



The Differences of Students' Aerobic Endurance in Urban and Rural Areas Post Covid-19 Pandemic

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Abstract. This research aims to understand the differences in aerobic endurance between students in urban and rural areas post Covid 19 pandemic. This research is descriptive research using a quantitative approach. The sample used was junior high school (SMP) students in one of the districts in South Sulawesi Province. The sample collection technique used purposive sampling, so that 30 students were obtained for each. The aerobic endurance test instrument used is the Bleeps test. Descriptive statistics were used to obtain a general picture of aerobic endurance. Inferential statistics use the t-test to determine the differences in aerobic endurance. This research was conducted in 2023 (July-August). Results: (1) The aerobic endurance of students in urban areas after the pandemic status was lifted and entering the endemic period was in the poor category. (2) The aerobic endurance of students in rural areas after the pandemic status was lifted and entering the endemic period was in the good category. (3) The aerobic endurance of students in rural areas is better than students in urban areas after the pandemic status is lifted and they enter the endemic period.

Keywords: Aerobics, Students, Covid-19.

1 Introduction

The first case of Covid 19 was in December 2019 in Wuhan (China) [1], on March 11th 2020 WHO declared this virus as pandemic [2]. then on Wednesday 21st June 2023 the Government of the Republic of Indonesia decided to revoke the pandemic status and we began to enter endemic period [3]. The emergency of the Covid 19 pandemic has had an impact on various aspects of life, including physical education and sports coaching activities. The tightening requires trainers and efforts to develop sports SMEs to be carried out using certain methods and reducing direct face-to-face contact [4]. Various restrictions resulting from the COVID-19 pandemic in Indonesia starting from phases such as Lockdown/Large Scale Restrictions (PSBB). Small/Limited Scale Restrictions, and New Normal (Adaptation to new habits) have made the physical education learning process slightly hampered [5]. Sports training facilities must be closed and training activities carried out at home or online to follow government health protocols [6]. In this regard, various important information to reconstruct the course of the physical education learning process, sports coaching activities, and health purposes is really needed.

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B. Bustang et al. (eds.), *Proceedings of the Second Makassar International Conference on Sports Science and Health (MICSSH 2023)*, Advances in Health Sciences Research 74,

https://doi.org/10.2991/978-94-6463-354-2_2

One of the important information that could be a source of information and reference for parties with authority to reconstruct the course of the physical education learning process and/or sports coaching activities is by investigating and understanding the differences in aerobic endurance between students in urban and rural areas post Covid 19 pandemic. Aerobic endurance is a complex component of physical fitness, because it involves the interaction of several physiological processes in the cardiovascular, respiratory and muscular systems, including the capacity of the lungs to inhale oxygen, the capacity of blood in the lungs to absorb oxygen, the capacity of the heart to pump blood containing oxygen to muscle tissue and the capacity of muscle tissue to absorb oxygen from blood and use it to produce energy. At the cellular level, oxygen is used to convert food essence, especially carbohydrates and fats, into energy which is needed to maintain body functions. Therefore, the combination of the cardiovascular and respiratory systems is a mechanism for supplying oxygen to the muscles.

Considering that aerobic endurance is an important factor that students in physical education learning, athletes and/or the general public must have in coaching activities for sports and health purposes, regular physical activity by increasing aerobic endurance can reduce the risk of non-communicable diseases that are common in society today, including coronary heart disease, stroke, diabetes, hypertension, depression, osteoarthritis, and several types of cancer (eg endometrial and breast cancer) [7]. One of the important physical abilities is VO₂Max because it really supports all a person's physical activities. In choosing appropriate exercises in an effort to increase VO₂Max abilities, these are exercises that include aerobic activities such as walking, running, swimming and so on [8] [9]. Aerobic exercise is a type of exercise that can train the whole body [10]. Schools and physical education environments are the most appropriate vehicle for increasing students' aerobic fitness levels through the application of efficient resistance training methods and motivating students to improve their healthy lifestyle [11].

2 Method

This research applied descriptive quantitative approach. The sample used was junior high school (SMP) students in one of the districts in South Sulawesi Province. The sample collection technique used was purposive sampling, or determining samples with initial provisions, namely; (1) Students come from schools in rural areas and schools in urban areas. (2) These students continue to take part in the physical education learning process with certain restrictions in accordance with health protocols during the Covid 19 period, so that there are 30 students each. The aerobic endurance test used is the Bleeps test according to the format [12] [13]. Descriptive statistics was used to obtain a general picture of aerobic endurance, then be compared with the assessment norms. Further, inferential statistics used the t-test to determine the difference in aerobic endurance of students at rural schools and urban schools. The data analysis of the research was done by using the SPSS version 22 computer program system. This research was conducted in 2023 (July-August).

3 Results

The frequency tabulation percentage results of aerobic endurance data for students in urban areas were summarized in Table 1.

Table 1. Recapitulation of the percentage of aerobic endurance data for students in urban areas

Asesment Norms	F	%	Classification
38.6 – 42.2	0	0.0	Very Good
34.9 – 38.5	0	0.0	Good
31.2 – 34.8	1	3.3	Average
27.5 – 31.1	18	60.0	Poor
23.6 – 27.4	11	36.7	Very poor
Amunt	30	100	-

Based on the table above, it can be seen that the percentage of frequency tabulation results of aerobic endurance data for students in urban areas out of 30 students were; 1 student in the average category (3.3%), 18 students in the poor category (60.0%) and 11 students in very poor category (36.7%). Further, there was no student who had aerobic endurance in the very good or good category. Meanwhile, the average result obtained was 27.8367. Thus, it can be concluded that the aerobic endurance of students in urban areas after the pandemic status was lifted and entering the endemic period was in the average category. The percentage results of frequency tabulation of aerobic endurance data for students in rural areas are summarized in table 2 below.

Table 2. Recapitulation of the percentage of aerobic endurance data for students in urban areas

Asesment Norms	F	%	Classification
38.6 – 42.2	8	26.7	Very good
34.9 – 38.5	14	46.7	Good
31.2 – 34.8	7	23.3	Average
27.5 – 31.1	1	3.3	Poor
23.6 – 27.4	0	0.0	Very poor
Jumlah	30	100	-

The table showed that the percentage of frequency tabulation results of aerobic endurance data for students in rural areas out of 30 students were; 8 students (26.7%) were in very good category, 14 students (46.7%) were in good category, 7 students (23.3%) were in average category, 1 student (3.3%) was in poor category, and there is no student (0%) in the very poor category. Meanwhile, the average result obtained was 37.8167. Thus, it can be concluded that the aerobic endurance of students in rural areas after the pandemic status was lifted and entering the endemic period is in the good category. The

analysis results of the differences in aerobic endurance between students in rural and urban areas are summarized in table 3 below.

Table 3. Recapitulation of the percentage of aerobic endurance data for students in urban areas

Students	Mean	t_0	$t_{0.05}$	Sig.
Rural are	37.8167	14.517	2.000	0.000
Urban area	27.8363			

From the summary results, the $t_{\text{observation}}$ value = 14.517 $>$ $t_{\text{Table}} = 2.000$, while the significance probability value obtained is $0.000 < \alpha 0.05$. It can be concluded that there is a significant difference in aerobic endurance between students in rural and urban areas after the pandemic status was lifted and they entered the endemic period. This is proven by the average aerobic endurance values of students in both areas of residence ($\mu_{\text{peg}} = 37,8167; \mu_{\text{kot}} = 27,8367$).

4 Discussion

Thus, it was concluded that the aerobic endurance of students in rural areas was better than students in urban areas. If we look at their habits, rural students have better physical activity, because they generally walk to school and go home on foot, and do other physical activities such as helping their parents on plantations and rice fields. Activities at night are also limited which make the rest time is much longer and maximum. Rural areas have more comfortable areas because the atmosphere is still natural. As for students in urban areas, of course there is less physical activity because they use vehicles, and in the evenings, there are many choices for spending free time, and the atmosphere in urban areas is certainly no longer natural, because of the hustle and bustle of vehicles and industry around it.

Related to the Covid-19 pandemic situation, students in urban areas experience more restrictions than those in rural areas. As well as sports coaching centres which are generally the basis for urban communities to exercise and maintain their health, more and more of their facilities and infrastructure cannot be used. For this reason, various things that can be reconstructed include maximizing sports coaching centres which generally have more and optimal facilities and infrastructure, especially for students and/or communities in urban areas. As for students in rural areas, what can be maximized is various appeals to use print and electronic media, online media, and even the introduction of sports applications to increase the understanding and knowledge of students and/or the community in rural areas. The existence of personal facilities and infrastructure, knowledge about health through government appeals using print and electronic media, online media, and sports applications are very useful in motivating someone to exercise during the pandemic (in Canada) [14] [15]. In Australia, it uses digital platforms (YouTube, Instagram, and Facebook), online applications (such as Centr and MyFitnessPal), active electronic games such as Xbox Kinect, online training or racing (Zwift, FullGaz, and Rouvy), online classes (recorded/ online) using Zoom, a sports-specific

application designed directly by sports organizations such as Team Builder for physical activity (sports) is very useful when tightening occurs [16]. The solution to increasing physical activity (exercise) during the pandemic is to use home fitness applications, social media support, streaming videos of physical activity (exercise) [17].

5 Conclusion

(1) The aerobic endurance of students in urban areas after the pandemic status was lifted and entering the endemic period was in poor category. (2) The aerobic endurance of students in rural areas after the pandemic status was lifted and entering the endemic period was in good category. (3) The aerobic endurance of students in rural areas is better than students in urban areas after the pandemic status is lifted and they enter the endemic period. Considering that the habits and environment of students in rural areas have a healthier lifestyle compared to students in urban areas, what can be maximized is sports facilities and infrastructure in urban areas, considering that generally these facilities and infrastructure are better than in rural areas. As for rural areas where facilities are limited, knowledge about health should be further increased through government appeals using print and electronic media, online media and sports applications.

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