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A Survey of Physical Fitness Levels Among Overweight Elementary School Students

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ABSTRACT

The increasing prevalence of overweight among school-aged children poses a significant public health concern, particularly due to its negative impact on physical fitness and overall well-being. This study aims to assess the physical fitness levels of overweight elementary school students aged 10–12 years at SDIT Nurul Rahmah Kemayoran and SDS Muhammadiyah 1 Bangkalan. A descriptive quantitative method with a survey approach was employed, using standardised fitness tests including sit-ups, pull-ups (hanging), vertical jump, 40-meter sprint, and 600-meter run. The results showed that most students performed well in the sit-up test, indicating adequate abdominal strength. However, their performance in other tests—especially in cardiovascular endurance (600-meter run), speed (40-meter sprint), and leg explosive power (vertical jump)—was predominantly in the "Poor" and "Very Poor" categories. Overall, the majority of overweight students demonstrated low levels of physical fitness. These findings highlight the need for schools and families to promote structured physical activities and healthier lifestyles to improve children's fitness and prevent long-term health risks associated with being overweight.

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B. Acquisition of data;
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INTRODUCTION

The prevalence of overweight and obesity among children has reached critical levels worldwide. According to the World Health Organisation (WHO), the number of overweight children under the age of 19 has increased dramatically over the past decades, contributing to a growing public health concern. The WHO reports that in 2022, over 340 million children and adolescents aged 5–19 were overweight or obese globally, a figure that has tripled since 1975. A child is considered overweight if their BMI falls between the 85th and 94th percentiles, while a BMI at or above the 95th percentile is classified as obesity. The CDC 2000 growth chart can be used as a reference for these categories in children aged over five years up to 18 years (Dewi et al., 2022). This alarming trend emphasises the urgent need to focus on promoting physical fitness and healthy

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lifestyles among school-aged children to prevent the onset of chronic diseases such as type II diabetes, cardiovascular diseases, and certain types of cancer later in life. The impact of being overweight among adolescents becomes a risk factor for developing degenerative diseases such as cardiovascular disease, diabetes, musculoskeletal disorders, as well as breast cancer, endometrial cancer, and colorectal cancer (Lugina et al., 2021).

Physical activity, particularly through structured and regular exercise, plays a significant role in maintaining and improving health, fitness, and overall physical performance. According to the WHO, physical activity is any bodily movement that results in increased energy expenditure. In this modern era, physical activity is less appealing to children and all age groups, due to the rapid technological advances that have introduced sophisticated entertainment facilities (Damsir et al., 2021). As a result, online gaming—popular among both children and adults—and social media, which attract people of all ages, have become more interesting to engage in than physical activity, which offers positive benefits for health (Wibisono et al., 2024). Engaging in sports activities enhances the functioning of muscles, bones, and the circulatory system, while also providing psychological benefits such as stress reduction, improved concentration, and the development of self-confidence. Engaging in sports activities is very important, as it enables our bodies to move and sweat, which in turn helps us stay healthy and fit (Cahya & Pradipta, 2021). Moreover, physical activity fosters social skills and teamwork, which are essential for the holistic development of children. Health is regarded as a vital asset that must be preserved, as emphasised in Islamic teachings (Salahudin & Rusdin, 2020). Sports activities are accessible to all segments of society and are usually based on individual interests and capabilities (Putri et al., 2024).

Physical fitness, defined as the ability to perform daily tasks efficiently and without excessive fatigue, includes important components such as cardiovascular endurance, muscular strength, flexibility, and balance (Keolahragaan, 2025). Physical fitness is a determining factor in all aspects of life (Ainun Najib et al., 2022). Physical fitness is an important aspect that supports individual health and quality of life, especially during school age. At this stage, children are in a period of growth and development that requires adequate physical activity to support their physical, mental, and social well-being (Tsalisafriana, 2024). Physical fitness encompasses both health-related and skill-related components. Health-related components—cardiorespiratory endurance, muscular strength and endurance, body composition, and flexibility—are crucial for overall health and functional capacity (Suyono et al., 2024). Skill-related components—such as agility, coordination, and balance—are particularly important in sports performance and daily activities.

Children with a good level of physical fitness are better equipped to engage in various physical activities and demonstrate higher overall health and well-being. Despite the known benefits of physical activity, the rise of sedentary lifestyles, poor dietary habits, and excessive screen time has contributed significantly to the increasing rates of overweight among children. Overweight is commonly defined as having a body weight

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exceeding the ideal weight by 10% or possessing a body fat percentage greater than 20% for males and 25% for females (Dwi Nugroho et al., 2021). It is often measured using the Body Mass Index (BMI) and has been associated with numerous health problems, including cardiovascular diseases, type II diabetes, hypertension, respiratory issues, and sleep disorders (Jehaman et al., 2023). Furthermore, overweight children may experience psychological challenges such as low self-esteem, social stigma, and emotional distress, which can negatively impact their academic performance and social relationships.

Children who are overweight often encounter difficulties in participating in physical activities. They may experience symptoms such as breathlessness, a sense of heaviness, and pain in the lower back, hips, thighs, and knees. Overweight (obesity) is defined as excess body weight compared to the normal weight, which can be caused by the accumulation of either fat tissue or non-fat tissue (Pongbura & Nurhayati, 2024). Obesity and overweight in children and adolescents have emerged as a major global public health issue. Overweight and severe obesity drastically lower a person's cardiorespiratory fitness (CRF) (Deng & Wang, 2024). Being overweight and obese can affect not just physical health but also mental well-being and overall quality of life among children and teenagers (Förster et al., 2023). These issues not only affect their physical health but also limit their ability to engage in regular sports activities, contributing to a vicious cycle of inactivity and further weight gain. Dietary intake is a direct factor that can affect a child's nutritional status (Aslam & Octavira, 2021).

Addressing the issue of overweight and obesity among children requires a multifaceted approach. Schools, parents, healthcare providers, and policymakers all play vital roles in promoting healthy lifestyles and encouraging regular physical activity. The school environment, in particular, serves as a critical setting for health promotion and intervention, as children spend a significant amount of their time there. Implementing physical education (PE) programs that emphasise both physical fitness and enjoyable participation in sports can help children develop lifelong healthy habits (Kuncoro et al., 2024). In addition, creating a supportive school culture that values health and well-being can foster positive attitudes toward physical activity among students.

Considering these factors, this study aims to determine the level of physical fitness among overweight elementary school students and to evaluate their athletic performance based on key fitness components. Specifically, it seeks to assess whether students at SDIT Nurul Rahmah Kemayoran and SDS Muhammadiyah 1 Bangkalan demonstrate adequate levels of physical fitness and identify areas that require targeted intervention. The findings are expected to contribute to the academic body of knowledge concerning physical fitness in overweight children and provide valuable data for future research and intervention programs.

This research is designed as a descriptive study employing a quantitative approach, focusing on students aged 10–12 years in the selected primary schools in Bangkalan, Indonesia. The study will utilise standardised fitness tests to assess various components of physical fitness, including cardiovascular endurance (using the 20-meter

shuttle run test), muscular strength (using sit-up and push-up tests), flexibility (using the sit-and-reach test), and balance (using the one-leg stand test). Anthropometric measurements, including height, weight, and BMI, will also be recorded to classify the students' weight status. Data collection will be conducted in collaboration with PE teachers to ensure consistency and reliability of the measurements.

The expected outcomes of this study include identifying the current fitness levels of overweight students and highlighting the relationship between weight status and fitness components. By analysing the data, the study aims to uncover whether overweight students face significant limitations in certain aspects of fitness, such as cardiovascular endurance or muscular strength. This information can be instrumental for teachers and school administrators in designing targeted PE programs that cater to the specific needs of overweight children. Moreover, the results can inform parents about the importance of regular physical activity and healthy dietary habits in preventing obesity-related health problems.

Beyond the school setting, this study has broader implications for public health policies and community-based interventions. The increasing prevalence of childhood overweight and obesity in Indonesia calls for collaborative efforts from multiple stakeholders. Policymakers can use the study's findings to develop evidence-based strategies, such as integrating more physical education into the school curriculum, providing safe and accessible recreational facilities, and promoting health education campaigns that emphasise the benefits of active lifestyles. Healthcare professionals can also use the findings to design counselling and intervention programs that target high-risk children and their families.

In conclusion, the issue of overweight and obesity among children is a pressing global and national health concern. This study seeks to contribute to the understanding of the relationship between weight status and physical fitness among elementary school students. By focusing on students in Bangkalan, Indonesia, the research aims to provide locally relevant insights that can inform interventions at the school, community, and policy levels. Ultimately, promoting physical fitness and encouraging active lifestyles among children are essential steps in combating the growing epidemic of childhood overweight and obesity and in ensuring that future generations grow up healthy, active, and well-prepared for the challenges of life.

METHODS

This research employed a quantitative descriptive design using a survey method to assess the physical fitness levels of overweight elementary school students. Quantitative data analysis is an approach that uses computational and statistical calculations to process data mathematically, numerically, or statistically. Therefore, data analysed using this method must be measurable or expressed in numerical form (Sofwatillah et al., 2024). Participants were selected through purposive sampling and consisted of students aged 10 to 12 years from SDIT Nurul Rahmah Kemayoran and SDS

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Muhammadiyah 1 Bangkalan, Indonesia, who were categorised as overweight based on Body Mass Index (BMI) standards. Data collection was conducted through two face-to-face sessions at Gelora Bangkalan Stadium and Bangkalan City Square.

The study utilised a series of standardised physical fitness tests, including sit-ups to assess abdominal strength, pull-up hangs for upper body strength, vertical jumps for explosive leg power, 40-meter sprints for speed, and 600-meter runs for cardiovascular endurance. Each test followed standard procedures suitable for the participants' age group. Data were collected according to safety guidelines and ensured accurate and consistent measurements.

Descriptive quantitative analysis was used to process the data, with results categorised into performance levels based on normative standards. Frequencies and percentages were calculated using the formula:

$$P = \frac{F}{N} x\ 100\%$$

where :

P = the percentage
F = the frequency, and
N = the total number of participants.

This approach provided a comprehensive description of the physical fitness profiles of overweight students in the targeted schools.

RESULTS AND DISCUSSION

Result

This study involved 19 overweight students aged 10–12 years from SDIT Nurul Rahmah Kemayoran and SDS Muhammadiyah 1 Bangkalan. Their Body Mass Index (BMI) measurements confirmed that all participants fell into the overweight category according to standard BMI-for-age criteria.

Sit-Up Test Result

The sit-up test assessed abdominal strength and endurance. Sit-ups are exercises that rely on the hips and buttocks for support, with the knees lifted upward and performed repeatedly (Walukow et al., 2021). The distribution of sit-up performance is shown in Table 1.

Table 1.
Distribution of Sit-Up Test Results

Category	Pre test	Treatment
Very Good	8	42%
Good	8	42%
Fair	2	11%
Poor	1	5%
Very Poor	0	0%
Total	**19**	**100%**

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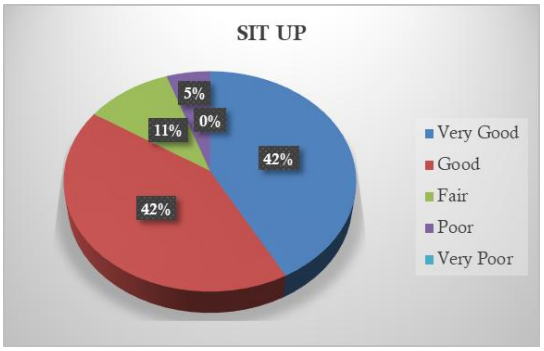

Image 1.
Sit-Up Test Performance Distribution

The results indicate that the majority of overweight students achieved "Good" or "Very Good" performance levels in the sit-up test, suggesting relatively strong abdominal muscles despite being overweight.

Pull-Up Test Result

Pull-ups are exercises designed to develop the muscles of the arms and shoulders (Burhan & Herlina, 2022). The Pull-up test evaluated upper body strength, as summarised in Table 2.

Table 2.
Distribution of Pull-Up Test Results

Category	Pre test	Treatment
Very Good	0	0%
Good	1	5%
Fair	10	53%
Poor	8	42%
Very Poor	0	0%
Total	**19**	**100%**

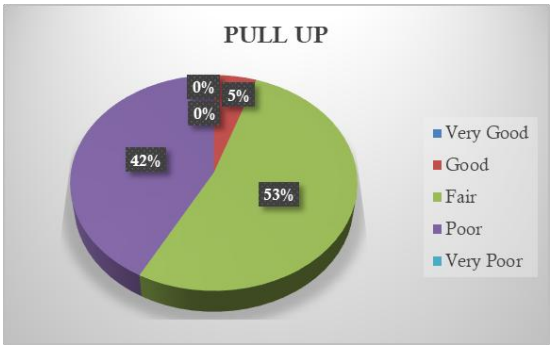

Image 2.
Pull-Up Test Performance Distribution

Most students achieved only "Fair" or "Poor" results in this test, indicating weak upper body strength.

Vertical Jump Test Result

The vertical jump test assessed explosive power in the legs. The vertical jump is a type of movement commonly seen in sports skill tests and has been discussed in previous related studies. The vertical jump is an individual's ability to leap as high as possible by utilising the explosive power of the leg muscles (Pardiman et al., 2021). Table 3 presents the results.

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Table 3.
Distribution of Vertical Jump Test Results

Category	Pre test	Treatment
Very Good	0	0%
Good	0	0%
Fair	3	16%
Poor	6	32%
Very Poor	10	53%
Total	**19**	**100%**

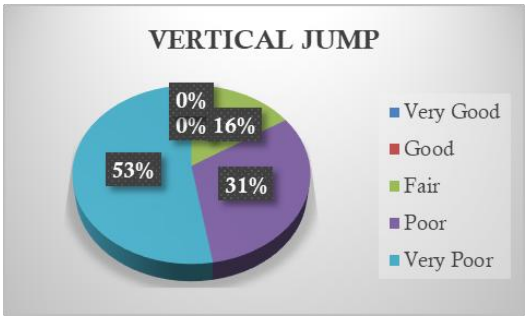

Image 3.
Vertical Jump Test Performance Distribution

The majority of students performed poorly or very poorly, indicating low explosive leg power among overweight participants.

40 Meter Sprint Test Result

The 40-meter sprint assessed speed performance. The 40-meter sprint is the ability to run at high speed from a stationary position (Saleh et al., 2023). Table 4 shows the findings.

Table 4.
Distribution of 40 Meter Sprint Test Results

Category	Pre test	Treatment
Very Good	0	0%
Good	0	0%
Fair	3	16%
Poor	5	26%
Very Poor	11	58%
Total	**19**	**100%**

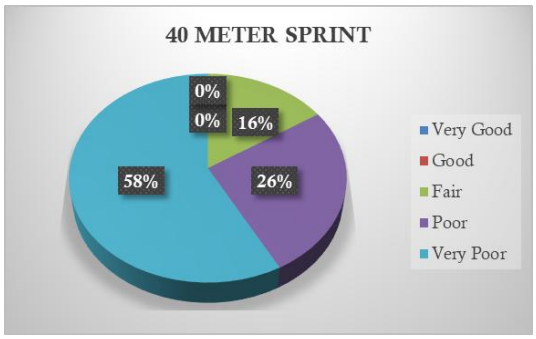

Image 4.
40 Meter Sprint Test Performance Distribution

More than half of the students fell into the "Very Poor" category, reflecting limited speed capabilities.

Aisyah Vinka Nurul Jahsy[1A-E], Septyaningrum Putri Purwoto[2B-D], Heni Yuli Handayani[3B-D]
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600 Meter Run Test Result

The 600-meter run measured cardiovascular endurance. The 600-meter run is a test used to measure endurance, using time (minutes and seconds) as the unit of measurement (Endrawan, 2023). The distribution is shown in Table 5.

Table 5.
Distribution of 600 Meter Run Test Results

Category	Pre test	Treatment
Very Good	0	0%
Good	0	0%
Fair	0	0%
Poor	1	5%
Very Poor	18	95%
Total	**19**	**100%**

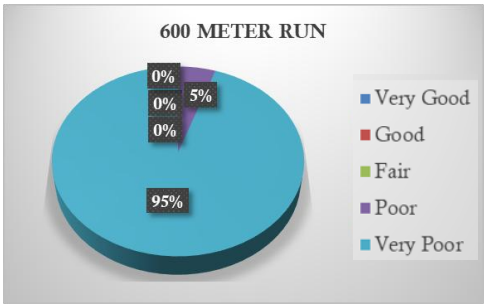

Image 5.
600 Meter Run Test Performance Distribution

Almost all students (95%) performed in the "Very Poor" category, indicating extremely low cardiovascular endurance.

Overall Physical Fitness Result

The overall results from all fitness tests were aggregated to categorise the students' total fitness levels, as presented in Table 6.

Table 6.
Overall Physical Fitness Results

Category	Pre test	Treatment
Very Good	0	0%
Good	0	0%
Fair	1	5%
Poor	14	74%
Very Poor	4	21%
Total	**19**	**100%**

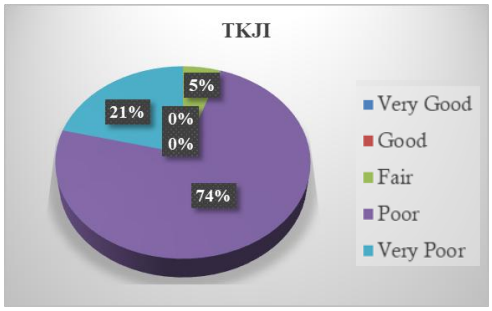

Image 6.
Overall Physical Fitness Level Distribution

Aisyah Vinka Nurul Jahsy[1A-E], Septyaningrum Putri Purwoto[2B-D], Heni Yuli Handayani[3B-D]
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The results highlight that the majority of overweight students had poor to very poor physical fitness levels.

Discussion

The findings of this study indicate that overweight students generally show lower physical fitness levels, especially in cardiovascular endurance, explosive leg strength, and speed. Although a significant number of students performed well in the sit-up test, suggesting preserved abdominal strength, their upper body strength, sprinting ability, explosive power, and especially cardiovascular endurance were substantially compromised. The pull-up and vertical jump test results showed that most students fell into fair or poor categories, emphasising the negative impact of excessive body weight on muscle performance and movement efficiency. These results align with previous studies that found overweight and obesity significantly impair physical fitness components among children. The poor performance in the 600-meter run particularly highlights the critical impact of excess body fat on cardiovascular health, as overweight students were unable to sustain aerobic activity effectively.

Physical fitness is generally influenced by two factors: internal and external. Internal factors are inherent within an individual and are relatively fixed, such as genetics, age, and gender. External factors, however, originate outside the body and include nutrition, smoking habits, rest, sleep, and physical activity (Kurnia & Jatnika, 2022). This suggests that while some aspects of fitness may be biologically constrained, there are still many modifiable behaviours that can significantly improve a child's physical condition.

Therefore, the findings stress the urgent need for structured physical activity programs targeted at overweight children, focusing not only on weight management but also on improving muscle strength, endurance, and cardiovascular health. Schools and parents must work collaboratively to promote regular exercise, balanced nutrition, and reduced sedentary behaviour to address these concerns effectively.

CONCLUSION

Based on the findings from this study conducted among overweight students aged 10 to 12 years at SDIT Nurul Rahmah Kemayoran and SDS Muhammadiyah 1 Bangkalan, it can be concluded that the overall level of physical fitness among the participants was relatively low. Most students fell into the "Poor" and "Very Poor" categories across multiple physical fitness components.

The sit-up test showed encouraging results, with most students categorised as "Good" and "Very Good," indicating relatively adequate abdominal strength despite their weight status. However, in the pull-up test, the majority of students were categorised as "Fair" or "Poor," suggesting limited upper body strength. The vertical jump test results revealed that over half of the students had "Very Poor" leg explosive power. Similarly, the

40-meter sprint results indicated that speed performance was also limited, with more than half in the "Very Poor" category. The 600-meter run test results were the most concerning, as nearly all students were categorised as "Very Poor," clearly reflecting inadequate cardiovascular endurance. In summary, the overall physical fitness levels of overweight elementary students in this study were insufficient and in need of improvement, particularly in speed, endurance, and power components.

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