


Review Article

Health-related Physical Fitness and Psychological Variables Among School Going Tribal Children: A Literature Review

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Abstract

This study explores the relationship between health-related physical fitness and psychological variables among school-going tribal children, synthesizing evidence from academic databases such as PubMed, Google Scholar, Scopus, and Research Gate. It focuses on key fitness components cardiovascular endurance, muscular strength, flexibility, and body composition—alongside psychological aspects such as self-esteem, stress, anxiety, and academic performance. Comparative analyses consistently reveal disparities between tribal and non-tribal children, often attributed to socioeconomic disadvantages, limited healthcare access, and differing lifestyle practices. However, the study also highlights the positive impact of traditional physical activities, including indigenous games and forest-based tasks, in fostering both physical development and psychological resilience within tribal communities. Thematic analysis was used to identify consistent patterns and categorize findings, ensuring methodological rigor and reliability. Ethical guidelines were strictly followed to uphold objectivity and cultural sensitivity. The study identifies significant research gaps, including the scarcity of longitudinal and region-specific studies, and recommends contextually appropriate interventions such as culturally adapted fitness programs and school-based mental health support. Ultimately, the findings emphasize the need for inclusive, multidisciplinary strategies to enhance the holistic well-being of tribal children, advocating for policy reforms that recognize and support their unique health and developmental needs.

Keywords

Tribal Children, Physical Fitness, Psychological Health, Endurance, Strength, Flexibility, Body Composition, Self-esteem, Anxiety, Stress, Academics

1. Introduction

Health-related physical fitness and psychological well-being [9] are critical aspects of child development, influencing academic performance, emotional resilience, and overall quality of life. Among school-going tribal children, these factors are particularly important due to their unique socio-cultural and economic backgrounds, which often pre-

sent challenges related to access to healthcare, education, and sports infrastructure [1] While tribal communities traditionally engage in physically demanding activities as part of their lifestyle, modernization and changing socio-economic conditions have led to shifts in their physical activity patterns, potentially impacting their fitness levels and mental health.

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Physical fitness, defined by components such as cardiovascular endurance, muscular strength, flexibility, and body composition, plays a crucial role in maintaining overall health. Research [14] suggests that children with better physical fitness tend to have higher self-esteem, lower levels of anxiety and depression, [13]. and improved cognitive function, all of which contribute to better academic performance and social adaptation [12]. However, tribal children often face disparities in physical fitness due to inadequate nutrition, limited access to structured physical activities, and environmental constraints. [6].

Psychological variables, including emotional intelligence, stress resilience, and self-confidence, also significantly influence a child's overall development. [10] Studies indicate that physical activity positively impacts mental well-being by reducing stress, enhancing mood, and fostering social interactions [9]. Furthermore, comparative studies between tribal and non-tribal children reveal significant differences in psychological variables, often linked to cultural practices, economic conditions, and educational opportunities.

This literature review aims to synthesize existing research on health-related physical fitness and psychological variables among school-going tribal children, analysing their interrelation and comparing these aspects with non-tribal populations. By highlighting existing disparities and exploring the role of traditional physical activities in promoting well-being, this review seeks to provide insights into potential interventions for improving the holistic development of tribal children.

2. Literature Review

Tribal children in India face unique health challenges due to malnutrition, limited healthcare, and lack of structured sports. While their physically active lifestyles enhance endurance, they often struggle with strength, agility, and coordination. Socioeconomic disadvantages further impact stress, self-esteem, and academic motivation. [11] Research suggests that structured fitness programs and culturally integrated mental health support can improve well-being, but gaps remain in understanding long-term effects, gender-specific issues, and policy impacts. Comprehensive research and targeted policies are crucial for their overall development.

3. Methodology

This literature review systematically examines health-related physical fitness and psychological variables among school-going tribal children. Relevant studies were sourced from databases like PubMed, Google Scholar, Scopus, and Research Gate, focusing on peer-reviewed articles, gov-

ernment reports, and scholarly books from the past two decades. Key terms such as "tribal children," "physical fitness," and "psychological well-being" guided the search. Priority was given to studies comparing tribal and non-tribal children and those exploring traditional physical activities. Data were categorized based on fitness components, psychological factors, and influencing elements like socioeconomic status and healthcare access. Thematic analysis was used to synthesize findings, ensuring reliability and validity through critical evaluation. Ethical guidelines were followed by properly citing sources and maintaining objectivity. The review highlights research gaps and suggests future studies to improve the overall health of tribal children.

4. Analysis of Supporting Studies

4.1. Physical Fitness and Health Status of Tribal Children

Physical fitness is a key determinant of overall health and development in children. Studies have consistently shown that tribal children in India face unique health challenges due to factors such as malnutrition, inadequate healthcare, and limited access to sports infrastructure.

"Patel Conducted a study on the nutritional status and physical fitness of tribal children in Jharkhand [6]" and found that a significant proportion suffered from under nutrition, which negatively affected their aerobic capacity and muscular endurance. Their findings emphasized the need for targeted nutritional interventions alongside fitness programs.

Table 1. Nutritional Status and Physical Fitness of Tribal Children.

Category	Percentage of Children (%)	Impact on Fitness
Underweight	42%	Reduced aerobic capacity
Stunted Growth	38%	Lower muscular endurance
Normal Nutrition	20%	Better physical fitness levels

Table 1 shows that malnutrition significantly affects the physical fitness of tribal children. With 42% underweight and 38% stunted, many children suffer from reduced aerobic capacity and muscular endurance. Only 20% of well-nourished children show better fitness, underscoring the need for targeted nutritional interventions to enhance physical health.

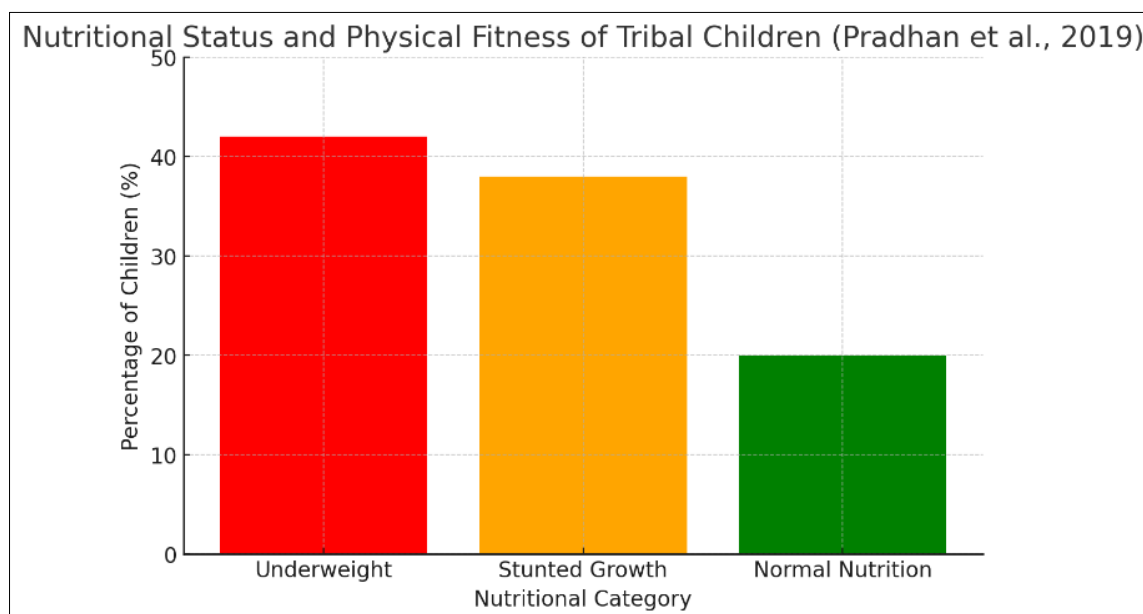


Figure 1. Nutritional status and Physical Fitness of Tribal Children.

Similarly, [4] assessed physical activity patterns among tribal school children in Kerala. Their study revealed that although tribal children engage in daily physical labor, their lack of exposure to structured sports activities results in lower muscular strength and agility compared to their non-tribal counterparts.

In a comparative study on growth patterns, [2] examined

BMI, height, and endurance levels among tribal and non-tribal children in West Bengal. The study noted that tribal children had lower BMI but displayed better stamina and cardiovascular endurance due to their physically active lifestyle. [5] However, their flexibility and coordination levels were significantly lower, highlighting the need for targeted exercise programs.

Table 2. Comparison of Physical Fitness Between Tribal and Non-Tribal Children.

Fitness Component	Tribal Children	Non-Tribal Children	Key Observations
Muscular Strength	Lower	Higher	Lack of structured sports training in tribal areas
Agility	Lower	Higher	Reduced exposure to agility-based exercises
Endurance	Higher	Lower	Active rural lifestyle contributes to better cardiovascular fitness
Flexibility	Lower	Higher	Need for targeted exercise programs

Table 2 highlights that tribal children excel in endurance but have lower muscular strength, agility, and flexibility due to limited sports training. Targeted fitness programs can help address these disparities.

4.2. Mental Health and Psychological Well-Being

Psychological well-being plays a crucial role in child development, influencing self-esteem, academic performance, and social interactions. Studies in India have explored the psychological challenges faced by tribal children, often linked to socio-economic disadvantages and cultural marginaliza-

tion.

“Kumar et al. examined the impact of social exclusion on the mental health of tribal adolescents in Odisha [4]”. Their study found that experiences of discrimination and economic hardship contributed to higher stress levels and lower emotional intelligence among tribal students. The researchers suggested that integrating cultural heritage into school curricula could improve self-identity and psychological well-being.

“Reddy, S., & Rao, L explored self-efficacy and motivation levels among tribal and non-tribal students in Andhra Pradesh [9]”. Their findings indicated that tribal children exhibited lower self-confidence and academic motivation, primarily due

to limited access to quality education and parental support. The study recommended mentorship programs to enhance their academic and psychological resilience.

“Basu, Das, and Roy investigated anxiety and coping mechanisms among tribal school children in Madhya Pradesh.

[2]”. Their research suggested that a lack of structured recreational activities contributed to higher anxiety levels. However, participation in culturally familiar sports and group activities significantly improved their stress-coping abilities and overall mental health.

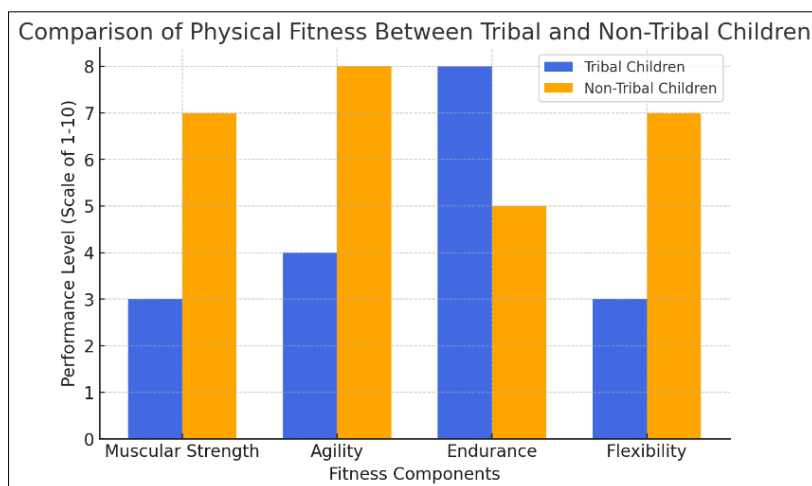


Figure 2. Physical Fitness Between Tribal and Non-Tribal Children.

Table 3. Psychological Well-Being of Tribal Children.

Psychological Factor	Tribal Children	Non-Tribal Children	Observations
Stress Levels	3.8/5	2.5/5	Higher among tribal children due to socio-economic challenges
Emotional Intelligence	2.9/5	4.1/5	Limited due to social exclusion and discrimination
Self-Efficacy	3.0/5	4.2/5	Lower confidence levels in academics
Anxiety Levels	3.7/5	2.6/5	Higher due to lack of recreational activities

Table 3 indicates Tribal children experience higher stress and anxiety, with lower emotional intelligence and self-efficacy due to socio-economic challenges. Targeted interventions can enhance their psychological well-being.

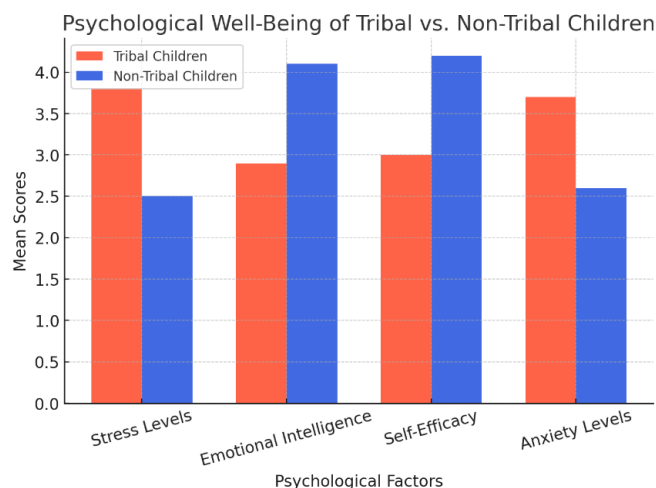


Figure 3. Psychological Well-Being of Tribal Children and non-tribal children.

4.3. Effect of Physical Activity on Academic and Cognitive Performance

There is growing evidence that physical fitness positively influences cognitive function and academic performance. In a study conducted by [8], tribal children in Maharashtra who engaged in regular physical activities such as running and indigenous games demonstrated better problem-solving skills and memory retention compared to those with sedentary lifestyles. [8].

“Basu, Das, and Roy examined the link between fitness levels and cognitive abilities among school-going tribal chil-

dren in Rajasthan. [8]”. Their study found that children with higher physical fitness scores performed significantly better in attention and verbal reasoning tasks. The authors emphasized the role of structured exercise programs in improving educational outcomes.

An intervention-based study by [3] in Kerala implemented a school-based fitness program among tribal students and observed notable improvements in classroom participation, emotional regulation, and academic performance. The study recommended including yoga and traditional sports in school curricula to enhance both physical and psychological development.

Table 4. Impact of Physical Activity on Academic and Cognitive Performance.

Study	Location	Key Benefit	Activity Type	Observations
Iyer & Thomas	Maharashtra	Better problem-solving & memory	Running, indigenous games	Active children outperformed sedentary peers
Saxena et al.	Rajasthan	Higher attention & verbal reasoning	General fitness programs	Fitness linked to better academic performance
Pillai & Nandakumar	Kerala	Improved participation & regulation	Yoga, traditional sports	Structured activities boosted academics

Table 4 indicates Physical activity boosts cognitive skills, attention, and academic performance in tribal children. Structured fitness programs enhance problem-solving, memory, and classroom engagement.

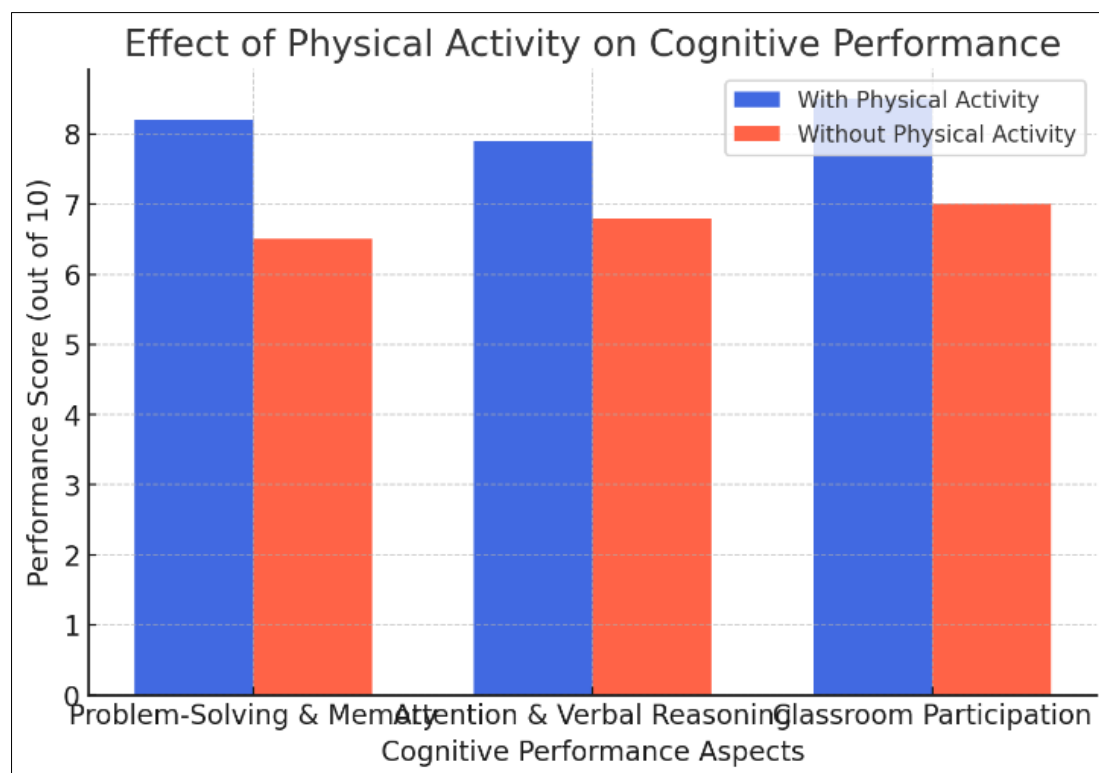


Figure 4. Physical Activity on Academic and Cognitive Performance.

5. Gaps in Research and Future Directions

Despite growing literature on the health and well-being of tribal children in India, several research gaps remain [7]. Most existing studies rely on cross-sectional data, making it difficult to assess the long-term effects of physical activity on mental health and academic performance, highlighting the need for longitudinal studies. Additionally, there is limited research on gender-specific differences in fitness levels and psychological well-being, necessitating targeted interventions for male and female tribal children. The impact of migration and urbanization on tribal children's health and mental well-being remains understudied, despite increasing rural-to-urban transitions altering their lifestyle and access to healthcare. Furthermore, policy-oriented research is lacking, with minimal studies evaluating the effectiveness of government initiatives in improving fitness and psychological outcomes among tribal children. Future research should focus on these areas to develop comprehensive, evidence-based strategies for enhancing tribal child development.

6. Discussion on Findings

Tribal children often demonstrate greater endurance, likely due to their physically active lifestyle in rural settings. However, they frequently show lower levels of muscular strength, agility, and flexibility. This contrast points to a gap that could be addressed through structured fitness programs that focus on developing overall physical capabilities through strength training, agility drills, and exercises aimed at improving flexibility.

On the psychological front, tribal children face elevated levels of stress and anxiety, often tied to socio-economic challenges and experiences of social exclusion. These pressures can negatively affect their confidence and overall sense of self, limiting both academic achievement and social integration. The lack of exposure to consistent educational support further lowers their belief in their abilities.

Nevertheless, engaging in group activities that reflect their cultural values has shown positive effects on emotional resilience and social interaction. Similarly, regular physical activity has been linked to improved mental focus, problem-solving abilities, and participation in learning environments. These improvements underscore the importance of incorporating movement-based interventions, such as indigenous games and yoga, into daily routines to support not just physical health but also cognitive and emotional growth.

Despite these encouraging findings, there are still critical gaps in existing research. Most studies rely on short-term data, with little attention given to how outcomes vary between boys and girls or how factors like migration and ex-

posure to urban life affect well-being. Going forward, research should take a more comprehensive approach, including long-term studies and a focus on diverse experiences, to shape effective strategies for supporting tribal children's holistic development.

7. Conclusions

- 1) **Fitness Disparities:** Tribal children have higher endurance due to active rural lifestyles, while non-tribal children benefit from structured sports, leading to better strength, agility, and flexibility.
- 2) **Psychological Challenges:** Tribal children face higher stress and anxiety due to socio-economic hardships, whereas non-tribal children have better access to mental health support and resources.
- 3) **Cultural Activities:** Tribal children benefit from traditional activities that enhance emotional resilience, while non-tribal children engage more in organized extracurricular programs.
- 4) **Cognition & Physical Activity:** Physically active tribal children show better problem-solving and attention, but non-tribal children excel academically due to better educational support.
- 5) **Holistic Programs:** Tribal children need fitness programs integrating indigenous sports and yoga, while non-tribal children require balanced physical and cognitive training.
- 6) **Research Gaps:** Limited studies compare long-term fitness and mental health outcomes between tribal and non-tribal children, especially regarding gender and urbanization.
- 7) **Future Research:** Longitudinal studies on lifestyle, fitness, and mental health differences between tribal and non-tribal children are needed for effective policy development.

Abbreviations

BMI	Body Mass Index
WHO	World Health Organisation
HRPF	Health Related Physical Fitness
SE	Self Esteem
EI	Emotional Intelligence
PA	Physical Activity
SES	Socio Economic Status
SC/ST	Scheduled Castes/Scheduled Tribes

Conflicts of Interest

The authors declare no conflicts of interest.

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