves are low. For anaerobic sports the oxygen debt suffered during match will be substituted after the last minutes of the match. Adding light exercise for 5-15 minutes is very important for origin recovery purpose. For aerobic sports, as a competition principal or core is the process of stabilizing internal functions for 15-20 minutes where in this time the body will get rid of toxic substances in the body. From the description above, the researcher concludes that recovery is active significant effect on pulse recovery, this is because in active recovery all members of the body play an active role.

For the sportsmen, the goal of training is to improve physical performance^[15]. A normal pulse at rest is the same as the heart rate, which is about 70 to 80 beats per minute. The weight of the workload resistance can be assessed by calculating the work pulse, oxygen consumption, lung ventilation capacity and body temperature. Recovery heart rate or pulse rate is a pulse that is measured after a person has finished doing certain activities. Results show that HRr% is a robust indicator of aerobic fitness and match performance^[4]. A decrease in the pulse rate after a person has finished doing an activity can describe better heart function, it takes about 30 minutes to return to a normal heart rate at rest. Before an aerobic reaction occurs, when start an exercise that becomes a resource Energy is the energy obtained from the reaction Anaerobic, i.e. reactions that do not require oxygen supply. Usually this reaction occurs in 2 first minute of exercise. Therefore capacity for this anaerobic reaction is limited, then people will quickly feel tired. When have felt tired, then the aerobic system will takes place that generates ATP to source of energy in continuing the exercise.

Recovery heart rate or pulse rate is a pulse that is measured after a person has finished doing certain activities. Recovery from exercise and competition is a vital component of the overall exercise training paradigm, and paramount for high-level performance and continued improvement, if the rate recovery is appropriate, higher training volumes and intensities are possible without the detrimental effects of overtraining^[16]. A decrease in the pulse rate after a person has finished doing an activity can describe better heart function, it takes about 30 minutes to return to a normal heart rate at rest. It is widely believed that an active cool-down is more effective for promoting post-exercise recovery than a passive cool-down involving no activity^[17].

Therefore, recovery must be done after the match so that someone does not experience excessive fatigue and can perform optimally in the next match. For the body to recover or improve its abilities, it takes time to rest. And this is of course by speeding up or reducing the rest period. Recovery by jogging cannot be done during the match. Active recovery is a form of rest which means the athlete does not sit still but does physical activity with very light intensity (20% DNM) to light (50% DNM) such as jogging and walking.

Active recovery here is a time of rest in an exercise but is used to move slowly with a low intensity (30-50%) of maximum ability or almost equivalent to 5% of the ability to inhale the maximum volume of air (Vo₂ max). Vo₂max represents the upper limit that determines the ability of an organism to consume oxygen, is expressed in millimeters per kilogram of body weight per minute (ml/kg/min) as a relative value or in liters per minute (l/min) as an absolute value^[18]. The intensity of 50% of the Vo₂max ability is equivalent to the consumption of breathing air/oxygen of about 1.75 liters or 25 ml/kg BW/minute, so that oxygen (O₂) will accelerate the decomposition of lactic acid, lower and the threshold for anaerobic stimulation is increased, muscle pumps are more active. and increased aerobic power.

V. Conclusion

According to our results, coaches and sports scientists should take into account the rest with active recovery should be done to improve the player and team performance capacity for the next game. Therefore, further studies on post-training recovery recommended.

Conflicts of Interest

There were no conflict of interest to declare

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