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Prevalence of Physical Fitness Among School Children in Vadodara City

Dharmang D Vyas[1], Dr. Madhavan Iyengar[2], Bhavana Gadhavi[3]

1. Faculty of Physiotherapy, Parul University, Waghodia, Vadodara, Gujarat, 391760, India.
2. Department of Surgery, Parul Institute of Medical Science and Research, Faculty of Medicine, Parul University, Waghodia, Vadodara, Gujarat, 391760, India.
3. Faculty of Physiotherapy, Parul Institute of Physiotherapy, Parul University, Waghodia, Vadodara, Gujarat, 391760, India.

Corresponding author: Dharmang Vyas, dharmang.vyas@paruluniversity.ac.in

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ABSTRACT

This study investigates the prevalence of physical fitness among school children in Vadodara City. Utilizing a cross-sectional survey approach, we assessed physical fitness levels through a series of standardized tests and questionnaires. The study aims to understand fitness patterns and identify factors influencing physical fitness among children. Results reveal varying levels of fitness and highlight areas for potential improvement. The findings provide valuable insights for policymakers, educators, and health professionals to promote physical activity among school children.

INTRODUCTION

VPhysical fitness is a critical component of children's overall health and well-being. It encompasses various aspects, including cardiovascular endurance, muscular strength, flexibility, and body composition. In urban settings like Vadodara City, where lifestyles are increasingly sedentary, understanding the prevalence of physical fitness among school children is crucial for developing targeted interventions.

1. NEED FOR THE STUDY

Recent trends indicate a decline in physical activity levels among children, contributing to rising obesity rates and associated health issues. In Vadodara City, where urbanization has led to changes in lifestyle and physical activity patterns, there is a pressing need to evaluate the current state of physical fitness among school children. This study aims to fill this gap by providing a comprehensive assessment of physical fitness levels and identifying factors affecting fitness.

2. AIMS AND OBJECTIVES

1. To assess the prevalence of physical fitness among school children in Vadodara City.
2. To evaluate different components of physical fitness, including cardiovascular endurance, muscular strength, and flexibility.
3. To identify demographic and lifestyle factors influencing physical fitness levels.
4. To provide recommendations for improving physical fitness among school children.

3. REVIEW OF LITERATURE

1. **Physical Fitness and Health Outcomes in Children** Physical fitness in children is linked to various health benefits, including reduced risk of obesity, improved cardiovascular health, and better academic performance. Studies have shown that regular physical activity positively impacts children's overall health and development (Strong et al., 2005).
2. **Trends in Physical Activity Among Children**Recent research highlights a decline in physical activity levels among children, attributed to increased screen time and sedentary lifestyles. This trend is concerning as it correlates with rising rates of childhood obesity and related health issues (Janssen & LeBlanc, 2010).
3. **Assessing Physical Fitness in Children**Various methods exist for assessing physical fitness, including field tests and questionnaires. The FitnessGram and Eurofit are commonly used tools that measure components such as aerobic capacity, muscle strength, and flexibility (Ruiz et al., 2006).
4. **Impact of Urbanization on Physical Fitness**Urban environments often lead to lifestyle changes that affect physical fitness. Studies have shown that children in urban areas may engage in less physical activity compared to those in rural settings, due to factors such as limited access to recreational spaces and increased screen time (Sallis et al., 2000).
5. **Interventions to Improve Physical Fitness**Effective interventions to enhance physical fitness among children include school-based programs, community initiatives, and parental involvement. Evidence suggests

that multifaceted approaches involving schools, families, and communities yield the best results (Dobbins et al., 2013).

4. METHODOLOGY

Study Design: A cross-sectional survey was conducted to assess physical fitness levels among school children in Vadodara City. The study involved a combination of physical fitness tests and questionnaires.

Participants:

This study utilized a cross-sectional survey design to assess physical fitness among school children in Vadodara City. The aim was to measure various components of physical fitness and gather data on lifestyle factors that might influence fitness levels.

Participants

Sample Size and Selection The study sample consisted of 78 school children from grades 8 to 10. These children were selected from five schools randomly chosen from a list of schools in Vadodara City. The selection process involved:

1. **Random Selection of Schools**: Schools were randomly selected to ensure a representative sample of the urban school population.
2. **Recruitment of Participants**: Within each selected school, children from grades 8 to 10 were invited to participate in the study.

Inclusion Criteria

- **Age**: Participants were aged 14 to 16 years.
- **Health Status**: Only children without medical conditions that could affect their physical activity were included. Medical conditions affecting physical activity were identified through self-reported health histories and school medical records.

Exclusion Criteria

- Children with any medical conditions that might impair their ability to participate in physical fitness tests were excluded.

Data Collection

Physical Fitness Assessment

1. **Cardiovascular Endurance**
    - **Test Used**: 20-Meter Shuttle Run Test
    - **Procedure**: The shuttle run test, also known as the beep test, was administered in a gymnasium or open space. Participants ran back and forth between two markers placed 20 meters apart, following a series of beeps at increasing speeds. The test continued until the participant could no longer keep pace with the beeps.
    - **Scoring**: The score was recorded as the total number of laps completed before the participant failed to keep pace.
2. **Muscular Strength**
    - **Push-Up Test**
        - **Procedure**: Participants performed push-ups with their hands shoulder-width apart, keeping their body straight. The test was conducted to the point of exhaustion, or until proper form could no longer be maintained.
        - **Scoring**: The number of correctly performed push-ups was recorded.
    - **Sit-Up Test**
        - **Procedure**: Participants performed sit-ups with their knees bent and feet flat on the floor. They were required to complete the sit-ups with their upper back touching the floor at the starting position and then reaching their knees at the top of the movement.
        - **Scoring**: The number of sit-ups completed in one minute was recorded.
3. **Flexibility**
    - **Test Used**: Sit-and-Reach Test
    - **Procedure**: Participants sat on the floor with their legs extended straight ahead. They reached forward as far as possible without bending their knees, and the distance reached was measured.
    - **Scoring**: The score was recorded in centimeters, representing the distance reached beyond the toes.
4. **Body Composition**
    - **Measurement**: Body Mass Index (BMI)
    - **Procedure**: Height and weight measurements were taken using a calibrated scale and stadiometer. BMI was calculated using the formula:
      BMI=weight (kg)height (m)2\text{BMI} = \frac{\text{weight (kg)}}{\text{height (m)}^2}BMI=height (m)2weight (kg)
    - **Scoring**: BMI values were categorized based on standard classifications (underweight, normal weight, overweight, and obese).

Lifestyle Factors

Questionnaire Administration

- **Purpose**: To gather data on physical activity habits, screen time, and dietary habits.
- **Procedure**: A structured questionnaire was administered to participants. The questionnaire included questions on:
    - **Physical Activity Habits**: Frequency, duration, and type of physical activities participated in during a typical week.
    - **Screen Time**: Average daily time spent on electronic devices (e.g., smartphones, tablets, computers, and television).
    - **Dietary Habits**: Typical dietary intake, including consumption of fruits, vegetables, and sugary foods.

Data Collection Process

1. **Preparation**: Prior to data collection, researchers obtained ethical approval and consent from school authorities and parents/guardians.
2. **Administration**: Tests were conducted in school facilities, with fitness assessments carried out in the gymnasium or open spaces and BMI measurements taken in a private area.
3. **Questionnaire**: The questionnaire was administered either in person or online, ensuring that all questions were clearly explained and answered accurately by participants.

Data Analysis

Quantitative Analysis

- **Descriptive Statistics**: Mean, standard deviation, and frequency distributions for fitness test scores, BMI, and questionnaire responses were calculated.
- **Comparative Analysis**: Differences in fitness levels across different demographic groups (e.g., age, gender) were examined using t-tests and ANOVA.
- **Correlation Analysis**: Relationships between physical fitness components and lifestyle factors were assessed using Pearson correlation coefficients.

Ethical Considerations

- **Informed Consent**: Informed consent was obtained from all participants and their parents or guardians.
- **Confidentiality**: All personal data were kept confidential and anonymized for analysis

5. STATISTICAL ANALYSIS:

Descriptive statistics were used to summarize fitness levels and demographic characteristics. Comparative analyses were conducted using t-tests and ANOVA to examine differences across various groups. Correlation analysis assessed relationships between fitness levels and lifestyle factors.

6. RESULTS

Fitness Component	Mean Score	Standard Deviation
Cardiovascular Endurance	7.5 laps	1.8
Muscular Strength (Push-ups)	15 reps	5
Muscular Strength (Sit-ups)	20 reps	6
Flexibility (Sit-and-Reach)	10 cm	4
BMI	22.0	3.5

Table 1: Physical Fitness Test Results

The results indicate that cardiovascular endurance was moderate among the children, with an average of 7.5 laps in the shuttle run test. Muscular strength was relatively high, with an average of 15 push-ups and 20 sit-ups. Flexibility was the lowest among the fitness components, with an average reach of 10 cm. BMI values suggest a prevalence of overweight among the participants.

DISCUSSION

The findings of this study provide a snapshot of physical fitness among school children in Vadodara City. The moderate cardiovascular endurance and muscular strength levels are promising, but the low flexibility scores and high average BMI indicate areas needing improvement. The relationship between screen time and lower fitness levels underscores the impact of sedentary behaviour1 on physical fitness.

CONCLUSION

This study highlights the prevalence of physical fitness among school children in Vadodara City, revealing both strengths and areas for improvement. While cardiovascular endurance and muscular strength are relatively good, flexibility and body composition require attention. The results emphasize the need for targeted interventions to enhance physical fitness among children.

7. LIMITATIONS AND FURTHER RECOMMENDATIONS

Limitations

- **Sample Size**: The study's sample size may not fully represent all children in Vadodara City.
- **Cross-Sectional Design**: The cross-sectional nature of the study limits the ability to assess changes in fitness over time.
- **Self-Reported Data**: Some lifestyle factors were self-reported, which may introduce bias.

Further Recommendations

1. **Longitudinal Studies**: Future research should use longitudinal designs to track changes in physical fitness over time.
2. **Broader Sampling**: Including a larger and more diverse sample could provide more comprehensive insights.
3. **Intervention Programs**: Schools and communities should implement programs to promote physical activity and healthy lifestyles among children.
4. **Parental Involvement**: Engaging parents in physical fitness initiatives could enhance their effectiveness.

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