



The Cardio Respiratory Endurance Level of the Penjaskesrek Gymnastics Instructors in the Education and Teacher Training Faculty of Universitas Syiah Kuala

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Abstract

Endurance is one of the major factors of physical fitness. Endurance is closely related to activities or daily work of human beings in doing jobs or moving. High endurance can maintain physical abilities in a relatively long period of time continuously. This study aimed to describe the level of cardio respiratory endurance of the Gymnastics Instructors in FKIP of Syiah Kuala University. The research question is how are the endurance level of the cardio respiratory endurance of the Gymnastics Instructors in FKIP of Syiah Kuala University. The population in this research was all of the 16 Penjaskesrek Gymnastics Instructors in the Faculty of Education and Teacher Training of Syiah Kuala University, while the samples were drawn by means of purposive sampling technique. The data used in this study were drawn using cardiac respiratory endurance test. The obtained data were analyzed in terms of their averages and percentages. The results show that the obtained values are as follows. (1) The average level of the cardio respiratory endurance obtained from the test is 15.07 and is in the "Medium" category; (2) in general, the average level of the cardio respiratory endurance of the Gymnastics Instructors are just 0 person or 0% in the "trained" category, 2 persons or 12.5% in the "very good" category, 4 persons or 25% in the "good" category, 7 persons or 43.75% in the "medium" category, and 3 persons or 18.75% in the "poor" category. Based on the results of this research, it is suggested that all Gymnastics instructors in the University have good cardio respiratory as well as other physical endurance, and are capable of well performing their duties as gymnastics instructors and improving their exercise and ability so that they perform their duties better.

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INTRODUCTION

Motion and physical activities are a basic function for all of the body organs. The rocketing technological advances, however, have largely ruled out the need for physical activities of most people thus affecting the habits of everyday life from the simple to the complicated ones. Now, we live in a very easy life and have drastically changed the habit of being active to passive. Many activities that previously required physical abilities have been replaced by automated machinery that can easily pull, push, or lift extremely heavy objects just by pressing a button. However, the results of most research have shown us that inactive life (lack of physical activity) has a very bad effect on human health.

Basically, citizens must have good physical quality. Indonesia has now entrusted sports as a means of obtaining such quality. In accordance with the Law of the Republic of Indonesia (UURI) no 3 of 2005 on the national sports system described in Chapter II on the basis, the function and purpose contained in Article 4 in Sembiring (2008, p.7), it is stated that

The national sports aim to maintain and improve health and fitness, achievement, and human quality, implanting values and noble character of sportsmanship, discipline, cultivating and fostering national unity, strengthening national resilience, and raising the dignity and honor of the nation.

Doing sports activities is common among all components of Indonesian society. In spite of that, sports have become one of the pioneers in improving and uplifting the nation and country. Doing sports activities in a systematic, organized, planned, and sustainable manners will enable a person to maintain and improve the degree of health and fitness in order to realize the importance of performing sports activities for the health of the body, both physically and spiritually. Sports activities are very important and should not be ignored in both individual and social life because human beings are a combination of physical and spiritual aspects which are realized in the form

of physical activities. Exercise is also a step to maintain health and physical condition that has been implanted by itself and is taken into consideration in every activity and daily performance. Exercise that is done with great confidence and determination will make a person qualified in life as well as in one of the sports that he or she is engaged in so that it can hold high name of the nation at the national and international levels. Human quality as the perpetrator will be intact and he or she will always be eager to live his/her daily life and also give impact on the conduct of sports activities consistently.

Conducting various sports activities will make citizens ready to response to the problems they experienced and to establish a good spirit for state defense in any circumstances so that they maintain the integrity and strengthen the national resilience. Achievement in the field of sports will also make the nation and the country considered in the international world for its achievements in various sports so that it can raise the dignity and honor of the nation and country. Performing any activities in the life of the nation and country in Indonesia requires a level of physical fitness quality in order to create national development.

Physical fitness is closely related to physical activity. Every human being has different physical activities. Consequently, their physical fitness will also be different. The more physical activity that is done, the level of physical fitness will be higher. Physical fitness is defined as the ability or capability of the body to adjust to the physical burden given to it from daily work without causing excessive fatigue (Depdiknas, 2000, p. 53). Irianto (2004, p. 2) argues that

"In general, physical fitness is a person's ability to perform daily work efficiently without excessive fatigue so as to enjoy his spare time" (Irianto, 2004, p. 2).

To be more specific, according to Lutan (2002, p. 62), physical fitness is defined as the ability of a person to perform physical tasks that

require strength, endurance, and flexibility. Based on the definition, physical fitness is an ability or capability of someone to perform physical activity effectively and efficiently without causing fatigue so that he/she still has the reserves of energy to perform other activities.

The possession of a good endurance will avoid fatigue that is fatal when doing physical activities or more severe exercises. The lack of endurance, joint flexibility, muscle strength, speed, and agility is the main cause of sports injuries. A sports activity can develop a person's physical fitness for the purpose of improving the body's endurance and the physical condition to be able to participate in various activities well and smoothly.

The development of one's physical fitness through sports activities is inseparable from the maturation of endurance; good endurance condition can also affect the good physical condition, and vice versa. An athlete who has a good routine exercise also expects good sports achievement. An Army, Police, Seafarers, military cadets, and various kinds of professions that require excellent physical condition can not be separated from training for strength endurance.

Syiah Kuala University is one of the higher education institutions in Aceh. It consists of a number of faculties; one of them is the Faculty of Education and Teacher Training (FKIP). Within the faculty, there are a number of departments with their study programs for teacher training. One of them is The *Penjaskesrek* Study Program. The *Penjaskesrek* study program has a section for students who are talented as prospective gymnastics instructors. The gymnastics Instructor of *Pengakesrek* FKIP Syiah Kuala University is one of the gym instructors who have been guided and trained in doing gymnastics or in doing the exercises. This gymnastic activity has also been done in various places among others in the FKIP building followed by the students and employees of *Penjaskesrek* FKIP Universitas Syiah Kuala. The gymnastics instructors of *Penjakesrek* FKIP Universitas Syiah Kuala have participated in various competitions in the championship events

in Aceh. Basically for this activity to take place, there many things that must be done by the instructors to improve their gymnastics movement ability in order to be able to do good movement in accordance with the actual movement or in accordance with the technique of gymnastics movement. There are a number of gymnastics delivered by the Instructors to hold gymnastics activities. For example, SKJ gymnastics, aerobics, and new gymnastics created by the instructors themselves with tools that support the continuity of the gymnastics itself and such instruments and devices as gymnastics music, player, son, laptop, as well as a feasible field prepared for the gymnastics activities. In addition, it is necessary for the cardio respiratory endurance of the *Penjaskesrek* gymnastics instructor of FKIP Syiah Kuala University to be examined in order to uncover their level of professionalism as *Penjaskesrek* gymnastics instructors of FKIP Shyiah Kuala University. It is expected that after knowing the level of their cardio respiratory endurance, solutions can be given if the instructors still have poor cardio respiratory endurance.

Based on the preliminary observation at the *Penjasesrek* study program of FKIP Syiah Kuala University, it was found that in carrying out the task as gymnastics instructors, they did activities which spent up their physical conditions, such as taking part in exercises that have been strictly scheduled on the basis of a mutual agreement. Therefore, the *Penjaskesrek* gymnastics instructors must have good cardio respiratory endurance in order to run their daily activities optimally.

It is necessary to study the level of cardio respiratory endurance of the gymnastics Instructors of FKIP Syiah Kuala University in order to discover their professionalism as gymnastics instructors of FKIP of Universitas Syiah Kuala. It is expected that after knowing the level of the cardio respiratory endurance of the instructors of FKIP University of Syiah Kuala solution to the poor endurance of the instructors can be sought.

Based on the problems that have been presented above, this study aimed to uncover the

level of cardio respiratory endurance of the gymnastics instructors of FKIP of Universitas Syiah Kuala in order to improve their level of cardio respiratory endurance. The researchers intend to conduct research entitled "The Level of Cardio respiratory Endurance of the Penjaskesrek Gymnastics Instructors in the Faculty of Education and Teacher Training (FKIP) of Syiah Kuala University".

Nature of Cardio respiratory Endurance

Endurance is one of the major factors in physical fitness. As stated by Sajoto (1988, p. 4), endurance is "the ability of a person to use that cardio respiratory organs effectively and efficiently to run work continuously involving a number of muscle contractions with high intensity for a long period of time".

Quoted from the Ministry of National Education, endurance is the ability of the body's organs to overcome fatigue caused by a burden for a relatively long period of time. Sajoto (1995, p.8) said that endurance can be classified into two categories, namely

1) General endurance or cardio respiratory endurance is the ability of a person to use his/her cardio respiratory system effectively and efficiently for continuous work involving the contraction of large and highly intensive muscles for a long time; 2) Local muscle endurance is the ability of a person in using a muscle group to contract continuously in a relatively long period of time with a certain load.

Based on the above quotation, it can be inferred that endurance is the ability of a person to perform heavy tasks continuously for a long period of time by involving sections of muscles such as thigh muscles, leg muscles, chest muscles, and abdominal muscles. Endurance can be Improved by doing sports exercises such as interval training. Endurance must be increased with the intensity of the exercise, the longer the better so as to survive the fatigue. According to Jonath (1981, p.116), for junior beginner athlete, the load duration is under 30 minutes, while the load duration for junior athlete with achievement ranges from 50 to 120 minutes. This duration of training time is

divided further into three methods of training: continuous, alternate, and fartlek training methods.

Continuous method is characterized by the ability to maintain running speed for a long time and for the determination of its intensity from the perspective of pulse between 150 to 170 times/minute. Meanwhile, the alternate method is marked by the change of running speed programmed during loading. For example, for 30 minutes running: every 100 meters run is at a speed of 4 meters/second and every 500 meters run is at a speed of 5 meters/second, these are done alternately. The fartlek method is characterized by the turn of running speed adjusted to the needs of individual athletes. In other words, the athlete determines his/her running speed.

Furthermore, Sajoto (1988, p. 21) says that endurance exercise is an exercise done by an athlete with his/her own weight as a burden, with the form of such exercises as running, swimming, cycling and rowing. Based on the above quotation, it is clear that the purpose of exercise is to improve endurance by giving more burden on the heart so it can work more effectively and efficiently especially when it is needed to supply blood during heavy and long working hours. Cardiac pulmonary endurance is the ability of the blood circulatory and respiratory system of a person in carrying out heavy activities continuously within a certain period of time by involving the muscles in carrying out the activities. Someone is said to have a good cardio respiratory endurance if he/she is able to perform activities or jobs with heavy burden over a certain period of time.

The cardio respiratory endurance can be increased by doing exercise; the goal is to improve a person's ability to overcome fatigue during physical activity. Exercise that is done regularly, repeatedly, and with increasing amount of burden will have an impact on the quality of the cardiac respiratory endurance, as well as respiratory and circulatory system so that the body will be able to survive in fatigue for a relatively longer period of time.

Cardiac pulmonary endurance plays an important role in everyday life, cardiac pulmonary endurance is also a real source of energy when we perform any activity; the weakness of one's cardiac pulmonary endurance will cause a sense of fatigue so that he/she cannot do heavy activities in daily life. In doing daily activities, everyone should pay more attention to the endurance of the heart and the lungs in order to avoid fatal injuries during the activities. Physical activities should be programmed and in accordance with the principles of practice, thus one will gain meaningful benefits for the body, especially the quality of cardio respiratory or cardiovascular endurance.

METHODS

This research is characterized as a descriptive research type. Descriptive research is a study that is focused on the problems raised in the present moment. According to Arikunto (1991, p. 63) "descriptive research is research that studies problems in community as well as certain situations including activities, attitudes, views, and processes that take place as well as certain influences or a review of the ability possessed by individuals".

Based on the above notion, this research aimed to describe the levels of cardiac respiratory of the Penjaskesrek gymnastics Instructors of FKIP Syiah Kuala University. The research covers cardiac pulmonary endurance tests which includes the process of sampling followed by the procedures of cardiac respiratory endurance measurement, and the implementation of the instrument for data collection, data analysis, and report of research results.

The population of this research was all members of the Penjaskesrek gymnastics instructors at FKIP Syiah Kuala University

amounting to 16 persons. A sample is the smallest part of the population. The sampling technique employed in this research was purposive sampling. A data collection technique is a procedure used for obtaining data in a study. The procedure consisted of guidance on the implementation of the measurement used for obtaining the data in this study. The technique used for data collection in this research was in the form of a test; the endurance levels were measured using the 2.4 kilometer run test (Cooper Test) consisting of the following test items.

The purpose is to measure the ability and willingness of a person to do physical activities. This method measures the time required to run as far as 2.4 km.

Implementation:

- a. The initial attitude of the participants with the breast number to move from the starting line
- b. The ready-made movement prepared to run
- c. The cue "yes" the participants started running up to cover a distance of 2.4 km
- d. The results are recorded when the participant has entered the finish in minutes or seconds.

The study was conducted at the University Stadium of Syiah Kuala University on February 7, 2017 at 09.00 - finish.

RESULTS AND DISCUSSION

Results

The research data obtained from the endurance tests conducted on the Penjaskesrek gymnastics instructors at FKIP Syiah Kuala University were in the form of quantitative data. They were obtained directly from the cardio respiratory endurance test. To facilitate processing, the data were tabulated resulting in a list presented in Table 1.

Table 1. Result of Cardio respiratory Test on Penjaskesrek gymnastics Instructors of FKIP Syiah Kuala University.

No	Name	Register Number	Age	2.4 KM Results
1	2	3	4	5
1	Ana fitri	1406104020048	21	18.48
2	Alfi Rahmi	1406104020002	20	13.36
3	Amminur Wahyu	1406104020078	20	10.58
4	Cut Nita Kurniawati	1406104020100	22	17.53
5	Elfida	1406104020076	22	18.56
6	Fakhrurrazi	1206104020060	22	9.58
7	Ika Yuni Kurniasih	1306104020083	21	16.27
8	Kurnia Eliyanti	1306104020022	21	15.52
9	Masykur	1206104020008	23	10.03
10	Mira Lidiawati	1506104020041	19	16.22
11	Masyitah	1406104020011	20	18.40
12	Putra Sukma Cahyadi	1406104020048	20	11.44
13	Ridayati	1306104020001	22	17.04
14	Rizki Amalani	1406104020004	19	14.28
15	Saripah	1206104020108	22	15.57
16	Salmiati	1506104020022	19	18.38
Total				241.24

After obtaining the Raw-Score data, the next step the researchers did was looking for value of the cardio respiratory endurance of the

Penjaskesrek gymnastics instructor of FKIP University of Syiah Kuala. The Raw Score and their values are presented in Table 2.

Table 2. Raw-score and value of the cardio respiratory endurance of the Penjaskesrek gymnastics instructors of FKIP University of Syiah Kuala.

No	Name	Register Number	Age	2.4 KM Results	Catagory
1	2	3	4	5	6
1	Ana fitri	1406104020048	21	18.48	Very Poor
2	Alfi Rahmi	1406104020002	20	13.36	Good
3	Amminur Wahyu	1406104020078	20	10.58	Good
4	Cut Nita Kurniawati	1406104020100	22	17.53	Poor
5	Elfida	1406104020076	22	18.56	Very Poor
6	Fakhrurrazi	1206104020060	22	09.58	Very good
7	Ika Yuni Kurniasih	1306104020083	21	16.27	Poor
8	Kurnia Eliyanti	1306104020022	21	15.52	Poor
9	Masykur	1206104020008	23	10.03	Very good
10	Mira Lidiawati	1506104020041	19	16.22	Poor
11	Masyitah	1406104020011	20	18.40	Very Poor
12	Putra Sukma Cahyadi	1406104020048	20	11.44	Good
13	Ridayati	1306104020001	22	17.04	Poor

14	Rizki Amalani	1406104020004	19	14.28	Good
15	Saripah	1206104020108	22	15.57	Poor
16	Salmiati	1506104020022	19	18.38	Very Poor
Total				241.24	

Table 3. Percentages of the cardio respiratory endurance of the Penjaskesrek gymnastics instructors of FKIP University of Syiah Kuala.

No	Category	Frequency	Percentage
1	Trained	0	0
2	Very good	2	12.5
3	good	4	25
4	poor	7	43.75
5	Very poor	3	18.75
Total		16	100

Based on the figures in Table 3, the cardio respiratory endurance ability of the gymnastics instructors of FKIP of Universitas Syiah Kuala was just 0 person or 0% in the "Trained" category, 2 persons or 12.5% in the "very good" category, 4 persons or 25% in the "Good" category, 7 persons or 43.75% in the "poor" category, and 3 persons or 18.75% in the "very poor" category.

Discussion

The research concerning the cardio respiratory endurance was conducted on the gymnastics instructors of FKIP University of Syiah Kuala. The researchers were guided by the test developed by Nurhasan (1991, p.220). The analysis of the research data found that the average score obtained from the endurance test was 15.07 and was in the "poor" category. Meanwhile, the percentage of the cardio respiratory endurance level of the Penjaskesrek gymnastics instructors of FKIP Syiah Kuala University was just 0 person or 0% in the "Trained" category, 2 persons or 12.5% in the "very good" category, 4 persons or 25% in the "Good" category, 7 persons or 43.75% in the "poor" category, and 3 persons or 18.75% in the "very poor" category.

In terms of muscle work, endurance is the ability of a muscle a group of muscles work

in a certain period of time, while in terms of the energy system endurance of is the ability of the body's organs to work in a certain period of time. According Sajoto (1988, p. 16), endurance is the ability of a person to use the cardio respiratory system along with its blood circulatory effectively and efficiently to run the work that causes the contraction of a number of muscles in a long time. In the world of sports, endurance is known as the ability of body organs to fight against fatigue during activity or work. Endurance exercises are affected and have an impact on the quality of the cardiovascular, respiratory, circulatory systems. Therefore, the factor that influences the endurance is the maximal ability to fulfill oxygen consumption marked with VO₂max.

Cardio respiratory system is a person's ability to utilize the cardio respiratory system along with its blood circulation effectively and efficiently to run the work continuously involving the contraction of muscles with high intensity in a long time. Cardiopulmonary endurance is very important for a person's life in doing activities or daily work. The term endurance itself is the ability to do work or activity without experiencing excessive fatigue. Endurance is closely related to the activities or the daily work of human beings in doing jobs or moving. This is in accordance with the

Widaninggar's (2002, p.1) opinion that high endurance can maintain the ability in a relatively long period of time continuously. In addition, Wahjoedi (2000, pp. 58-59) claims that physical fitness is the body's ability to perform tasks and daily work diligently without experiencing significant fatigue and with the remaining energy reserves he is still able to enjoy free time and face emergency matters.

CONCLUSIONS AND SUGGESTION

Based on the results of the research and data analysis on the level of the cardio respiratory endurance conducted on the gymnastics instructors of FKIP University of Syiah Kuala, it can be concluded that:

1. The average score obtained from the cardio respiratory endurance conducted on the gymnastics instructors of FKIP University of Syiah Kuala is 15.07 and is in the "poor" category.
2. The percentage of the cardio respiratory endurance on the basis of the test conducted on the gymnastics instructors of FKIP University of Syiah Kuala is 0 person or 0% in the "trained" category, 2 persons or 12.5% in the "very good" category, 4 persons or 25% in the "Good" category, 7 persons or 43.75% in the "poor" category, and 3 persons or 18.75% in the "very poor" category.

Based on the above conclusions, the authors convey some suggestions to all parties concerned that the cardio respiratory endurance is the need of everyone in improving their physical and spiritual fitness and cardio respiratory endurance is a very important thing for human life in doing activities or daily work either in a short or long period of time.

1. Based on this research results, is expected that all related parties, especially gymnastics instructors of

FKIP Universitas Syiah Kuala to have good cardio respiratory endurance and other physical components so that they are capable of carrying out routine exercise activities better and effectively in order to improve their physical fitness both in the field of academic and sports achievements in the organized sports competition forum.

2. Furthermore, for other researchers, this research may be continued with other research solving broader problems with larger number of samples so as to contribute to trainers, coaches or related party that can be in the form of optimal fitness improvement.

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