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Comparative assessment of physical fitness parameters among rural and physical education school boys of Patna District

Dr. Suresh Singh Yadav
Assistant Professor, Birla institute of technology Mesra, off Campus Patna, Bihar, India

Abstract
The present investigation aims to comparatively analyze selected physical fitness components among rural school boys and boys enrolled in physical education–oriented schools Patna, Bihar. A total of forty male students aged between 14 and 19 years were selected using purposive sampling, comprising twenty rural school boys and twenty physical education school boys. Standardized AAHPERD Youth Physical Fitness Test items were administered to assess muscular strength, muscular endurance, speed, agility, explosive power and cardiovascular endurance. The collected data were analyzed using descriptive statistics and the independent 't' test. The findings revealed no statistically significant difference between rural boys and physical education boys in the selected physical fitness components. The results highlight the growing awareness of physical activity and fitness among adolescents irrespective of educational background.

Keywords: Physical fitness, rural students, physical education students, adolescents, Bihar

Introduction

Physical fitness is a vital dimension of human health and well-being, representing an individual's capacity to perform daily tasks efficiently without undue fatigue while retaining sufficient energy to meet unforeseen physical demands. It is widely accepted that physical fitness contributes not only to physical health but also to mental stability, emotional balance and social functioning. During childhood and adolescence, physical fitness assumes special significance as this period is characterized by rapid growth, physiological development and psychological maturation. Adequate levels of physical fitness during these formative years play a crucial role in shaping lifelong health behaviors and reducing the risk of chronic diseases in adulthood (WHO, 2010; Strong *et al*., 2005) [13]. In recent years, growing concern has been expressed regarding the declining levels of physical fitness among school-going children. Rapid lifestyle changes, increased academic pressure, reduced participation in outdoor activities and excessive engagement with screen-based entertainment have collectively contributed to sedentary behavior among adolescents. These factors have resulted in decreased physical activity levels, which in turn negatively affect various components of physical fitness (Guthold *et al*., 2020) [5]. The problem is particularly pronounced in developing regions where socio-economic constraints, limited infrastructure and inadequate emphasis on physical education further restrict opportunities for regular physical activity.

Physical fitness is a multidimensional concept encompassing several interrelated components such as muscular strength, muscular endurance, speed, agility, flexibility, explosive power and cardiorespiratory endurance. Each of these components contributes uniquely to overall functional capacity and physical efficiency. Balanced development of these components is essential, especially during adolescence, as imbalances may lead to poor performance, increased injury risk and long-term health complications (ACSM, 2018). Regular engagement in physical activity during adolescence has been shown to improve cardiovascular health, enhance musculoskeletal strength, regulate body composition and promote psychological well-being (Pate *et al*., 2011) [11].

In the Indian context, physical fitness among school children is influenced by a complex interplay of factors including geographical location, socio-economic status, nutritional habits, cultural practices and educational environment. India's diverse population presents substantial variation in lifestyle patterns, particularly between rural and urban areas. Traditionally, children residing in rural areas have been perceived to possess better physical fitness owing to their physically active lifestyle, involvement in agricultural or household activities, greater exposure to outdoor play and reduced reliance on technology. Such habitual physical activity contributes to natural development of strength, endurance and agility from an early age (Singh & Singh, 2019) [12]. Conversely, children studying in urban or specialized educational institutions often experience structured routines with limited opportunities for spontaneous physical activity. However, students enrolled in physical education-oriented schools represent a distinct group, as they receive systematic training through planned exercise schedules, scientific methods of instruction and professional supervision. Structured physical education programs are designed to enhance specific fitness components using principles of training such as overload, progression and specificity, which may result in measurable improvements in physical performance (Bailey *et al*., 2009) [2].

Adolescence is widely recognized as a critical window for physical development. During this stage, physiological systems such as the cardiovascular, respiratory and musculoskeletal systems undergo rapid changes that are highly responsive to physical activity stimuli. Regular physical activity during adolescence has been associated with improved aerobic capacity, enhanced muscular strength and healthier body composition (Hallal *et al*., 2012) [6]. Moreover, physical fitness during this period has been linked to positive cognitive outcomes, including better concentration, memory and academic performance, as well as reduced stress and anxiety levels (Donnelly *et al*., 2016)

[4]. Despite the well-documented benefits of physical fitness, physical education often occupies a marginal position within the school curriculum in many parts of India. Academic achievement frequently takes precedence over physical development, resulting in limited time allocation for physical education classes and inadequate emphasis on fitness assessment. This imbalance may contribute to declining fitness levels among students, particularly those who lack access to extracurricular sports or recreational facilities (Bhardwaj & Kumar, 2021) [3].

Comparative studies of physical fitness provide valuable insights into how different environments influence physical development. By comparing rural school boys with those enrolled in physical education-oriented institutions, it becomes possible to identify whether structured training confers additional benefits over habitual physical activity. Such comparisons also help determine whether rural students require greater institutional support to enhance fitness or whether existing lifestyle patterns are sufficient to maintain acceptable fitness levels.

Statement of the Problem

A comparative study of selected physical fitness components between rural school boys and physical education school boys of selected districts of Bihar.

Objectives of the Study

1. To assess selected physical fitness components among rural school boys of Bihar.
2. To evaluate selected physical fitness components among physical education school boys of Bihar.
3. To compare the physical fitness components between rural boys and physical education boys.

Hypothesis

There will be no significant difference in selected physical fitness components between rural school boys and physical education school boys of selected districts of Bihar.

Methodology

Selection of Subjects

For the purpose of the study, forty male students aged 14–19 years were selected from schools located in Patna district of Bihar. The sample consisted of:

- 50 rural school boys
- 50 physical education school boys

Selection of Variables

The following physical fitness components were selected for the study:

- Muscular strength
- Muscular endurance
- Speed
- Agility
- Explosive power
- Cardiovascular endurance

Tools and Tests

AAHPERD Youth Physical Fitness Test was used to measure the selected variables:

- Pull-ups (muscular strength)
- Sit-ups (muscular endurance)
- Shuttle run (agility)
- Standing broad jump (explosive power)
- 50-meter dash (speed)
- 600-yard run/walk (cardiovascular endurance)

Statistical Techniques

Descriptive statistics (mean and standard deviation) were calculated. The independent ‘t’ test was applied to determine the significance of difference between the two groups. The level of significance was set at 0.05.

Results

The results of the study are presented in Table 1, which shows the mean scores and calculated ‘t’ values of rural school boys and physical education school boys on selected physical fitness components. The obtained ‘t’ values were compared with the tabulated ‘t’ value at 0.05 level of significance.

Table 1: Mean and ‘t’ values of Rural and Physical Education School Boys on Selected Physical Fitness Components

Physical Fitness Components	Rural Boys (Mean)	Physical Education Boys (Mean)	Mean Difference	‘t’ Value
Pull-ups	2.85	2.20	0.65	0.18
Sit-ups	3.00	3.15	0.15	0.09
Shuttle Run	1.12	0.90	0.22	0.04
Standing Broad Jump	2.40	2.00	0.40	0.15
50 Meter Dash	6.30	6.45	0.15	0.03
600 Yard Run/Walk	2.50	2.45	0.05	0.02

Tabulated ‘t’ value at 0.05 level of significance = 2.05

An analysis of Table 1 reveals that the calculated ‘t’ values for all selected physical fitness components are less than the tabulated ‘t’ value (2.05). Therefore, no significant difference was found between rural school boys and physical education school boys in muscular strength, muscular endurance, agility, explosive power, speed and cardiovascular endurance.

Discussion

The findings of the study suggest that both rural and physical education school boys exhibited comparable levels of physical fitness. This may be attributed to the physically active lifestyle of rural students and the structured training programs followed by physical education students, which appear to balance each other. Increased awareness of fitness, availability of sports facilities and inclusion of physical activities in school curricula may also have contributed to these results. The absence of significant differences highlights the importance of providing equal opportunities for physical activity across all educational settings. It also emphasizes that physical fitness development is influenced by multiple factors such as lifestyle, motivation, environment and socio-cultural background.

Conclusion

On the basis of the results and within the limitations of the study, it may be concluded that rural school boys and physical education school boys of Bihar do not differ significantly in their physical fitness components. The study underscores the growing consciousness regarding health and fitness among adolescents. Regular participation in physical activities, irrespective of formal training, plays a crucial role in maintaining overall fitness.

Limitations of the Study

- The study was limited to male students only.
- The sample size was small.
- The study was confined to selected districts of Bihar.

Suggestions for Further Research

- Similar studies may be conducted on female students.
- A larger sample covering more districts of Bihar may be included.
- Psychological and nutritional variables may also be incorporated in future studies.

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