



Related Health and Fitness in Children Aged 7-12 Years in View of Availability of Public Open Space and Socio-Economic Level in Ponorogo District

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Abstract. It is possible to enhance children's development and progress by using physical fitness as a benchmark for their motor abilities. This study aims to identify and monitor the movement behavior of elementary school-aged children with different levels of socioeconomic status and the accessibility of public open spaces in Ponorogo District. This research includes several factors supporting children's physical fitness regarding government programs down to the socioeconomic level. The approach is qualitative, and the tools utilized include the following: 1) Eurofit test; 2) Public open space data and a questionnaire on how people use public open space; and 3) A parent-child employment and income questionnaire. According to the study's findings, parents of children aged 7 to 12 in the Ponorogo District, typically earn more than the UMK Ponorogo and children in that district typically have a sufficient level of physical fitness, scoring an average of 57% out of a possible maximum of 88% and 28% at the lowest value. The range of the study's data's degree of confidence is 55.9573–62.5094. Ponorogo District has high socioeconomic conditions, with 7 people earning extremely high incomes and having an average physical fitness of 64%; 27 people earning high incomes and having an average child physical fitness of 58%; 19 people earning moderate incomes and having an average physical fitness of 52%; and 7 people earning very low incomes and having an average physical fitness of 56%. There are 13 public open spaces accessible to the local population in the city center's Ponorogo sub-district.

Keywords: First Keyword, Second Keyword, Third Keyword.

1 Introduction

Lack of physical activity in children can affect their growth and increase their chance of developing diseases as adults [1]– [3]. The contemporary era presents a very promising potential for health interventions involving exercise programs for kids; in

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addition, increasing physical activity is also linked to raising kids' physical fitness, and this rise has a favorable effect on bodily health [4]. Higher brain plasticity, higher cardiovascular functional capacity, and musculoskeletal efficiency are all indicators of increased physical activity [5]. The scale of how much free time is used by youngsters can be used to determine whether they engage in physical exercise or not [6]. A person's ability to manage daily tasks in this manner is taken for granted [7], [8]. According to the study's findings, those who regularly engage in physical activity at school, work, and other locations will have better health and physical condition [9]. They will also have better daily activity routines. Children's daily activities, such as playing with friends, working on schoolwork, or going on visits, can be used to observe how they use their spare time. This falls under the category of the child's daily movement behavior. Movement behavior is a way of living that modifies physical activity by incorporating sedentary or recreational screen time, light, moderate, and vigorous physical activity (MVPA), and bedtime. Recently, industrialized nations have started using 24-hour movement behavior recommendations as a comprehensive strategy for promoting children's and adolescents' healthy development [10]. Children's physical and mental health indicators are positively impacted by the implementation of movement behavior in daily life [9], [11]– [13]. However, there are significant variations in children's signs of physical activity in rural and urban areas. The behavior of school-age youngsters on their way to and from home is one such signal. The availability of public open space that the community can use for activities is another indicator.

In Indonesia, the availability of public open space for sports activities has begun to develop to a better standard, supported by the active participation of the local government [14]. The Ponorogo Regency is located in the western part of East Java Province and is directly adjacent to Central Java Province. Ponorogo Regency has an area of 1,371.78 km² which is located between 111° 17' - 111° 52' East Longitude and 7° 49' - 8° 20' South Latitude with an altitude between 92 to 2,563 meters above sea level, which is bordered by Madiun, Magetan and Nganjuk in the north, Trenggalek and Tulungagung districts in the east, Pacitan Regency in the south and Pacitan and Wonogiri Regencies in the west (Ponorogo Regency Government Web).

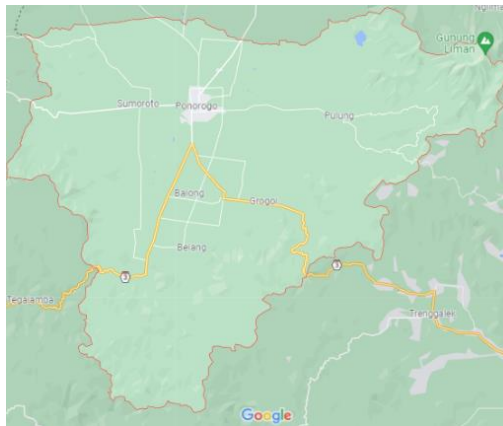


Fig. 1. Map of Ponorogo Regency

The majority of people in Ponorogo Regency's communities work in the agricultural sector (51.78%), followed by trade, restaurants, and hotels (17.34%), the social services sector, and individuals (11.83%). According to the Ponorogo Regency BPS, processed by Bapeda, which displays an index of 68.93, the Ponorogo Regency has a low human development index. It is focused on increasing income, the economy, and the workforce in Ponorogo Regency. [9]. Public open spaces are present in Ponorogo Regency and take the shape of parks, town squares, stadiums, and other structures. Sports are one beneficial activity that the community can engage in thanks to the availability of public open space. A community's interest in engaging in moderate to vigorous physical activity for at least an hour each week will result from the availability of public space facilities, which can pique people's interest in engaging in activities outside the home. The physical condition of children in a community will be impacted by the availability of public open spaces, especially green open spaces. [15]. These amenities have the potential to subtly improve people's interest in physical activity. The position of the child within space is another factor that affects the infant's capacity for movement. There are considerable discrepancies between rural and urban regions in terms of how easily accessible schools are for students. Children can travel to school without using a car or only by pedaling a bicycle thanks to the proximity of their homes to schools, public spaces, and a limited number of school options. Unlike urban areas, where most people commute to school using a car. This is due to the school's remote location. In addition, the fact that there are several schools available allows the community to select one that is of interest and, of course, has certain benefits.

With several routes to schools, it might be presumed that kids don't need to drive or even walk. Given that differences in living arrangements also significantly reflect the family's financial situation, both the capacity for physical fitness and the daily schedule for children's physical activity are undoubtedly impacted, particularly considering the current pandemic conditions. Children's movement activities were not as good as they had been before the pandemic because of the tendency for children to have fewer activities and the reduced interaction opportunities with the play environment and school. Children get overextended and under stress as a result, which makes them susceptible to immune system decline. [16], [17].

In Indonesia, there has been no identification or surveillance of the movement behavior of elementary school-age children with the level of difference in socio-economic status and the availability of public open space in MI Al-Kautsar, Ponorogo Regency, which demonstrates the phenomenon of the conditions for fulfilling physical activity that do not meet standards and some risks if this is not fulfilled properly. Based on these circumstances, it is crucial to gather surveillance information about the presence of public open spaces and the degree of fitness of primary school students in Ponorogo Regency. Children should be able to develop by their growth and development period thanks to the appropriate information provided by this. During a pandemic like the one we are currently experiencing, this surveillance data will also be highly helpful for encouraging and starting an active lifestyle. In light of this, it is critical to understand whether the previously stated occurrences are connected. Additional data is required to establish the connection between these events to provide concrete follow-up to develop

healthy, active adults for primary school students, particularly considering the present pandemic.

2 Methods

The research design is qualitative, with the level of physical fitness as the dependent variable and the availability of public open space as the independent variable. Students who fall into the low and high socioeconomic categories are considered attribution variables. The number and size of public open space amenities, as well as physical fitness assessments utilizing the Eurofit test, served as the sources of data for this study. (3) Information about parents' jobs and earnings (4) Information on movement patterns obtained from the IPAQ survey

A total of 40 elementary school pupils, their parents or guardians, and student tutors participated in the survey. such that the research findings are applicable and based on real-world situations. The MI Al-Kautsar, Al-Huda Foundation's pupils in grades 2-4 make up the target sample population. Bangunsari Village in Ponorogo District, Ponorogo Regency, will serve as the venue for the sample. Tests of physical fitness and questionnaires were the instruments employed in this investigation. The test is used to gather information on physical activity utilizing test items that include a Eurofit test for measuring physical activity. The questionnaire was used to gather information on the children's weekly physical activity levels as well as personal and parental information, including the parents' jobs and income. Data on public open spaces will be gathered by filling out questionnaires for the sports teachers at MI Al-Kautsar, conducting direct observations, and using the Google Maps program.

Data were identified and described as statements to conduct a qualitative analysis of the data. According to the test standards, each EUROFIT test instrument's results will be divided into many categories (very good, good, sufficient, poor, and very poor), and the entire test results will then be converted into a percentage of results. A qualitative descriptive method was used to collect information on IPAQ, parental income, parental occupation, and the availability of public open spaces broken down by district area. A conclusion will then be derived from the results of the Eurofit test and the IPAQ questionnaire, which will subsequently be supported by information on parental income and the accessibility to public open spaces.

3 Results

The examination of the EUROFIT test results for pupils at MI Al- Kautsar revealed that the average final percentage of kids was 53%, with the highest score coming in at 72%. The achievement percentage results indicate that 11 students received a good grade with a total percentage of 27.5% at a 60% -72% achievement, 18 students received an adequate grade with a total percentage of 45% at a 50% -58% achievement, and 11 students received a less than satisfactory grade with a total percentage of 27.5% on the achievement of 32% -48% (Table 1). 29 students have good physical fitness levels based on these facts. The daily routines of students provide evidence to

corroborate the eurofit test results. High movement behavior results are achieved by MI Al-Kautsar pupils. The range of children's weekly physical activity in the IPAQ data falls into the moderate to high group. 33 students fall into the medium activity category, where the average score is 1523.1 MET, while 7 students fall into the high activity category, where the average score is 6465.4 MET. The moderate exercise category received a mark of 2338 MET on average for all students.

Table 1. Table I. Physical Fitness Test Results

| EUROFIT Test Results | Number of Subjects | Percentage of Overall Physical Fitness | Physical Fitness Category |
|----------------------|--------------------|--|---------------------------|
| 32% | 1 | 2,5% | Poor |
| 36% | 1 | 2,5% | Poor |
| 38% | 2 | 5% | Poor |
| 40% | 1 | 2,5% | Poor |
| 42% | 3 | 7,5% | Poor |
| 44% | 2 | 5% | Poor |
| 46% | 1 | 2,5% | Poor |
| 48% | 3 | 7,5% | Poor |
| 50% | 1 | 2,5% | Average |
| 52% | 4 | 10% | Average |
| 54% | 2 | 5% | Average |
| 56% | 4 | 10% | Average |
| 58% | 2 | 5% | Average |
| 60% | 1 | 2,5% | Good |
| 62% | 3 | 7,5% | Good |
| 64% | 4 | 10% | Good |
| 65% | 1 | 2,5% | Good |
| 70% | 2 | 5% | Good |
| 72% | 1 | 2,5% | Good |
| 74% | 1 | 2,5% | Good |
| Total | 40 | 100% | |

Based on socio-economic status, most of the respondents' parents were self-employed and it was followed by government employment (Table 2).

Table 2. Results of socio-economic analysis (parent's occupation)

| Parent's Occupation | Subject |
|----------------------|---------|
| Teacher | 7 |
| Government Employees | 11 |
| Self-Employed | 13 |
| Farmer | 9 |

According to Table 3, there are a total of 20 parents of MI Al-Kautsar pupils, and 15 of them earn wages between \$1,000,000 and \$2,500,000. Of them, 9 work in agriculture, 18 work for the government, and 13 work for non-governmental organizations. All students from all around Indonesia may attend MI Al-Kautsar, which has a dormitory, within a set framework.

Table 3. Result of Sosio-Economic Analysis (Parent Income)

| Parent Income | Subject |
|---------------------------------|---------|
| < Rp1.000.000,00 | 5 |
| Rp1.000.000,00 – Rp2.500.000,00 | 15 |
| Rp2.500.000,00 – Rp5.000.000,00 | 17 |
| > Rp5.000.000,00 | 3 |

Table 4. Value Of Physical Fitness (Mean ± Sd) Eurofit Battery in Mi Al-Khautsar Viewed from Age And Gender

| Age | Muscular Strength | | | | Flexibility | Speed | | Total Body Balance |
|---------------|--------------------|-----------|------------------|--------------------|-------------|---------------|---------------|--------------------|
| | Muscular Endurance | | Maximal Strength | Explosive Strength | | Sit and reach | Shuttle run ‡ | Plate tapping ‡ |
| | Bent arm hang | Sit up | Hand-grip | Board jump | | | | |
| Male (n=29) | | | | | | | | |
| 7 (n=3) | 14,3 ± 9,29 | 10 ± 4 | 7,85 ± 1,19 | 113,67 ± 22,2 | 8 ± 4,26 | 17,01 ± 0,99 | 19,20 ± 2,25 | 24,74 ± 5,02 |
| 8 (n=5) | 11,8 ± 9,95 | 14 ± 4,1 | 10,19 ± 2,76 | 113 ± 29 | 8,48 ± 4,06 | 18,07 ± 0,47 | 16,32 ± 2,56 | 26,74 ± 20,58 |
| 9 (n=8) | 6,5 ± 5,51 | 9 ± 4,4 | 8,84 ± 1,51 | 113,13 ± 15,1 | 9,43 ± 3,90 | 18,27 ± 1,7 | 16,93 ± 1,84 | 23,08 ± 11,14 |
| 10 (n=13) | 5,26 ± 3,82 | 13 ± 3,36 | 12,2 ± 3,47 | 130 ± 21,02 | 8,30 ± 2,67 | 17,37 ± 1,47 | 14,71 ± 1,86 | 31,80 ± 20,91 |
| Female (n=11) | | | | | | | | |
| 7 (n=1) | | | | | | | | |
| 8 (n=4) | 6,5 ± 0,95 | 10 ± 0,95 | 9,5 ± 2,99 | 101 ± 29,29 | 9,4 ± 3,67 | 22,29 ± 3,97 | 18,59 ± 3,82 | 25,7 ± 16,11 |
| 9 (n=4) | 3,25 ± 1,25 | 10 ± 2,06 | 6,54 ± 0,92 | 104,7 ± 16,2 | 11,6 ± 2,33 | 21,55 ± 0,68 | 16,33 ± 3,53 | 31,65 ± 25,4 |
| 10 (n=2) | 4,2 ± 2,12 | 12 ± 0,7 | 5,8 ± 0,85 | 99 ± 11,31 | 3,6 ± 4,66 | 18,82 ± 1,46 | 15,75 ± 1,06 | 21,5 ± 17,6 |

‡ The result is better when the score is lower

The findings that was shown in Table 4 indicate that male students perform better on average on the muscular endurance test when they are younger than 10 years old,

and that female students also perform better on average on the maximum test results for strength, explosive strength, flexibility, speed, and balance when they are between the ages of 9 and 10. Students at MI Al-Kautsar performed rather well on average in the physical fitness exam, indicating a moderate to high level of physical activity.

4 Discussion

There are four sporting facilities at MI Al-Kautsar, including a badminton court, a futsal field, a volleyball court, and a table tennis area. This school offers one physical education class per week, but there are also several required physical activity-based boarding activities for the students. Although most of the time at school, learning in sports-related courses at MI Al-Kautsar occasionally takes place outside of the classroom and at community centers near the school. The sports center and the nearby Jaya futsal twin field are two of the facilities that are often used. Around MI Al-Kautsar, there are 13 public open spaces in Ponorogo District, including sports arenas, parks, and squares.

Public open spaces that are accessible to the entire community can be used as facilities to support sports learning activities in nearby schools. Some sports facilities are directly accessible to the entire community, while others are only accessible to a select group of locals with a connection to the area. Utilizing local amenities can be done in the pursuit of creating a new environment for pupils while they learn sports. Public open spaces that are accessible to the entire community can be used as facilities to support sports learning activities in nearby schools. Some sports facilities are directly accessible to the entire community, while others are only accessible to a select group of locals with a connection to the area. Utilizing local amenities can be done in the pursuit of creating a new environment for pupils while they learn sports [18]. Children's knowledge and interest in the learning process can be increased through sports learning that is done outside of school, but this must be supported by excellent human resources for the process of using public open spaces to work smoothly [19]. A child's introduction to the environment can begin with the presence of a mix of learning that makes use of public open areas [20].

Students in grades 2-4 at MI-Al Kautsar are accustomed to learning both inside and outside of the classroom, and their results on physical fitness tests are on par with those of other nations. Public open spaces near schools that are easily accessible to teachers can have an impact on the learning process that is carried out. Pupils at MI Al-Kautsar perform better on average on the balance and speed tests than pupils in Spain, but they also perform better on the strength and flexibility tests [21].

Regarding physical capabilities, low-intensity exercise improves both physical and mental wellness [22], [23]. The population's somatic development has changed over time and the passage of multiple generations, and these changes have increased quickly. One indication of these changes is the acceleration of biological development and adolescence. The improvement in the social and economic climate and the rising standard of life of the populace are the key drivers of these developments [24]. Depending on the educational paradigm used, differences in children's levels of physical fitness can

be observed. Some nations believe that the boarding school approach to education is particularly beneficial to a child's growth [25]. Due to some systems that restrict pupils and subject them to harsh punishments, American Indian (AI) boarding students' levels of physical activity are quite low, and their health is rated as worse [26]. The educational program at MI Al-Kautsar benefits young people's physical fitness. Aspects of aiding pupils in strengthening their physical ability include several extracurricular activities.

Because teachers can use this open space as a variation in the classroom to reduce student boredom, the presence of public open space near the school supports the educational process at MI Al-Kautsar. In terms of finances, MI Al-Kautsar students in grades 2-4 typically earn between 1,000,000 and 2,500,000 rupiah per year. Physical education is taught in elementary school as a support for children's physical fitness and the development of children's physical needs. This is done continuously every day without the presence of parents, sometimes leading to children being more active because they are accompanied by many peers [27]. Children's mental development benefits from pleasant dormitory environments, notably in terms of features of conduct and learning motivation [28].

5 Conclusion

According to the results of the EUROFIT test for children in grades 2-4, MI Al Kautsar pupils' level of physical fitness is generally quite good, with the highest percentages being 72% for female students and 74% for male students. Pupils at MI Al-Kautsar performed better on average on the balance and speed tests than pupils in Spain, although the scores for the strength and flexibility tests were still respectable. According to IPAQ data on physical activity, the MI Al Kautsar students' typical physical activity falls into the moderate physical activity group with 2338 MET. Both physical and mental health will benefit from moderate physical activity. One of the variables aiding the improvement of students' physical fitness is the presence of public open spaces close to schools. To reduce student saturation throughout the learning process at MI Al-Kautsar, the teacher uses open space as a different type of learning environment. In terms of socioeconomics, students in grades 2-4 make an average of 1,938,321 rupiah, which is higher than the Ponorogo UMK. Parents of students are often considered to be upper middle class, and children generally maintain good physical health thanks to a varied sports learning system and the use of nearby public open areas.

Author's Contribution

AP, DSY, and ZNS contributed to conceive and design the study. AP also contributed to collecting the data and performing the analysis. All authors wrote the paper. MEW, NRF, IH, and TT supervised and reviewed the manuscript.

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