



An analytical study of obstacles affecting the development of Handball players

Pardeep Kundu¹



*CORRESPONDENCE

Pardeep Kundu
pardeepknd@gmail.com

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Website: www.thescholarstime.in
Email: editor@thescholarstime.in

ABSTRACT

Handball is one of the most popular sports globally, played by people of all ages and genders. Its development requires significant commitment from players, coaches, administrators, and strong infrastructure support. This study focused on handball players from Rohtak, Haryana, involving a sample of 80 players aged 18 and above from various institutions with a strong interest in the sport. To identify key challenges, a questionnaire was distributed to handball experts, aiming to assess obstacles in training programs and the application of biomechanical and analytical tools. The study revealed a significant gap in the use of sports science in handball training and development. Key recommendations include promoting education in biomechanics and kinetic analysis for both coaches and players, initiating developmental training programs in these areas, and enhancing infrastructure, particularly for youth categories.

KEYWORDS

Biomechanical, kinetic analysis, influencing obstacles, Handball

¹ Assistant Professor, Physical Education, Govt. College, Barota, Sonipat, Haryana, India

INTRODUCTION

Playing sports and games offers numerous benefits for students, helping them build self-esteem, confidence, and social skills. It also fosters time management, discipline, and can serve as a pathway for a career or a lifelong hobby. Additionally, engaging in sports activities reduces stress and helps combat depression. On a broader scale, regular sports participation plays a crucial role in personal development, public health, and social integration. It helps individuals fulfil their responsibilities within teams, clubs, and communities, contributing to both personal and societal well-being. Sports offer a wide range of physical, psychological, cognitive, and moral benefits, helping individuals grow into productive citizens who can contribute positively to society. This is especially true in organized sports like handball, which demands not only athletic skill but also teamwork, strategy, and mental resilience. To support the growth and success of handball, it is essential to form specialized committees for training, officiating, and tournament organization. Handball is a dynamic team sport played by two teams of seven players, where the objective is to throw the ball into the opponent's goal. Matches consist of two 30-minute halves and are typically played indoors on a 40x20 meter court. Each goal is surrounded by a 6-meter zone that only the goalkeeper can occupy. Goals are scored from outside this area or while diving into it. The game is fast-paced and high-scoring, often with teams scoring between 20 and 35 goals per match. Although body contact is allowed for defensive purposes, protective gear is minimal, with players usually wearing soft pads or guards. Given the physical and tactical demands of handball—including its various playing positions and essential skills—players must undergo continuous, stage-specific training from a young age through to adulthood. Reaching advanced levels of performance requires the guidance of qualified coaches, effective management, and access to appropriate sports infrastructure. To support development in handball, it is vital to invest in facilities, equipment, and sports science tools. This includes motion analysis labs equipped with cameras, specialized software, and computers for storing and analysing video footage and performance data. Such resources are grounded in the scientific principles of kinesiology and biomechanics, which are essential for improving technique and reducing injury risks. The role of educational institutions, clubs, and sports federations is central in spreading awareness about the importance of scientific approaches to sports training. By laying strong foundations in training and education, future generations can be prepared for high-level competition. This study underscores the need to identify the current challenges hindering the development of handball—such as lack of infrastructure, insufficient training in biomechanical analysis, and limited access to sports science—and to propose evidence-based solutions. Implementing well-planned programs based on scientific analysis will enhance player performance and support the growth of handball at local, national, and international levels.

Objectives of the study

Identifying key obstacles hindering the development of handball players in Rohtak district was a primary objective of this study. The focus was on uncovering the most significant challenges faced by players in the region, particularly within the study sample. Additionally, the research aimed to highlight specific areas within educational institutions in Rohtak district that impact the growth and development of handball players, providing insights into factors that need attention for effective player development.

MATERIAL AND METHODS

The researcher employed the descriptive survey method, as it was deemed most appropriate for the nature and objectives of the study. The research sample was randomly

selected from various schools, colleges, and sports academies in Rohtak District. It included handball players, physical education teachers, and coaches. To develop the questionnaire, the researcher first reviewed relevant literature, previous studies, and conducted personal interviews with experts and specialists in the field. Based on these insights, key areas representing the most significant obstacles to the development of handball players in Rohtak were identified and used to create the questionnaire. These areas were then presented to a panel of specialists to ensure their relevance and appropriateness for the study sample. Fields that received approval from 70% or more of the experts were included. The final questionnaire consisted of 20 items, divided equally among four key areas (five items per area), each representing major challenges affecting player development. The questionnaire was reviewed by experts in sports training science, biomechanics, handball, and youth athlete development to assess the impact of the identified obstacles. After collecting and analyzing expert feedback, the final version of the questionnaire was prepared and used to conduct the study.

RESULTS

One of the key challenges facing the development of handball in the region is the lack of effective sports administrative planning. The governing bodies responsible for the game have shown limited initiative in pushing for its advancement through collaboration with coaches and officials. This has resulted in missed opportunities for structured growth and development. Additionally, sports federations, clubs, and youth centers struggle to attract qualified trainers and specialists in movement analysis and modern technologies. This shortfall has directly contributed to the limited use of analytical programs, which are essential tools in today's high-performance sports training. There is also an absence of a clearly defined vision or curriculum for handball development across different age groups. No comprehensive training framework exists that outlines preparation stages—general, specific, and competitive—tailored to the physical and developmental needs of each age category. Moreover, the lack of regular tournaments and leagues for juniors and other age groups has significantly hindered the game's progress. These age-group competitions are critical for talent development and serve as the foundation for the sport's future. Another major obstacle is the insufficient availability of training courses in analysis and biomechanics. There is a noticeable weakness in providing coaches with opportunities to enhance their skills in technical training, movement analysis, and biomechanical assessment of fundamental handball techniques. Without such capacity-building initiatives, coaches are limited in their ability to elevate player performance to competitive standards.

DISCUSSION

The analysis of the reconnaissance test results for players from Pt. NRS Government College, Rohtak, revealed that the use of analytical programs ranked highest among the identified obstacles, with a significant percentage. This finding highlights that, despite their experience in handball, players have not benefited from modern analytical tools widely adopted both globally and in neighboring countries. In an era of rapid technological advancement, the lack of access to or implementation of analytical and motion analysis programs—such as those measuring biomechanical and kinematic variables—represents a major gap. These tools, including imaging and scanning techniques, are essential for assessing inertia characteristics and body segment movement, ultimately contributing to performance optimization. The second-ranked obstacle was the limited application of biomechanical principles in learning and training, particularly observed among players at VC Rohtak. This suggests an underutilization of biomechanical foundations, leading to technical errors in player performance. Despite some players reaching commendable levels, there remains a clear need for structured training based on mechanical movement

analysis. Biomechanical training aims to develop optimal techniques by analyzing the purpose and structure of movement, thus enhancing efficiency and effectiveness in performance. The training curricula ranked third, indicating a noticeable weakness in the structure and execution of training programs, as reported by the exploratory study sample. Effective sports development today depends on the integration of scientifically grounded training methods to master fundamental skills. The current lack of essential training elements and confusion in training strategies hinders the ability of players to reach competitive levels comparable to international standards. This reflects an urgent need to overhaul the existing curricula and adopt best practices from advanced training models. Lastly, the field of age group training ranked lowest among the obstacles identified, particularly among players at GBDC Rohtak. This points to a lack of structured development for younger players at the district level, with evident randomness in talent nurturing. The findings indicate insufficient attention to foundational training for beginners and younger age groups, who require a balanced focus on physical, technical, psychological, and cognitive development. Training that aligns with the players' biological and developmental stages is crucial, as continued practice enhances functional adaptations, performance efficiency, and energy utilization through both aerobic and anaerobic methods. In conclusion, overcoming these challenges—especially in technology adoption, biomechanical training, curriculum development, and structured age-group programs—is essential for elevating the standard of handball in the region and achieving long-term player development.

RECOMMENDATIONS

It is essential to urge school and college sports authorities, youth forums, and sports clubs to operate according to a structured, annually prepared curriculum aimed at promoting and developing the game of handball. This approach should be supported by organized training and development courses, focusing on modern training methodologies and biomechanical analysis programs to enhance the skills and knowledge of coaches and trainers. Sports authorities must be encouraged to actively support and invest in these initiatives. Furthermore, it is important to engage academics, experienced coaches, and handball specialists to deliver intensive lectures and workshops in youth forums and sports clubs across all age groups. This will help build a strong foundation and deepen understanding of the game at every level. Priority should also be given to the organization of handball tournaments and leagues for all age categories, ensuring they receive both financial and media support to raise the profile of the sport and encourage wider participation. Officials at the governorate and district levels must be directed to provide the necessary infrastructure, equipment, and sports facilities, including the construction of handball courts and stadiums throughout the region to support grassroots and elite development. Lastly, there must be accountability for those responsible in sports institutions that fail to support the development of handball. Proper oversight should be implemented, and qualified, committed individuals must be placed in key roles to ensure the game receives the attention and resources it needs to grow.

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