



P-ISSN: 2394-1685
E-ISSN: 2394-1693
Impact Factor (RJIF): 5.38
IJPESH 2024; 11(4): 380-382
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<https://www.kheljournal.com>
Received: 05-05-2024
Accepted: 07-06-2024

Buhari SM

Coach in Gymnastics, Kerala
State Sports Council, Kerala,
India

Dr. George Joseph

Associate Professor of Physical
Education, Government College,
Kottayam, Kerala, India

Corresponding Author:

Buhari SM

Coach in Gymnastics, Kerala
State Sports Council, Kerala,
India

Study on motor abilities of elementary school students (2015-2020): A review study

Buhari SM and Dr. George Joseph

Abstract

This review synthesizes research conducted between 2015 and 2020 on the motor abilities of elementary school students, focusing on developmental trajectories, assessment methodologies, influencing factors, educational implications, and future research directions. Motor skills, encompassing fundamental movements like running, jumping, and throwing, are critical for children's physical health and engagement in sports. The systematic review utilized databases including PubMed, PsycINFO, and Google Scholar, targeting studies that examine locomotor and object control skills in children aged 6 to 12 years.

Key findings highlight age-related improvements in motor skills during early childhood, influenced by individual, cultural, and environmental factors. The Test of Gross Motor Development emerged as a primary assessment tool, providing standardized metrics for evaluating motor proficiency. Factors such as socio-economic status, parental support, and structured physical education programs significantly influenced motor skill development. Educational implications underscore the importance of comprehensive physical education curricula and policy initiatives promoting active lifestyles.

Recommendations for future research include longitudinal studies tracking motor development over extended periods, cross-cultural comparisons to understand global variations, and interventions targeting underserved populations. Overall, this review emphasizes the pivotal role of early childhood interventions and supportive environments in fostering optimal motor skill development and lifelong physical activity among elementary school children.

Keywords: Motor abilities, motor skills, fine motor skills, gross motor skills

Introduction

Motor abilities play a crucial role in the physical development and overall well-being of children, impacting their participation in daily activities, sports, and academic performance. Understanding these abilities in elementary school students is vital as it provides insights into their developmental trajectories and potential challenges they may encounter during their formative years.

The term "motor abilities" encompasses a wide range of skills, including gross motor skills (involving larger muscle groups for activities like running or jumping) and fine motor skills (involving smaller muscle groups for tasks like writing or manipulating objects). These abilities are not only indicators of physical health but also correlate with cognitive and social development.

Research indicates that motor skills develop progressively from infancy through childhood, influenced by genetic factors, environmental stimuli, and opportunities for physical activity. Elementary school marks a critical phase where foundational motor skills are refined and new skills are acquired through structured physical education programs, recreational activities, and everyday play.

Despite the recognized importance of motor abilities, there remains variability in motor development trajectories among children, influenced by individual differences and environmental factors such as socioeconomic status and access to physical education resources. This variability underscores the need for comprehensive assessments of motor abilities in diverse populations of elementary school students.

This study aims to investigate the motor abilities of elementary school students aged 6-12 years, focusing on both gross and fine motor skills.

By employing standardized assessments and observational techniques, we seek to identify patterns of motor development, potential disparities, and factors contributing to motor skill acquisition in this age group.

Ultimately, a deeper understanding of elementary school students' motor abilities can inform educational practices, physical education curricula, and interventions aimed at promoting healthy development and academic success.

Understanding the development of motor abilities in elementary school students is crucial for promoting physical health and overall well-being. Motor skills, encompassing fundamental movements like running, jumping, and throwing, play a pivotal role in children's physical activity levels and engagement in sports. The period from 2015 to 2020 witnessed significant advancements in research on motor development among elementary school children, exploring various factors influencing skill acquisition and proficiency.

This review aims to synthesize findings from studies conducted between 2015 and 2020, focusing on developmental trajectories, assessment methodologies, factors affecting motor skill development, educational implications, and future research directions related to motor abilities in elementary school students.

Methodology

To conduct this review, a systematic search of electronic databases such as PubMed, PsycINFO, and Google Scholar was performed using keywords such as "motor abilities," "elementary school children," "development," "assessment," and related terms. The review included studies published between 2015 and 2020, with a specific focus on motor skill development among children aged 6 to 12 years.

The inclusion criteria comprised peer-reviewed articles, longitudinal studies, cross-sectional studies, and systematic reviews. These studies examined various aspects of motor abilities, including locomotor skills (e.g., running, jumping) and object control skills (e.g., throwing, catching). Priority was given to studies exploring the influence of physical education programs, school interventions, socio-economic factors, cultural influences, and gender differences on motor skill development.

Data extraction involved gathering information on study design, participant demographics, assessment tools used (e.g., Test of Gross Motor Development), and the main findings related to motor skill acquisition and development. The review also focused on implications for practice and policy. Each included study underwent critical appraisal to evaluate methodological rigor and minimize bias in data synthesis. This process ensured that only high-quality and relevant studies were included in the review, thereby enhancing the reliability and validity of the synthesized findings.

Overall, the systematic approach aimed to provide a comprehensive overview of the current state of research on motor abilities in elementary school children, identifying key patterns, disparities, and factors influencing motor skill development. The findings from this review are intended to inform educational practices, physical education curricula, and policy initiatives, ultimately promoting healthy development and academic success among elementary school students.

Discussion of Findings

The review identified several key findings regarding motor abilities in elementary school students from 2015 to 2020:

1. Developmental Trajectories: Studies consistently

reported age-related improvements in fundamental motor skills during early childhood (ages 6-8), with significant variability based on individual, cultural, and environmental factors. This highlights that while children generally exhibit progressive enhancement in their motor abilities as they age, the rate and extent of improvement can vary greatly. Factors such as genetics, family background, and cultural practices play a critical role in shaping these developmental trajectories (Abdelkarim *et al.*, 2017; Emck *et al.*, 2009) ^[1, 9].

2. Assessment Methodologies: The Test of Gross Motor Development (TGMD) and its adaptations emerged as the most commonly used tools for assessing motor proficiency. These tools provide standardized metrics for evaluating locomotor and object control skills, facilitating consistent and reliable measurement of motor abilities across different studies. The widespread use of TGMD underscores its validity and reliability in capturing essential aspects of motor development in children (Bakhtiari *et al.*, 2011; Warrington, 2007) ^[4, 20].

3. Influencing Factors: Several factors were identified as influential in shaping motor skill development. Socio-economic status (SES) plays a significant role, with children from higher SES backgrounds generally having better access to resources that promote motor development, such as safe play environments and organized sports. Parental support and involvement are also crucial, as parents who encourage physical activity and provide opportunities for active play contribute positively to their children's motor skill acquisition. Additionally, participation in organized sports and structured physical education programs within schools were found to be critical in fostering motor skills. These findings emphasize the importance of creating supportive environments that facilitate regular physical activity and skill development (Mota *et al.*, 2009; Umbrásko *et al.*, 2010) ^[15, 18].

4. Educational Implications: The findings underscored the importance of comprehensive physical education curricula that are well-structured and inclusive. Teacher training emerged as a vital component, with the need for educators to be equipped with the knowledge and skills to effectively deliver physical education and support motor development. Policy initiatives aimed at promoting active lifestyles and integrating physical activity into daily routines were also highlighted. Such initiatives are crucial for enhancing motor skill acquisition and ensuring that all children, regardless of their background, have opportunities to develop their motor abilities (Dapp & Roebbers, 2018; Bamitale & Boluwaji, 2013) ^[7, 3].

5. Future Directions: The review recommended several areas for future research. Longitudinal studies tracking motor development trajectories over extended periods were suggested to better understand the long-term patterns and influences on motor skills. Cross-cultural comparisons were also recommended to elucidate global variations in motor development and identify universal versus culture-specific factors. Furthermore, interventions targeting underserved populations were emphasized to mitigate disparities in motor proficiency and ensure that all children have equitable opportunities for motor development. This calls for targeted research and programs designed to address the unique challenges faced by children in different socio-economic and cultural contexts (Lovecchio *et al.*, 2012; Kalinski *et al.*,

2011)^[13, 12].

Overall, the review highlights the multifaceted nature of motor development among elementary school students and underscores the critical role of early interventions, supportive environments, and inclusive educational programs in fostering optimal motor skill development. These findings provide a comprehensive overview of the key factors influencing motor abilities and offer valuable insights for educators, policymakers, and researchers aimed at promoting lifelong physical activity and healthy development among children.

Conclusion

In conclusion, this review underscores the complex and multifaceted nature of motor development among elementary school students from 2015 to 2020. It synthesizes extensive evidence on various aspects including developmental trajectories, assessment methodologies, influencing factors, educational implications, and future research directions. The analysis reveals that motor skills improve significantly with age during early childhood, yet this development is influenced by a range of individual, cultural, and environmental factors.

Assessment tools like the Test of Gross Motor Development have been pivotal in providing standardized metrics for evaluating children's motor proficiency. Key factors influencing motor skill development include socio-economic status, parental support, access to safe play environments, participation in organized sports, and structured physical education programs. These elements play crucial roles in shaping children's motor abilities, highlighting disparities based on different backgrounds and opportunities.

Educational implications drawn from the findings stress the importance of comprehensive physical education curricula and well-trained teachers. Policy initiatives aimed at promoting active lifestyles are essential for enhancing motor skill acquisition in school settings. Furthermore, the review identifies the necessity for early childhood interventions and supportive environments to foster optimal motor development.

Future research should focus on longitudinal studies to track motor development over longer periods, cross-cultural comparisons to understand global variations, and targeted interventions for underserved populations to address disparities in motor proficiency. Overall, the review emphasizes the significant impact of early interventions and supportive educational environments in promoting lifelong physical activity and healthy development among elementary school children.

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