

# BKSP



ক্রীড়ায় শ্রেষ্ঠত্ব  
Excellence in Sports

বাংলাদেশ ক্রীড়া শিক্ষা প্রতিষ্ঠান (বিকেএসপি)  
BANGLADESH KRIRA SHIKKHA PROTISHTHAN (BKSP)

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## BKSP SPORTS SCIENCE JOURNAL

Volume 22, June 2025



PHYSICAL  
STRENGTH



OVERALL  
MENTAL HEALTH



LESSEN EFFECT  
OF ASTHMA



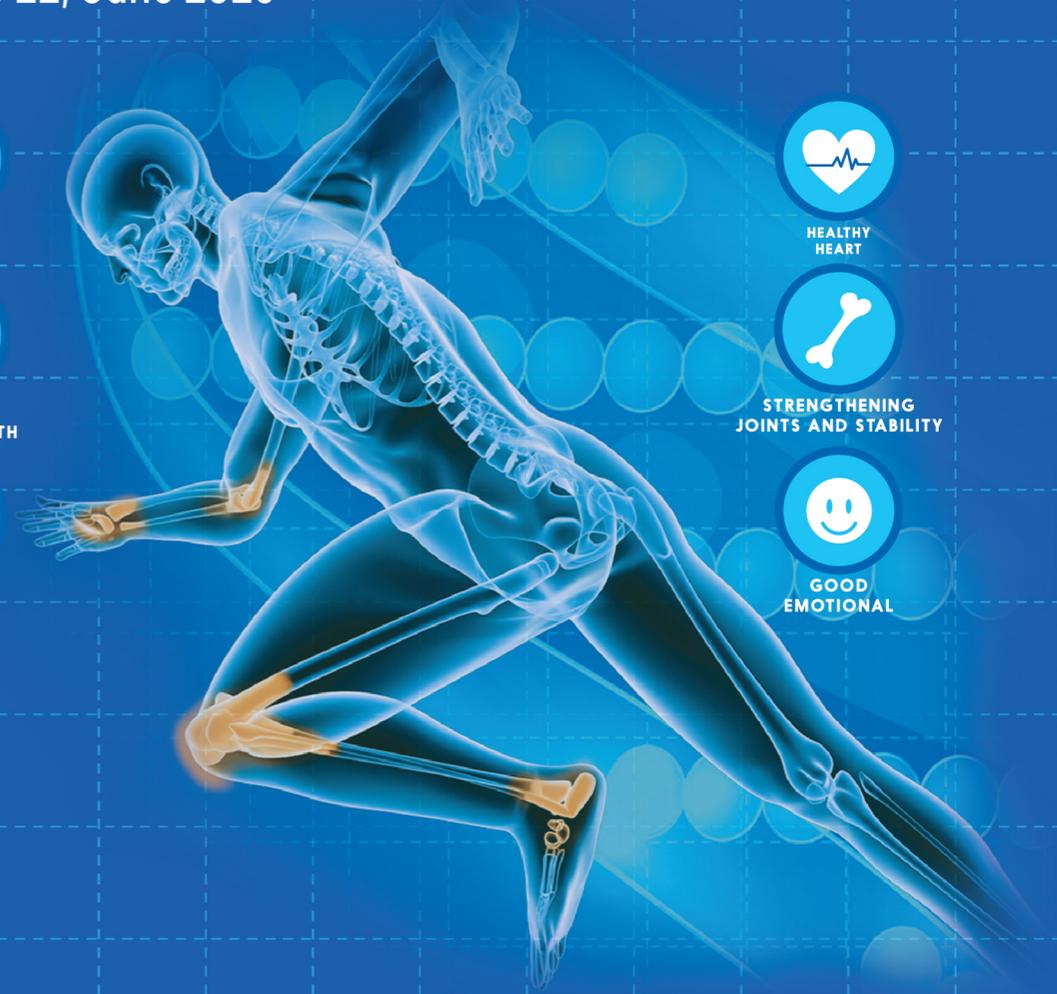
HEALTHY  
HEART



STRENGTHENING  
JOINTS AND STABILITY



GOOD  
EMOTIONAL



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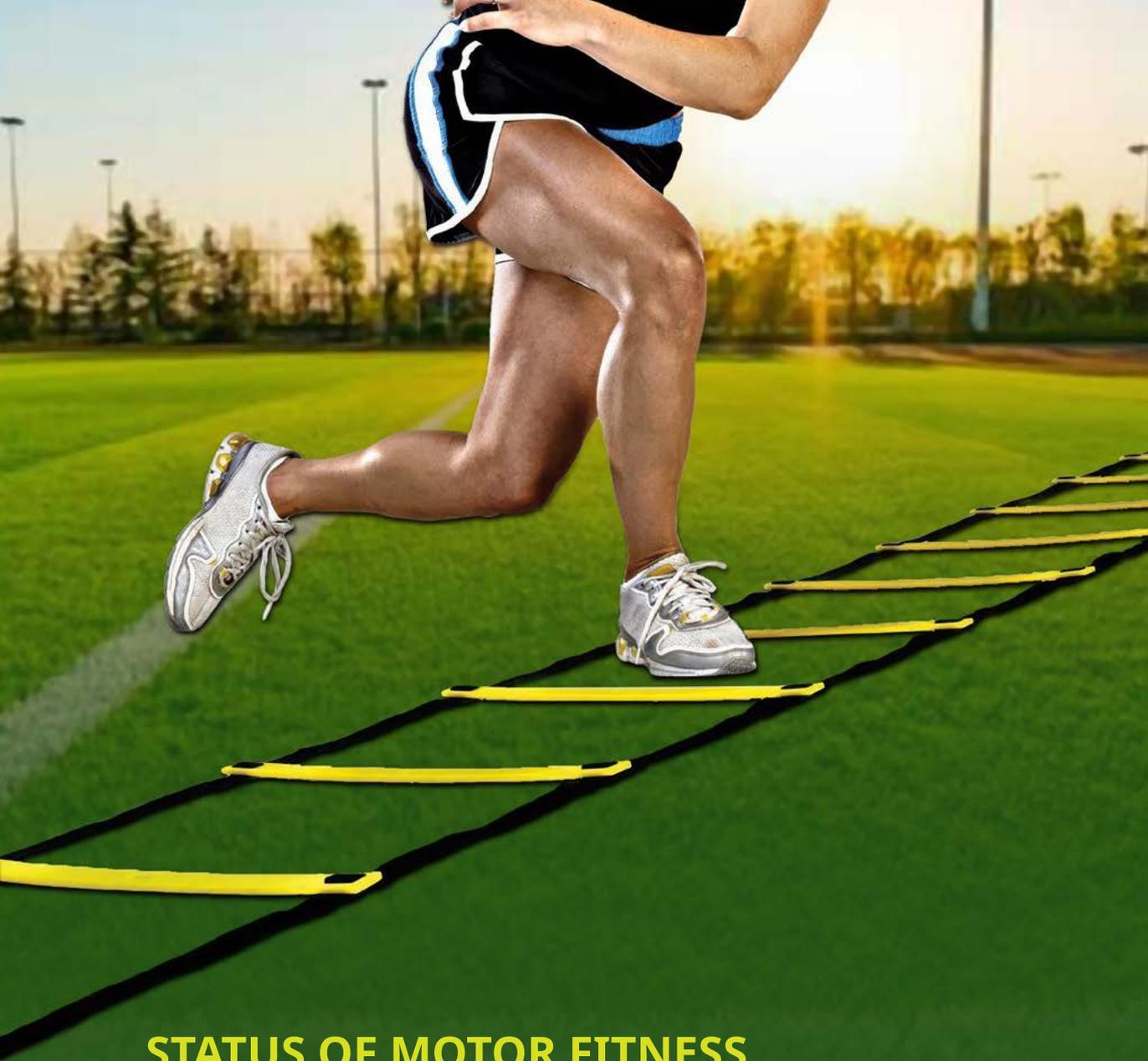


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# **STATUS OF MOTOR FITNESS COMPONENTS OF MALE FOOTBALL PLAYERS OF DELHI PHARMACEUTICAL SCIENCES AND RESEARCH UNIVERSITY – A PROFILE STUDY**

**A. K. Uppal\***  
**Abhijit Upadhyay\*\***

## ABSTRACT

The purpose of the study was to ascertain the status of motor fitness components of male football players of Delhi Pharmaceutical Sciences and Research University. The subjects of the study were 25 Football players who were tested for Speed (50m sprint), Agility (4x10m shuttle run), Endurance (600m run), Strength (standing broad jump) and Flexibility (sit & reach). With the help of norms created by Dr. Raj Kumar Sharma, LNIPE Gwalior, the performance of each subject was graded and separate profile of each player was developed. The result of the study revealed that overall status of DPSRU Football players in motor fitness was average. There is a need to enhance the training means for the development of motor components, mainly strength and endurance so that the motor fitness status of players could be enhanced.

**Keywords:** Motor Fitness Components, Football Players, Profile

## INTRODUCTION

Sports training seeks to improve athletic performance. Like all other forms of human performance, athletic ability is not the result of a single system or feature of the human psyche. Contrarily, it is the result of the athlete's entire personality. (Singh,1991). An individual's personality may be described in terms of their biological, social, and psychological characteristics. Along with their physical and physiological abilities, athletes' social and psychological qualities must also be strengthened in order to increase their athletic performance. In other words, a sportsman must develop his entire personality with the goal to better his performance. Therefore, sports training in one way or another tries to enhance the sportsman's personality. So, it seems sense that sports training is a form of learning. (i.e. pedagogical) process (Tandon et. al., 2001).

Sports conditioning is a methodical procedure that takes a lot of time. The training system must be founded on scientific principles and practices in order to get the greatest outcomes. The training must be based on the outcomes of effective practice that has stood the test of time in cases when it is not possible to do that. A sportsperson's performance is mostly influenced by his capacity for performance, which is a combination of the following five factors:

1. Technical Preparation
2. Physical Preparation
3. Development of Sports Personality
4. Intellectual Preparation
5. Tactical Preparation

The development of physical and motor fitness components among the aforementioned

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\*\* Research Scholar, DPSRU, New Delhi.

five criteria helps sportspeople prepare physically and motorically, which in turn builds a solid basis for all other types of training. Speed, flexibility, strength, agility and endurance, and coordination are just a few of the motor skills that make up a sportsperson's overall level of both physical and motor fitness. These motor skills are the fundamental prerequisites for human motor acts, together with their more complicated variations (such as endurance of strength, endurance of speed, explosive strength, etc.). As a result, these skills have a major role in how well athletes succeed in all sports. While marathon run in athletics calls for a very high degree of endurance, it doesn't call for high level of motor skills. On the other hand, in addition to basic endurance and speed, football & cricket demands an elevated degree of strength and speed endurance.

High degrees of physical preparedness are necessary for the sport of football. It is among those sports that call for speed, endurance, strength and power, in addition to agility. Top-level players can run several kilometres in a game while also remembering to often accelerate, decelerate, change directions, and leap. At all skill levels, fitness is crucial. While it's crucial for top players, it's also advantageous for novices because it will increase their effectiveness and enjoyment. Football fitness training aims to prepare players for the physical requirements of the game while also enabling effective use of their varied technical and tactical skills during the course of the game. Different fitness components are required for different kinds of sports, Uppal (2001).

Given the foregoing, a coach must assess the state of various physical/motor components, such as strength, speed, agility, flexibility, endurance, etc. and then construct a training schedule while taking into account the demands of a particular activity.

## **METHODOLOGY**

The subjects for the study were 25 football players who were regular students of Delhi Pharmaceutical Sciences and Research University. Ten of them competed in the 2023 North Zone Interschool Football Tournament, while the remaining players have been practicing regularly in preparation for next year's university squad. The concept of individual load was taken into consideration while developing the individuals' training program in terms of stimulus intensity, stimulus density, stimulus duration, and stimulus frequency. The researcher studied the scientific literature that was accessible in the field of his study, including both scholarly and ancillary works from a variety of sources found in both the university library and ASSRM. In order to choose factors that were pertinent to the study, the research scholar also talked with the mentor and other faculty members. It was also taken into consideration when choosing the fitness factors that instruments and equipment were readily available. The following factors were chosen for the study based on the researcher's expertise of the subject, the opinions of experts, the administrative feasibility, and the availability of tools and equipment.

**Table 1: List of variables, tests used to evaluate them and their unit of measurements**

SL. No.	Variable	Test Used	Unit of Measurement
1	Speed	50m Sprint	Second
2	Agility	4x10m Shuttle Run	Second
3	Endurance	600m Run	Minute
4	Strength	Standing Broad Jump	Centimeter
5	Flexibility	Sit & Reach	Centimeter

### COLLECTION OF DATA

The researcher conducted a meeting with the participants prior to the administration of tests for the collection of data in order to familiarize them with the research study and explain the effort necessary on their part. Additionally, he gave them a clear and concise explanation of the importance of the study he was undertaking. In order to dispel any uncertainty or question about the time and effort that they had to put in for the effective completion of this research project, the testing technique was also thoroughly described to them. As soon as the subjects were completely persuaded, they pledged the scholar of their earnest and unwavering assistance. The individuals were advised to give their hundred percent during the data collecting process even though there was no reward strategy used in the study.

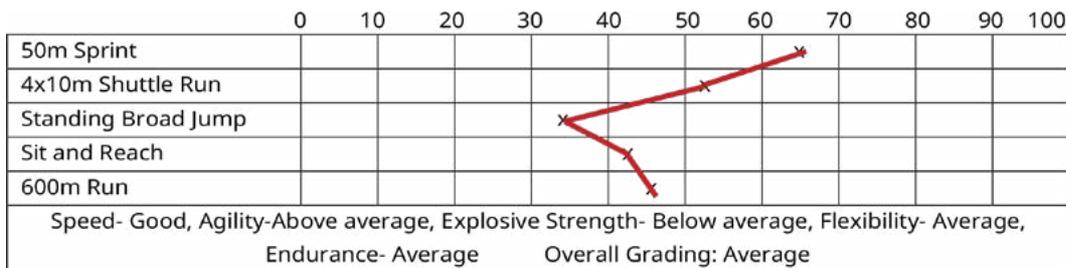
The subjects were tested in all the selected motor fitness components following the appropriate testing procedures. The scholar took help of other M.Sc. Sports Science students for collection of data and prior to testing; all the helpers were made familiar with the correct way of testing.

### PREPARATION OF PROFILES

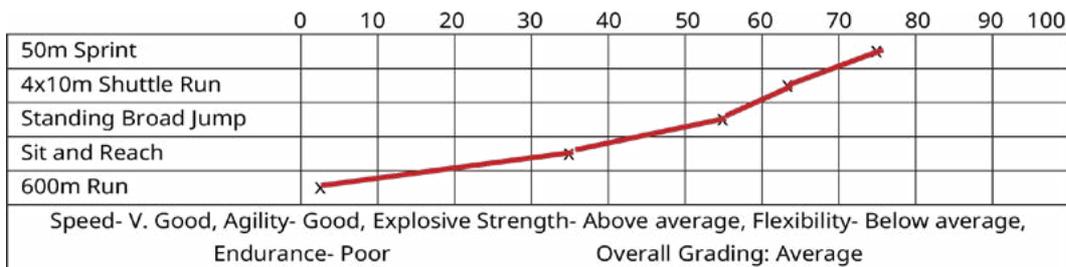
Assigning grades involved comparing each subject's performance on the motor fitness components with the norms created by Dr. Raj Kumar Sharma, LNIPE Gwalior. The subject-specific marks were translated into grades. The profile graph displayed the motor fitness component grades for each variable. To determine the trait pattern in the various motor fitness components for each participant, the plotted dots were combined together.

Figures 1 to 25 show the profile for every player chosen for the research through graphical representation.

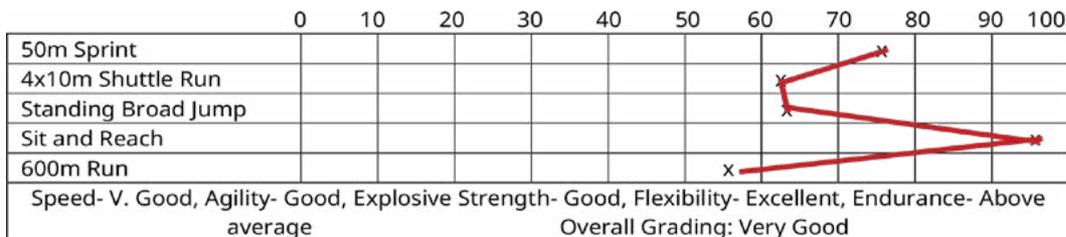
**Figure-1: Profile of Motor Fitness Components of Vibhor Gautam**  
Decile Points



**Figure-2: Profile of Motor Fitness Components of Ayush Gautam**  
Decile Points



**Figure-3: Profile of Motor Fitness Components of Vansh Malik**  
Decile Points



**Figure-4: Profile of Motor Fitness Components of Abhinav Bhardwaj**  
Decile Points

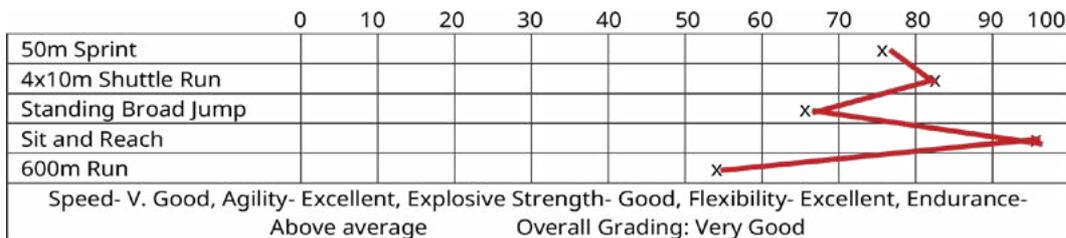


Figure-5: Profile of Motor Fitness Components of Rahul Singh

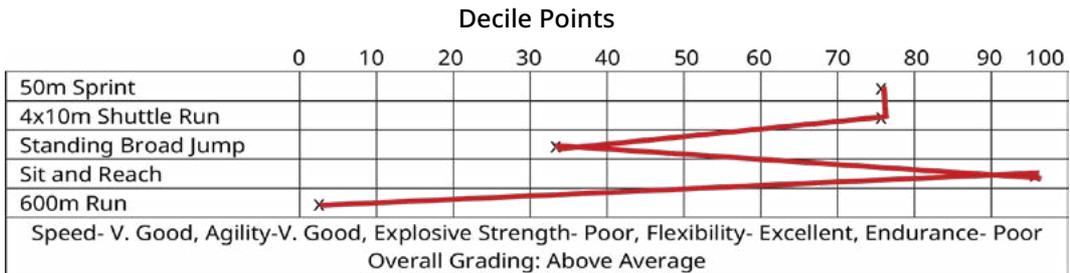


Figure-6: Profile of Motor Fitness Components of Jyotiban Das

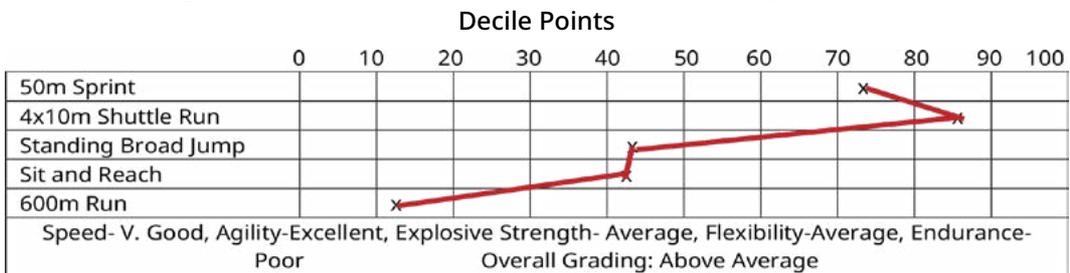


Figure-7: Profile of Motor Fitness Components of Nitish Jangra

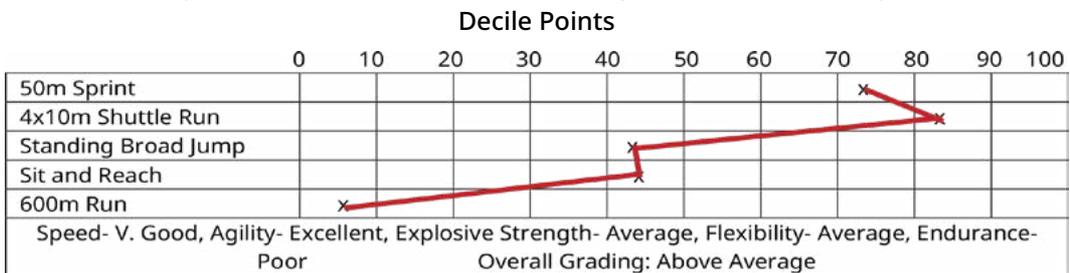


Figure-8: Profile of Motor Fitness Components of Namit Prakash

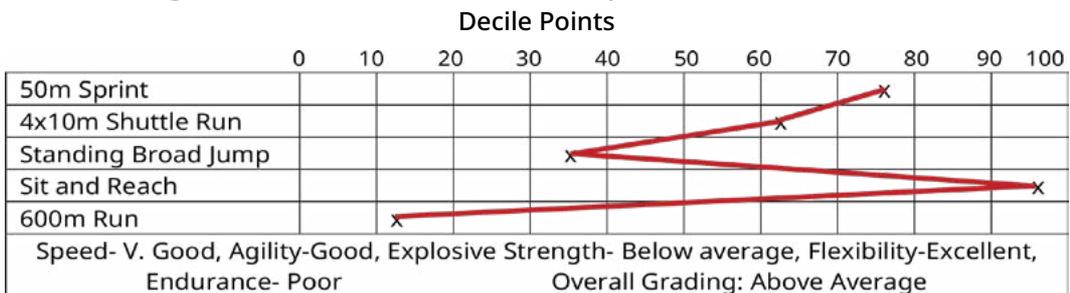


Figure-9: Profile of Motor Fitness Components of Sharandeep Singh

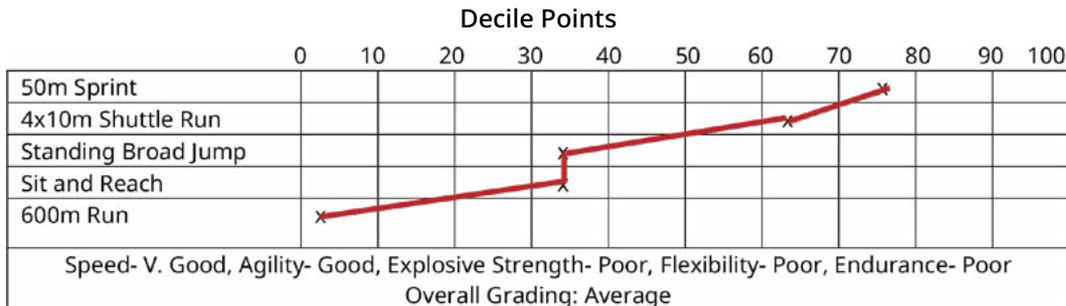


Figure-10: Profile of Motor Fitness Components of Mohd. Faizan

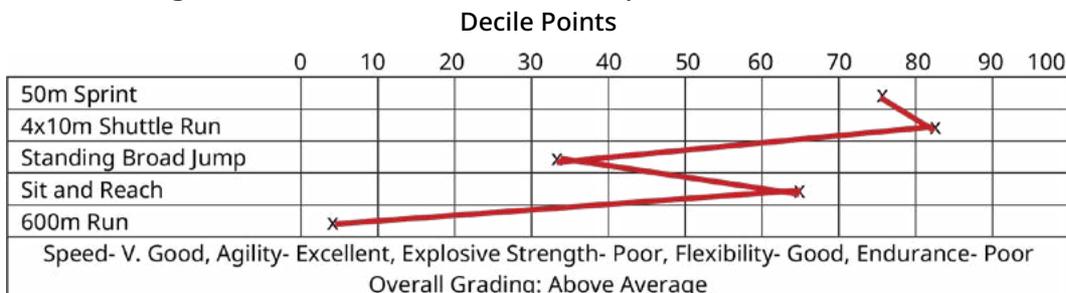


Figure-11: Profile of Motor Fitness Components of Kunal Phalaswal

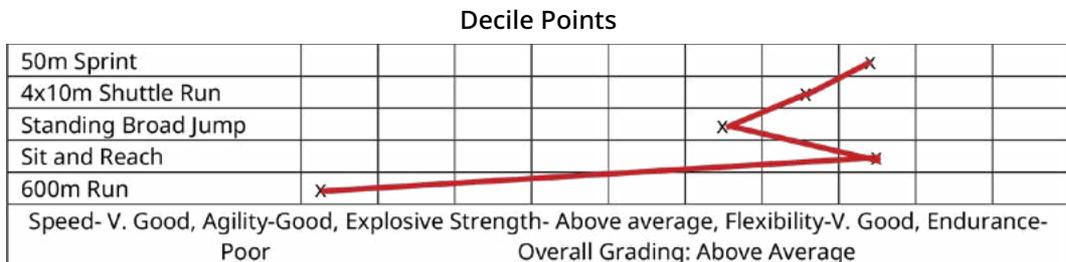


Figure-12: Profile of Motor Fitness Components of Vishal Singh

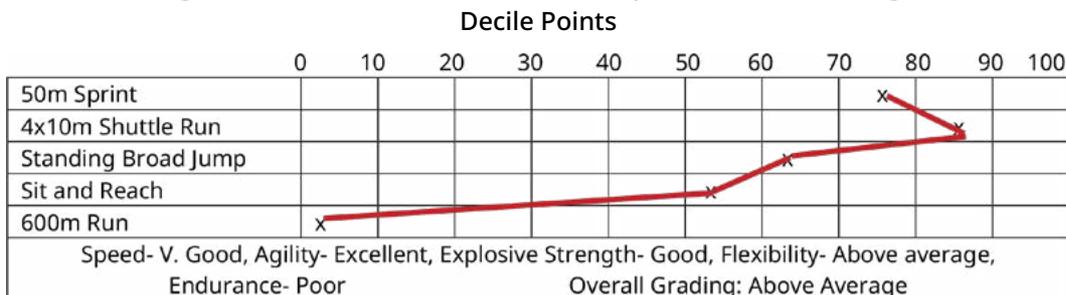


Figure-13: Profile of Motor Fitness Components of Saksham Sharma

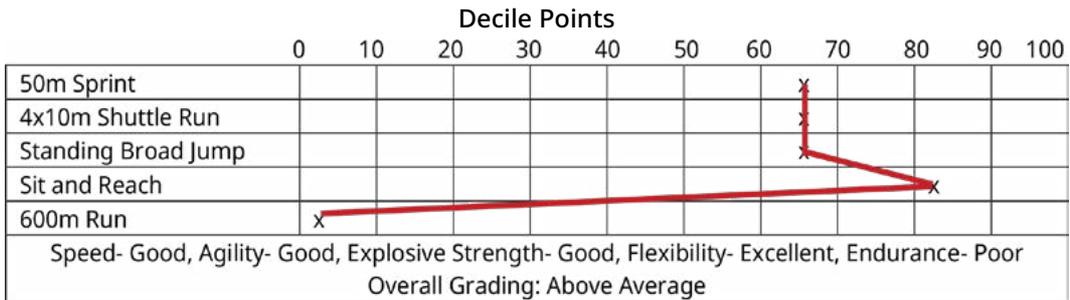


Figure-14: Profile of Motor Fitness Components of Naveen Yadav

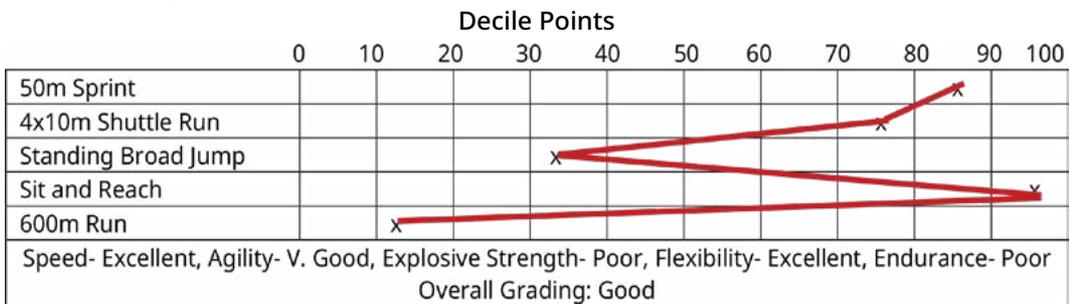


Figure-15: Profile of Motor Fitness Components of Aniket Dalal

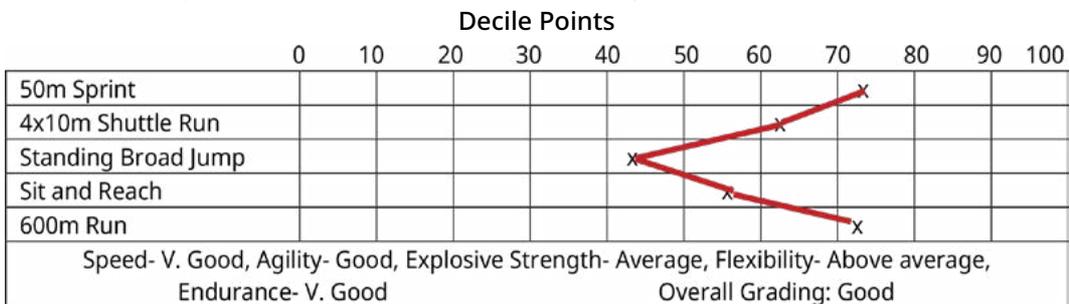


Figure-16: Profile of Motor Fitness Components of Surender Yadav

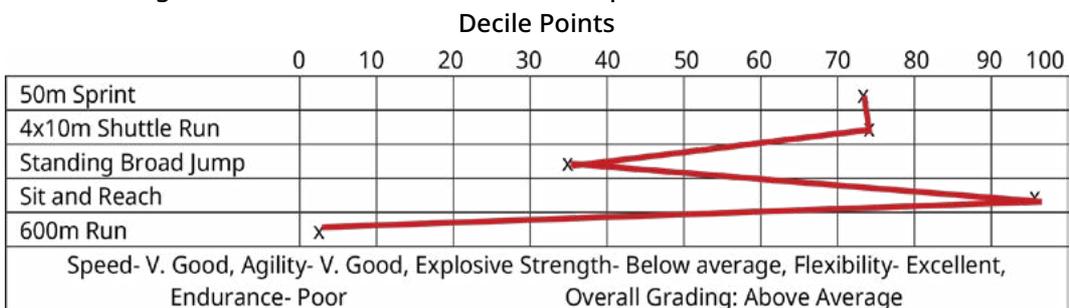


Figure-17: Profile of Motor Fitness Components of Prabal Tomar

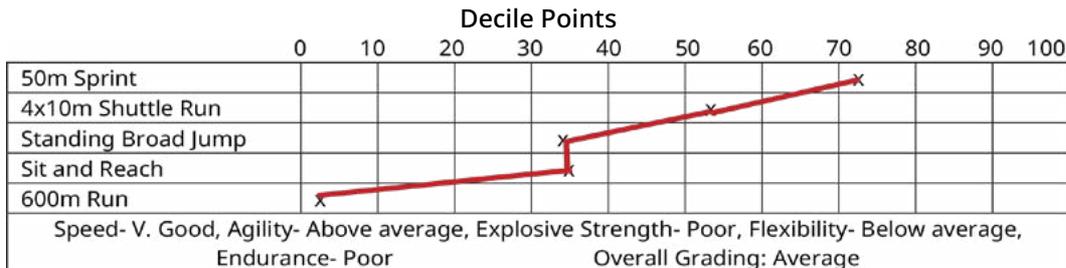


Figure-18: Profile of Motor Fitness Components of Alvin Anthony

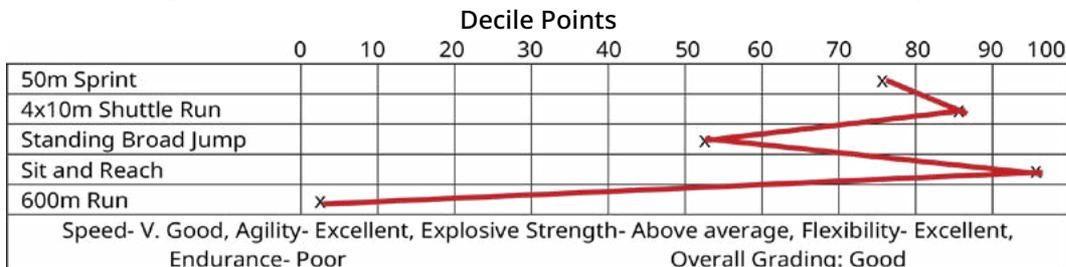


Figure-19: Profile of Motor Fitness Components of Priyam Singh

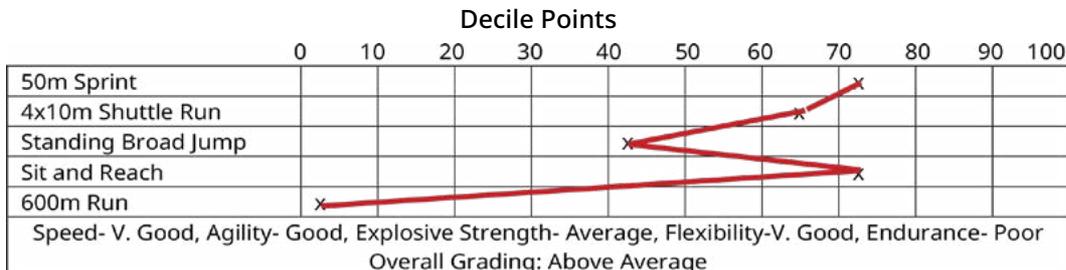


Figure-20: Profile of Motor Fitness Components of Tushar Arora

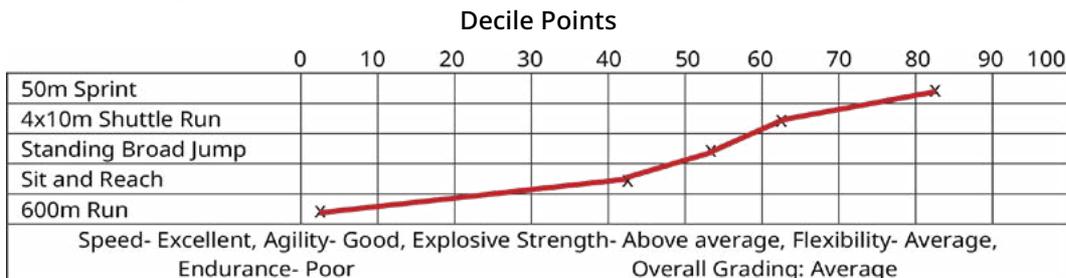


Figure-21: Profile of Motor Fitness Components of Abhishek Kaushik

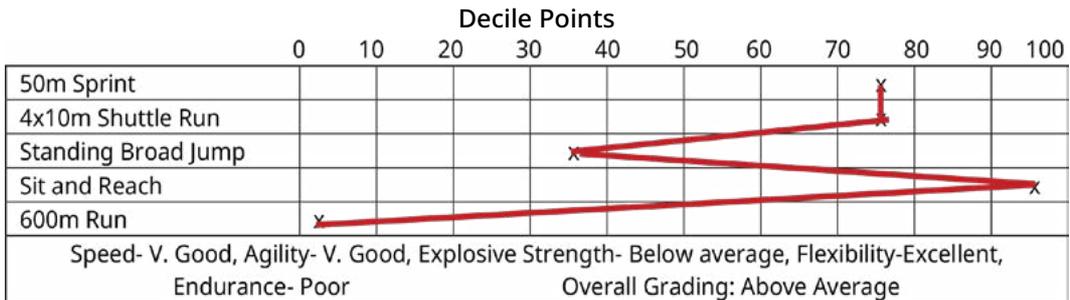


Figure-22: Profile of Motor Fitness Components of Ashish Dua

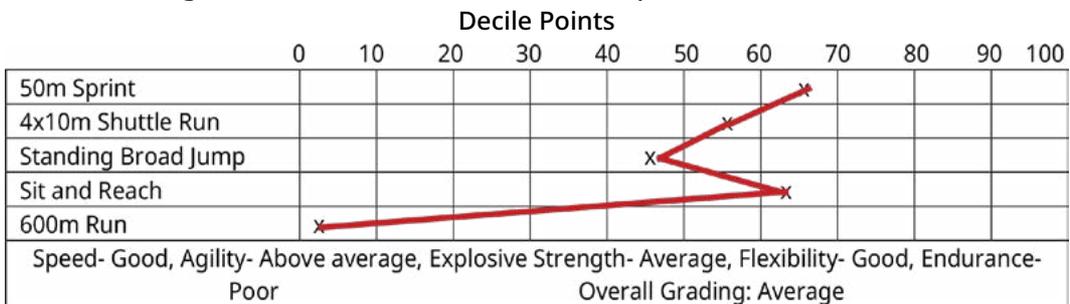


Figure-23: Profile of Motor Fitness Components of Asheesh Pant

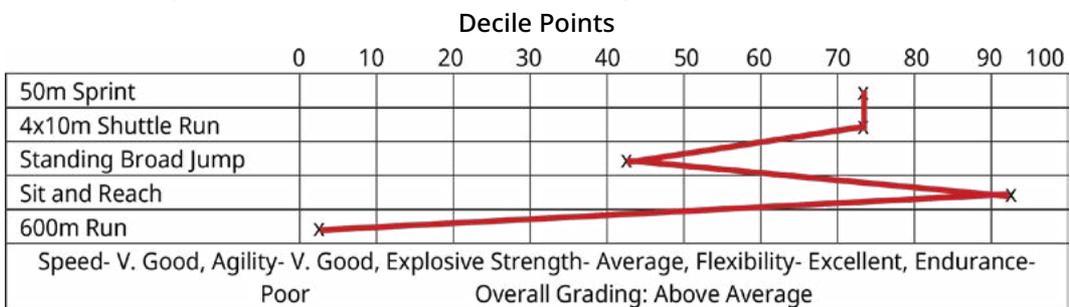


Figure-24: Profile of Motor Fitness Components of Shivam Srivastava

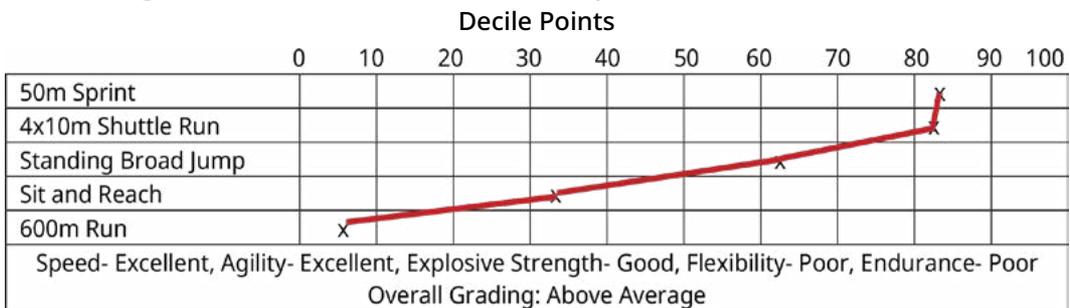
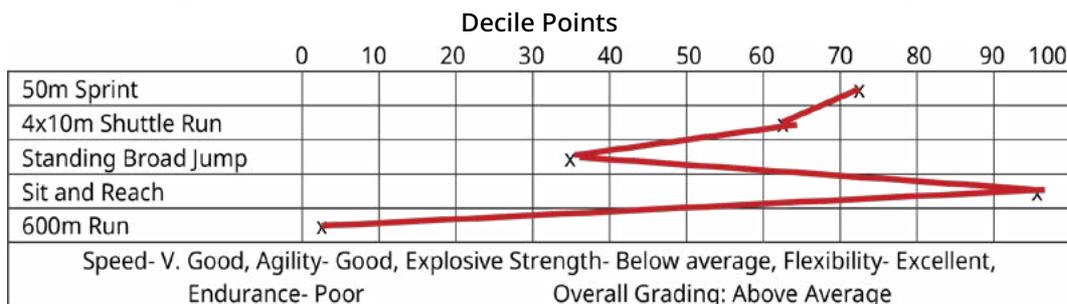


Figure-25: Profile of Motor Fitness Components of Gaurav Negi



### DISCUSSION OF FINDINGS

A summary of qualitative assessment of collected data based on the profile pattern is presented as follows:

Speed	Agility	Explosive Strength	Flexibility	Endurance	Overall Grading
Excellent- 3	Excellent- 7	Excellent- 0	Excellent- 11	Excellent- 0	Excellent- 0
V. Good- 19	V. Good- 5	V. Good- 0	V. Good- 2	V. Good- 1	V. Good- 2
Good- 3	Good- 10	Good- 5	Good- 2	Good- 0	Good- 3
Above average- 0	Above average- 3	Above average- 4	Above average- 2	Above average- 2	Above average- 14
Average- 0	Average- 0	Average- 6	Average- 4	Average- 1	Average- 6
Below Average- 0	Below Average- 0	Below Average- 5	Below Average- 2	Below Average- 0	Below Average- 0
Poor- 0	Poor- 0	Poor- 5	Poor- 2	Poor- 21	Poor- 0

The overall status of DPSRU Football players in motor fitness is Average. There are certain areas where there is a need to add more training means for the development of motor components, mainly Strength and Endurance. The status of motor components among football players can be ranked as follows:

1. Flexibility
2. Agility
3. Speed
4. Strength
5. Endurance

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# **AN OVERVIEW ON WOMEN'S REPRESENTATION IN SPORTS MEDIA: IMPACT ON EMPOWERMENT AND VISIBILITY**

**Dr. Neetu Dutta\***

## ABSTRACT

Women's representation in sports media has been a topic of growing concern and significance in recent years. Despite the increasing participation of women in sports, their portrayal in media often remains inadequate, stereotyped, or marginalized. This paper explores the multifaceted relationship between women's representation in sports media and its impact on empowerment and visibility and the role of sports media in shaping perceptions of women in sports and its impact on their empowerment and visibility. Drawing on global and regional case studies, the analysis highlights the disparities in coverage, the portrayal of women athletes, and the underlying socio-cultural factors influencing these trends. The study underscores the transformative potential of equitable media representation in challenging stereotypes, promoting gender equality, and empowering women within and beyond the sports domain. Furthermore, the paper discusses strategies to enhance women's visibility in sports media, emphasizing the role of policy interventions, media ethics, and advocacy. By addressing these gaps, this research contributes to the broader discourse on gender equity in sports and media, offering actionable insights for stakeholders. The research delves into the evolving dynamics of social media and its role as a transformative platform for empowering female athletes, ultimately contributing to gender equality in sports and society. By analysing global trends, data, and case studies, this study highlights challenges such as underrepresentation and stereotyping, while proposing strategies to create equitable representation.

**Keywords:** Women athletes, Women in sports, Media representation, Gender equality, Sports empowerment

## INTRODUCTION

The way women are represented in sports media serves as a reflection of society's progress toward gender equality. Despite remarkable growth in women's participation in sports globally, their portrayal in the media often lags far behind. Women athletes frequently receive significantly less coverage than their male counterparts, and the narratives surrounding them are often shaped by gender biases. When women in sports are featured, the focus is frequently on their physical appearance, personal lives, or off-field behaviour, rather than their athletic achievements and professionalism. This disparity in representation not only reflects ingrained societal stereotypes but also reinforces them, shaping public perception in ways that limit the visibility and recognition of women athletes. Media coverage plays a pivotal role in shaping how athletes are perceived by the public. It influences everything from sponsorship opportunities for athletes to how young girls view their potential in sports. However, when women athletes are underrepresented or portrayed in stereotypical ways, it sends a message that their contributions are less valuable. This lack of fair representation creates a vicious cycle: without sufficient visibility, women's sports struggle to gain the audience and investment they deserve, further perpetuating their marginalization in media narratives.

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One of the significant challenges is the persistent gender imbalance in decision-making roles within the media industry. Male-dominated editorial boards and sports journalism teams often fail to prioritize equitable coverage of women's sports. Moreover, societal perceptions and consumer demand also play a role. For example, the assumption that audiences are more interested in men's sports often dictates the type and amount of coverage women athletes receive. This creates a skewed representation where women's sports are perceived as less entertaining or important, further limiting their exposure and opportunities for growth. However, sports media also has the potential to be a transformative force. By amplifying the achievements of women athletes and telling their stories authentically, the media can help challenge societal stereotypes and inspire future generations. The impact of positive representation is far-reaching: it can empower women athletes, attract sponsorships, and encourage more young women to participate in sports. It also has a broader cultural impact, fostering a society that values gender equity and celebrates the achievements of women on equal footing with men.

To achieve this, significant efforts are needed from stakeholders across the board. Media organizations must commit to fair and balanced coverage of women's sports, and policy interventions can help ensure accountability. Advocacy groups and campaigns promoting gender equality in sports media have already begun to make a difference, but sustained efforts are essential to close the gap. Furthermore, diversifying newsroom leadership and fostering gender-sensitive reporting can ensure more inclusive narratives. This article explores the intricate relationship between women's representation in sports media and its impact on empowerment and visibility. By analysing current trends, identifying gaps, and discussing actionable solutions, it highlights what needs to be done to create a fairer and more inclusive media landscape. Recognizing the power of media to influence societal change, this discussion aims to contribute to the broader movement for gender equality in sports and beyond and also to what extent does representation contribute to their empowerment and visibility. The study highlights success stories and provides actionable recommendations for equitable representation in sports media.

## LITERATURE REVIEW

### Historical Context

Historically, women's involvement in sports has faced significant cultural and societal barriers. The emergence of professional women's leagues and global events like the Women's World Cup and Olympics have marked milestones in challenging these norms. Despite this progress, media coverage remains skewed toward male athletes.

### Gender Disparity in Media Coverage

Studies reveal that women's sports receive only 4% of total sports media coverage (UNESCO, 2022). Coverage is often relegated to non-primetime slots, and women's achievements are underrepresented in highlights and recaps.

## **Stereotyping and Objectification**

Research by Bruce (2016) underscores how media narratives frequently prioritize women athletes' physical appearance or personal lives over their sporting achievements. Such coverage perpetuates stereotypes and diminishes their professional identities.

## **Social Media's Role**

Social media has emerged as a game-changing platform, enabling athletes to bypass traditional media and engage directly with audiences. Platforms like Instagram and Twitter allow women athletes to showcase their personalities, share their journeys, and challenge stereotypes.

## **DATA AND METHODOLOGY**

### **Data Sources**

#### **Media Coverage Statistics**

To examine the representation of women in sports media, data from **UNESCO's 2022 report on gender equality in media and the Global Media Monitoring Project (GMMP) 2021** have been utilized. These sources provide a comprehensive overview of gender disparities in media coverage, including quantitative insights on the proportion of airtime and space dedicated to women athletes. UNESCO's findings highlight systemic biases in traditional media outlets, while the GMMP offers a global perspective on how women are portrayed in sports narratives, emphasizing underrepresentation and stereotypical depictions.

#### **Social Media Analytics: Engagement Metrics from Platforms like Hootsuite and Sprout Social**

Social media analytics refers to the process of collecting and analysing data from social media platforms to understand user behavior, engagement, and overall performance. Tools like Hootsuite and Sprout Social provide comprehensive analytics that help organizations, brands, and individuals track their social media presence and effectiveness.

#### **Case Studies: Analysis of Athletes like Serena Williams, Megan Rapinoe, and PV Sindhu**

##### **Serena Williams**

Serena Williams is not only a tennis icon but also a powerful brand ambassador. Her social media presence is characterized by a mix of personal insights, professional achievements, and advocacy for gender equality and racial justice.

##### **Megan Rapinoe**

Megan Rapinoe, a prominent figure in women's soccer, is known for her activism and outspoken nature regarding social justice issues, including LGBTQ+ rights and gender equality.

## **PV Sindhu**

PV Sindhu, an Indian badminton player and Olympic medallist, has leveraged social media to connect with fans and promote sports in India. Sindhu's posts, which often include training routines, match highlights, and personal achievements, receive substantial engagement, particularly from her Indian fan base. Her collaborations with brands also attract attention. Sindhu's presence on social media has helped popularize badminton in India, encouraging young athletes to pursue the sport. Her success story serves as an inspiration, particularly for aspiring female athletes in a country where sports are often male-dominated.

## **METHODOLOGY**

- Quantitative Analysis: Comparative analysis of the volume and tone of media coverage for men's and women's sports.
- Qualitative Analysis: Content analysis of headlines, articles, and advertisements featuring women athletes.
- Audience Surveys: Evaluating perceptions of women's sports based on media exposure.

## **FINDINGS AND DISCUSSION**

### **Underrepresentation of Women in Sports Media**

**Women's sports remain vastly underreported. For example:**

- Only 5% of Sports Centre's coverage is dedicated to women's sports (Cooky et al., 2015).
- During major tournaments like the FIFA Women's World Cup, media coverage often pales compared to men's events in both volume and depth.

### **Impact of Stereotypes**

**The focus on physical appearance and personal lives rather than athletic prowess affects how audiences perceive female athletes. For instance:**

- Coverage of Maria Sharapova often highlighted her "glamorous" image, while Serena Williams faced scrutiny for her physicality.
- Such narratives reinforce harmful stereotypes and detract from the athletic achievements of women.

### **Empowerment through Representation**

**Positive representation in media fosters empowerment. Examples include:**

- U.S. Women's National Soccer Team: Their advocacy for equal pay gained significant traction due to widespread media coverage.
- Indian Badminton Players: Athletes like PV Sindhu and Saina Nehwal have inspired millions through media visibility of their achievements.

## Social Media: A Game Changer

Athletes like Megan Rapinoe and Naomi Osaka leverage social media to control their narratives. Key statistics:

- Women athletes receive 20% more engagement per post than men (Hootsuite, 2023).
- Campaigns like Nike's "Dream Crazier" demonstrate the power of social media in challenging stereotypes and amplifying female athletes' voices.

## RECOMMENDATIONS

### Policy Interventions

- Mandate equitable media coverage of women's sports through regulatory frameworks.
- Provide incentives for broadcasters to feature women's sports during primetime slots.

### Media Training

- Educate journalists on gender-sensitive reporting to avoid perpetuating stereotypes.
- Promote diversity in sports journalism to ensure inclusive perspectives.

### Investments in Women's Sports

- Encourage sponsorships and endorsements specifically targeting women's sports.
- Develop grassroots campaigns to highlight local and regional female athletes.

### Social Media Campaigns

- Collaborate with influencers to amplify women's sports stories.
- Use hash tags and trends to create viral movements supporting gender equality in sports.

## CONCLUSION

The underrepresentation and misrepresentation of women in sports media remain significant barriers to their empowerment and visibility. However, the rise of social media presents opportunities to challenge traditional narratives and amplify female athletes' voices. By implementing targeted interventions, fostering equitable representation, and leveraging digital platforms, society can pave the way for a more inclusive and empowering future for women in sports. The representation of women in sports media plays a crucial role in shaping societal perceptions and attitudes towards female athletes. As the landscape of sports media evolves, it increasingly highlights the achievements and stories of women, thereby challenging long-standing stereotypes and biases. This shift not only enhances visibility but also empowers women to pursue their athletic aspirations with confidence and determination.

### **Empowerment through Visibility**

The increased coverage of women's sports serves as a powerful tool for empowerment. When young girls see female athletes excelling in various sports, it fosters a belief that they too can achieve greatness. This visibility is essential in breaking down the barriers that have historically limited women's participation in sports. As media platforms dedicate more resources to showcasing women's achievements, they contribute to a cultural shift that values and respects female athletes.

### **Challenging Stereotypes**

Moreover, the representation of women in sports media challenges the stereotypes that have long been associated with female athletes. By portraying women as strong, capable, and competitive, media outlets help dismantle the notion that sports are a male-dominated arena. This change is vital for encouraging young girls to engage in sports without fear of judgment or ridicule. Campaigns like Nike's "Dream Crazier" and Always' "LikeAGirl" have successfully reframed the narrative around female athleticism, promoting a message of strength and resilience.

### **The Role of Brands and Media**

Brands and media organizations play a significant role in this transformation. Initiatives like ESPN and dedicated women's sports channels are crucial in providing a platform for female athletes. These efforts not only increase visibility but also create a sense of community and support among female athletes. As more brands invest in women's sports, they contribute to a more equitable representation that reflects the diversity and talent present in female athletics.

### **Future Directions**

Looking ahead, it is essential for sports media to continue prioritizing women's representation. This includes not only covering major events but also highlighting grassroots initiatives and local female athletes. By doing so, media can inspire the next generation of female athletes and ensure that their stories are told and celebrated.

In summary, the representation of women in sports media is not just about visibility; it is about empowerment, challenging stereotypes, and fostering a culture that values female athletes. As this representation continues to grow, it holds the potential to inspire countless young women to pursue their dreams in sports and beyond, ultimately leading to a more inclusive and equitable society.

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**COMPARATIVE STUDY ON  
PHYSICAL FITNESS BETWEEN  
SCHEDULE CASTE AND  
SCHEDULE TRIBE IN RESPECT  
OF SOCIO-ECONOMIC STATUS**

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## ABSTRACT

Health and physical fitness have a vital role in the life of men from time immemorial. The progress of the Nation lies in the hands of the people, who are healthy and physically fit. Every individual should develop physical fitness for a happy and effective living. In order to get physical fitness one has to involve in physical activities. Physical activity is essential for the development of wholesome personality of a child which would depend upon the opportunities provided for wholesome development of the mental, physical, social and spiritual aspects. The purpose of the present study was to find out the physical fitness status of scheduled caste and scheduled tribe in respect of their socioeconomic status. Total 60(sixty) subjects were selected randomly from Mugberia Gangadhar Mahavidyalaya .The subjects age ranging from 20-25 years. They were divided in four group likely high socio economic schedule cast group, low socioeconomic scheduled cast group , high socioeconomic schedule tribe group and low socio economic schedule tribe group. After collecting the descriptive statistics were used and t test were employed to find out the difference between tested variables. Result reveals that no significant difference were observed in 50mt , vertical jump, hand grip strength and shuttle run for both high and low socio economic status groups.

**Keywords:** Physical fitness, Schedule cast, Schedule tribe and Socio economic status

## INTRODUCTION

Health and physical fitness have a vital role in the life of men from time immemorial. The progress of the Nation lies in the hands of the people, who are healthy and physically fit. Every individual should develop physical fitness for a happy and effective living. In order to get physical fitness one has to involve in physical activities. Physical activity is essential for the development of wholesome personality of a child which would depend upon the opportunities provided for wholesome development of the mental, physical, social and spiritual aspects. Hence a well organized and properly administered physical education program me for school children is very essential. Physical activity throughout the ages has been acclaimed for health and ssrecreation. It provided fun and enjoyment. It also provided youthful exuberance and the elderly care. Physical activity and movements are as old as human existence. It played numerous roles from struggle for existence to struggle for excellence. A sport is an activity in our lives where pursuits of different movement achieved through the total investigation of Neuro- muscular co-ordination. In this modern era, we can see that each and every individual directly or indirectly related to sports. Modern Physical Education commonly known as there is sports where pursuit of discipline freely formed such as biological, social and physical sciences. Over a decade, the society in general has realized the need for keeping fit and health through organized physical activity programme. Scientific

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evidence has made with a clear and that unless man engages himself in organized vigorous physical activity programme. The real benefits would not come. The primary aim of physical education is physical fitness of the individual. The method can content in physical education to improve physical fitness are to be visualized. Physical education is a process through which an individual obtain optimal, physical, mental and social skills and fitness physical activity. Lumpkin (1986): Physical education is a meaningful and worthwhile experience obtained through participation in physical activities that are physically wholesome mentally stimulating and satisfying and socially sound. William (1966): Physical education is necessary because it will make all physically fit to healthy to stimulate and satisfying the mind to keep all the socially sound and to give leadership training. It is a must for youngster like students who like to have mental stimulation and satisfaction. There has been a keen awareness of the need for physical fitness on a nationwide basis.

Most authors define 'physical fitness's the capacity to carry out every day activities without excessive fatigue and with enough energy in reserve for emergencies. Emphatically this definition is inadequate for a modern way of life. By such a definition almost anyone can classify himself as physically fit. Gatchell (1977): According to Clarke (1971) Physical fitness is the ability to carry out daily task with vigour and alertness without undue fatigue and ample energy to enjoy leisure time pursuits and to meet unforeseen emergencies. Every individual must know the importance of physical fitness. In other words, one must have a fundamental knowledge of anatomy and physiology. This fundamental knowledge enables person to understand physical fitness. Physical fitness is the capacity of a person to function steadily and smoothly when a situation arises. Physical fitness makes you feel mentally sharper, physically comfortable and more with your body and better able to cope with the demands that everyday life makes upon you. Increased physical fitness not only improves health but improves your performance at work. Hundreds of American companies have backed with idea financially by employing full time directors of fitness for their work. Gorden Jackson (1985) The benefits of physical fitness are numerous. The person who is physically fit has greater amount of strength, energy and stamina an improved sense of well being better protection from injury because strong well developed muscles safeguard bones, internal organs and joints and keep moving parts limbers and improved cardio respiratory function. Bucher and Prentice (1985): It is necessary for every individual to be physically fit to perform their daily work with ease and to take part in various activities effectively. Everyone should be fit enough through participation in physical activities to develop path different physical fitness components. The AAHPER (American Alliance for Health, Physical Education and Recreation) youth fitness test battery is very popular in this region because of its comprehensiveness, simplicity, easy accessibility, and availability of the most of the physical fitness components. These components are strength, endurance, agility speed, power, and cardio-respiratory endurance. The problem for investigation in this test battery is undertaken by the research scholar with a view to establish valid and reliable physical fitness norms for school boys and then to find out thin flounce of intensive physical activities programme on them. Socio-Economic Status is the social standing or class of an individual or group. It is often measured as a combination of education, income and occupation. Examinations of Socio-Economic Status often reveal inequities in access to resources, plus issues related to privilege, power and control. Socio-Economic Status (SES) is an economic and sociological combined total

measure of a person's work experience and of an individual's or family's economic access to resources and social position in relation to others. When analyzing a family's SES, the household income, earners' education, and occupation are examined, as well as combined income, whereas for an individual's SES only their own attributes are assessed. Recently, research has revealed a lesser recognized attribute of SES as perceived financial stress, as it defines the "balance between income and necessary expenses". Perceived financial stress can be tested by deciphering whether a person at the end of each month has more than enough, just enough, or not enough money or resources. However, SES is more commonly used to depict an economic difference in society as a whole.

## METHODS AND MATERIALS

For the present Study total 60 subjects (Schedule Caste and Schedule Tribe) were randomly selected from Mugberia Gangadhar Mahavidyalaya, Purbamedinipur and their age ranging from 20-25 years. They were divided in Four groups namely High Socio-economic Status of Schedule caste group (N=11), Low Socio-economic Status of Schedule caste group (N=19), High Socio-economic Status of Schedule tribe group (N=07) and Low Socio-economic Status of Schedule tribe group (N=23). Following variables were measured

- **Speed:** It was measured by 50 meter dash and was recorded in seconds.
- **Leg Explosive Strength:** It was measured by vertical jump and recorded in centimetre.
- **Static Hand Strength:** It was measured by hand grip strength and recorded in kilogram.
- **Endurance:** It was measured by cooper test and recorded in meter.
- **Agility:** It was measured by 10x 4 yard shuttle run and was recorded in seconds.
- **Socio-economic Status:** It was measured by subject's family annual income.

After collecting the data descriptive statistics were employed for all the data and Independent "t" test were used to find out the differences between tested variable. Statistical significance was set at  $p < 0.05$  levels.

## RESULT & DISCUSSION

Sixty (60) students were selected as the subject for the present study. Their personal data were Age, Height, and Weight was recorded. High Socio-economic Status of Schedule Caste Students (N=11), Low Socio-economic Status of Schedule Caste Students (N=19), High Socio-economic Status of Schedule Tribe Students (N=07) and Low Socio-economic Status of Schedule Tribe Students (N=23), were taken from Mugberia Gangadhar Mahavidyalaya according to age, i.e. 20- 25 years respectively. Sixty (60) students were selected as the subject for the present study. Their personal data were Age, Height, and Weight was recorded. High Socio-economic Status of Schedule Caste Students (N=11), Low Socio-economic Status of Schedule Caste Students (N=19), High Socio-economic Status of Schedule Tribe Students (N=07) and Low Socio-economic Status of Schedule Tribe Students (N=23), were taken from Mugberia Gangadhar Mahavidyalaya according to age, i.e. 20- 25 years respectively.

**Table-1: The Mean, SD of Age, Weight, Height of High & Low Socio-Economic Status of Schedule Caste & Schedule Tribe Students.**

Group	No.	Variable	Mean $\pm$ SD
High SES of SC Students	11	Age	24.64 $\pm$ 1.50
		Weight	54.09 $\pm$ 10.32
		Height	163 $\pm$ 8.72
Low SES of SC Students	19	Age	23.89 $\pm$ 1.59
		Weight	53.47 $\pm$ 6.41
		Height	159.34 $\pm$ 7.01
High SES of ST Students	07	Age	25.57 $\pm$ 1.62
		Weight	60.14 $\pm$ 6.69
		Height	164.63 $\pm$ 8.64
Low SES of ST Students	23	Age	24.95 $\pm$ 2.13
		Weight	52.30 $\pm$ 6.89
		Height	159.90 $\pm$ 7.56

From the above table it was shown that Mean of High & Low Socio-Economic Status of Schedule Caste & Schedule Tribe Students Age was 24.64, 23.89, 25.57 and 24.95 and SD  $\pm$  1.50,  $\pm$  1.59,  $\pm$  1.62m, and  $\pm$  2.13. The Mean value of High & Low Socio-Economic Status of Schedule Caste & Schedule Tribe Students Weight was 54.09, 53.47, 60.14 and 52.30 and SD  $\pm$  10.32,  $\pm$  6.41,  $\pm$  6.69 and  $\pm$  6.89. The Mean value of High & Low Socio-Economic Status of Schedule Caste & Schedule Tribe Students Height was 163, 159.34, 164.63 and 159.90 and SD  $\pm$  8.72,  $\pm$  7.01,  $\pm$  8.64 and  $\pm$  7.56.

### High Socio-Economic Status of Schedule Caste Students

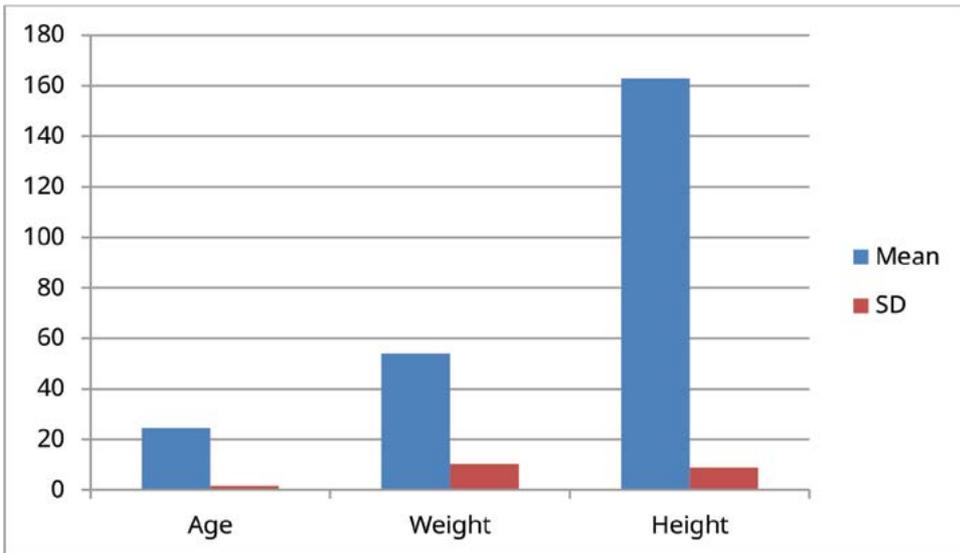


Figure-1: Graphical Representation of Mean and SD of High Socio-Economic Status of Schedule Caste Students

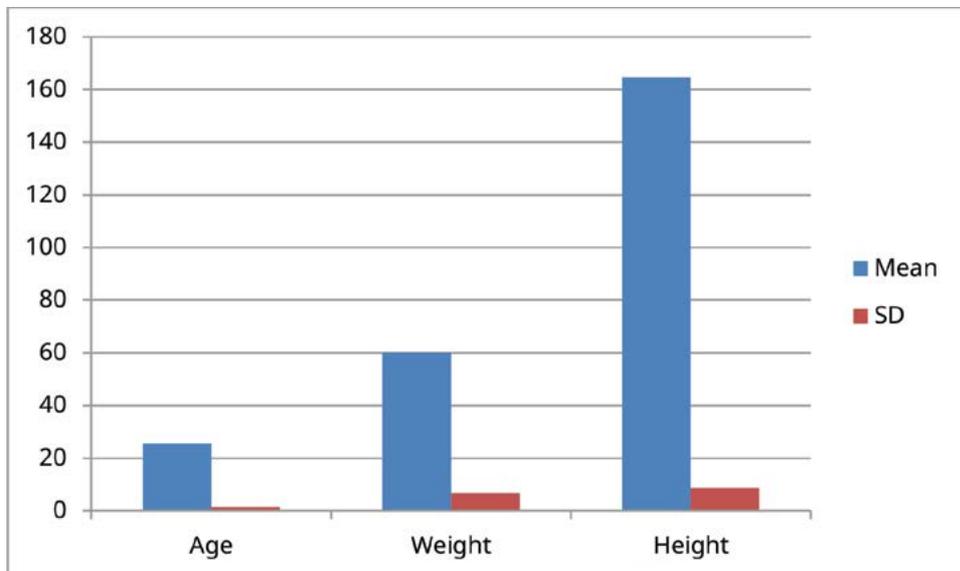


Figure-2: Graphical Representation of Mean and SD of High Socio-Economic Status of Schedule Tribe Students

### Low Socio-Economic Status of Schedule Tribe Students

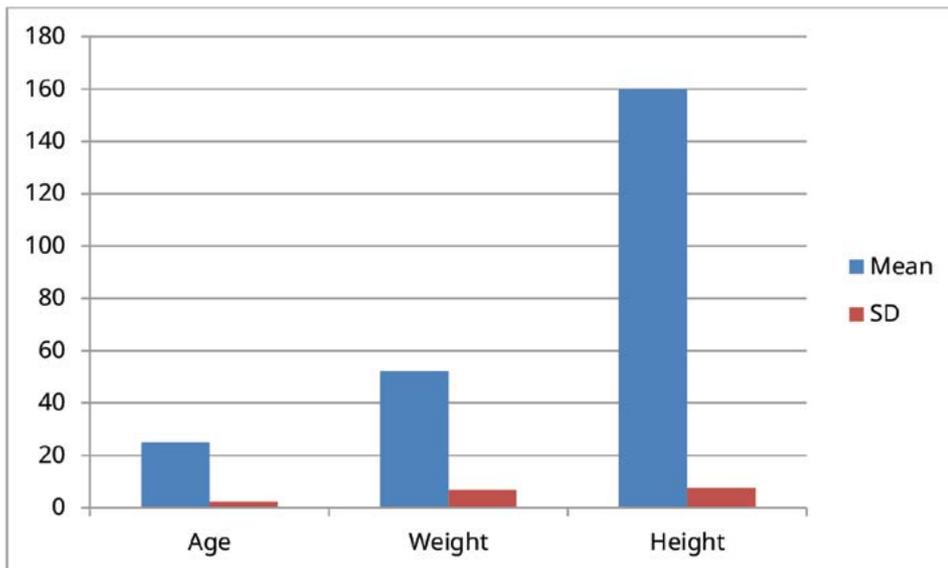


Figure-3: Graphical Representation of Mean and SD of Low Socio-Economic Status of Schedule Tribe Students

Table-2: 't'-test between Schedule Caste and Schedule Tribe Students of 20–25 years in age belonging to High Socio- Economic Status group in 50 meter Run

Schedule Caste Students of High SES Group			Schedule Tribe Students of High SES Group							
n1	Mean	SD	n2	Mean	SD	MD	df	SED	t	Sig. level
11	8.05	1.12	7	8.41	1.20	0.37	16	0.56	0.66	Not Significant

t at 0.05 level = 2.12

It was found that in 50 meter run between High Socio- Economic Status of Schedule Caste and Schedule Tribe Students, the Mean value were 8.05, 8.41 and Standard Deviation were  $\pm 1.12$ ,  $\pm 1.20$  and there is no significant difference in 50 meter Run between Schedule Caste and Schedule Tribe Students of 20–25 years in age belonging to High Socio- Economic Status group as the t- value was 0.66 is less than the criterion t- value of 2.12 at 0.05 level for df 16.

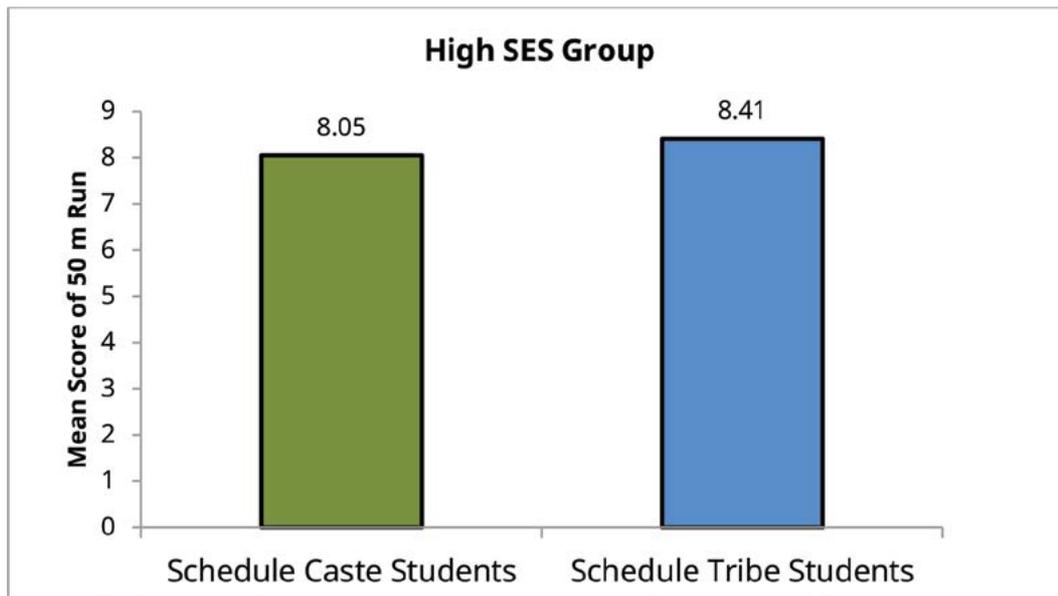


Figure-4: Graph showing the mean scores in 50 meter Run between Schedule Caste and Schedule Tribe Students of 20-25 years in age belonging to High Socio- Economic Status group

Table-3: 't'-test between Schedule Caste and Schedule Tribe Students of 20-25 years in age belonging to Low Socio- Economic Status group in 50 meter Run

Schedule Caste Studentsof Low SES Group			Schedule Tribe Studentsof Low SES Group							
n1	Mean	SD	n2	Mean	SD	MD	df	SED	t	Sig. level
19	8.827	1.67	23	8.833	1.43	0.006	40	0.48	0.01	Not Significant

t at 0.05 level = 2.02

Table-4 shows that 50 meter run between Low Socio- Economic Status of Schedule Caste and Schedule Tribe Students, the Mean value were 8.83, 8.83 and Standard Deviation were  $\pm 1.67$ ,  $\pm 1.43$  and there is no significant difference in 50 meter run between Schedule Caste and Schedule Tribe Students of 20-25 years in age belonging to Low Socio- Economic Status group as the t- value of 0.01 is less than the criterion t- value of 2.02 at 0.05 level for df 40.

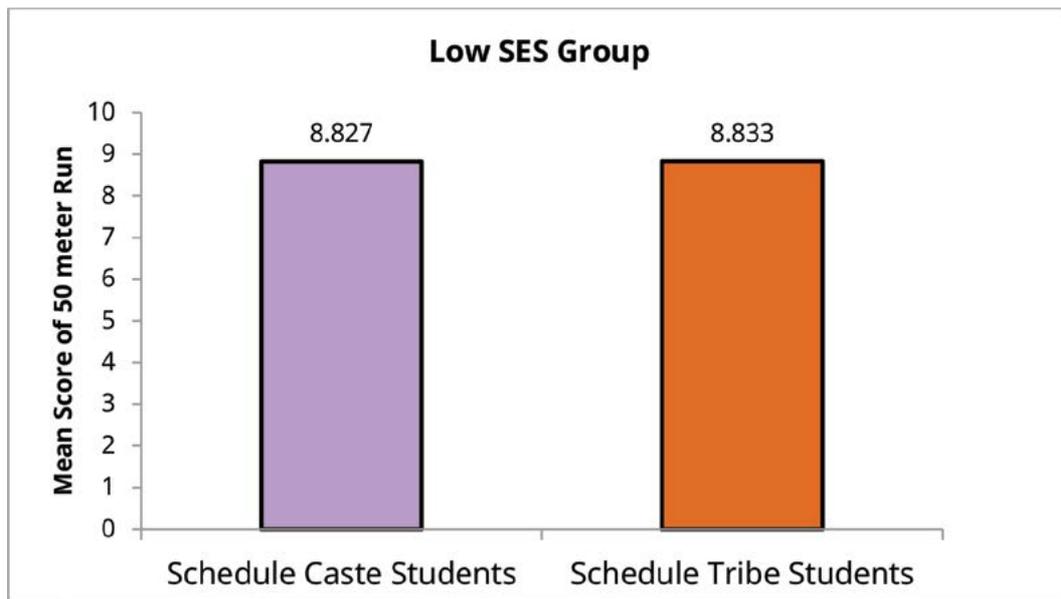


Figure-5 : Graph showing the mean scores in 50 meter run between Schedule Caste and Schedule Tribe Students of 20–25 years in age belonging to Low Socio-Economic Status group

Table-4: 't'-test between Schedule Caste and Schedule Tribe Students of 20–25 years in age belonging to High Socio- Economic Status group in Vertical Jump

Schedule Caste Students of High SES Group			Schedule Tribe Students of High SES Group							
n1	Mean	SD	n2	Mean	SD	MD	df	SED	t	Sig. level
11	34.55	7.65	7	33.00	9.66	1.55	16	4.09	0.38	Not Significant

t at 0.05 level = 2.12

From the above table it reveals that Vertical Jump between High Socio- Economic Status of Schedule Caste and Schedule Tribe Students, the Mean value were 34.55, 33.00 and Standard Deviation were  $\pm 7.65$ ,  $\pm 9.66$  and there is no significant difference in vertical jump between Schedule Caste and Schedule Tribe Students of 20–25 years in age belonging to High Socio- Economic Status group as the t- value of 0.38 is less than the criterion t- value of 2.12 at 0.05 level for df 16.

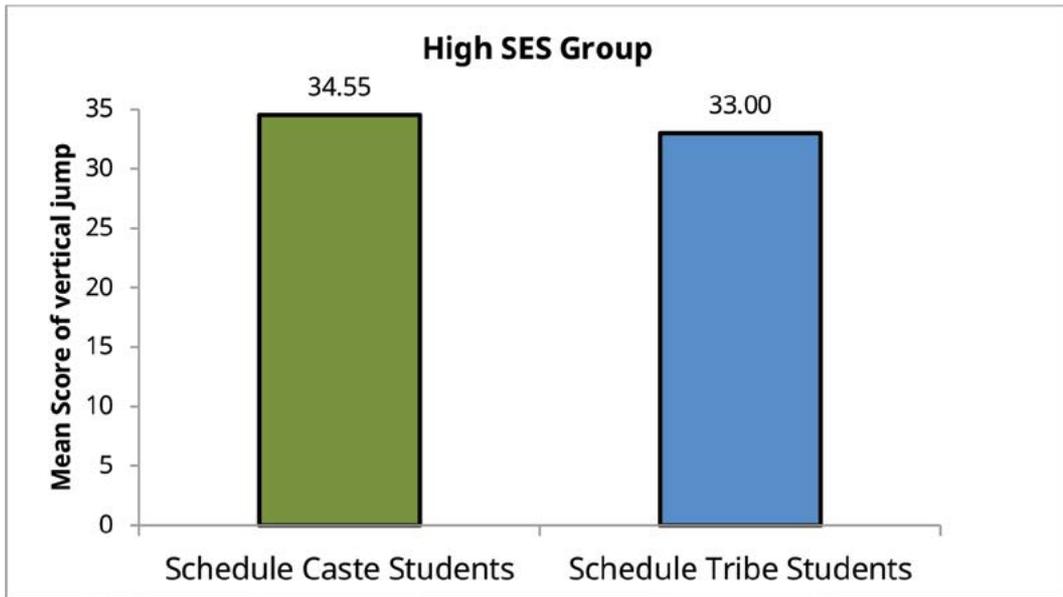


Figure-6: Graph showing the mean scores in Vertical Jump between Schedule Caste and Schedule Tribe Students of 20–25 years in age belonging to High Socio- Economic Status group

Table-5: 't'- test between Schedule Caste and Schedule Tribe Students of 20–25 years in age belonging to Low Socio- Economic Status group in Vertical Jump

Schedule Caste Students of Low SES Group			Schedule Tribe Students of Low SES Group							
n1	Mean	SD	n2	Mean	SD	MD	df	SED	t	Sig. level
19	30.11	8.25	23	27.09	7.44	3.02	40	2.42	1.25	Not Significant

t at 0.05 level = 2.02

Table-6 shows that Vertical Jump between Low Socio- Economic Status of Schedule Caste and Schedule Tribe Students, the Mean value were 30.11, 27.09 and Standard Deviation were  $\pm 8.25$ ,  $\pm 7.44$  and there is no significant difference in vertical jump between schedule caste and schedule tribe students of 20–25 years in age belonging to Low Socio- Economic Status group as the t-value of 1.25 is less than the criterion t-value of 2.02 at 0.05 level for df 40.

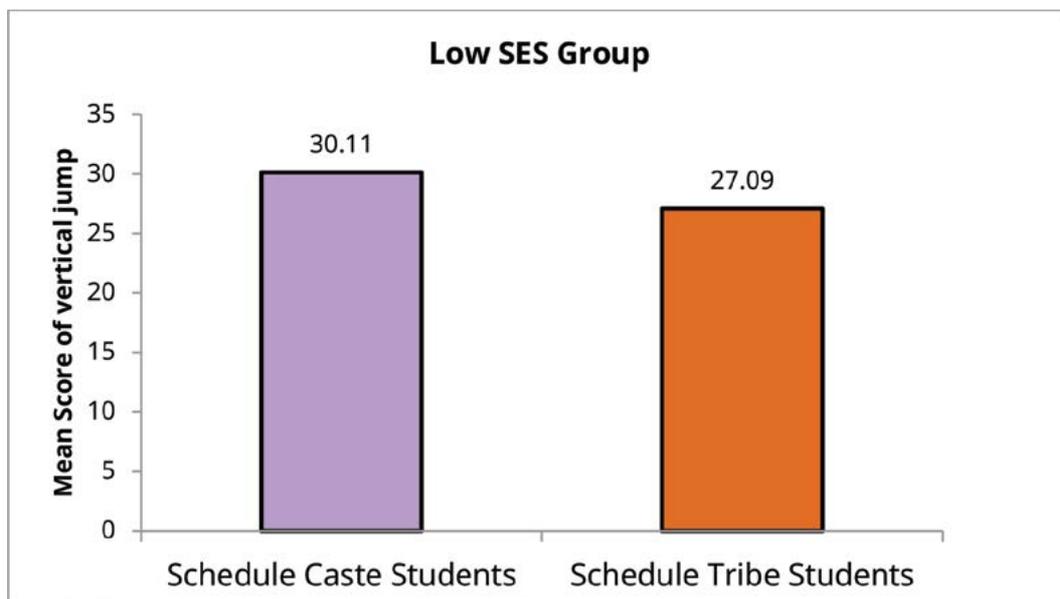


Figure-7: Graph showing the mean scores in Vertical Jump between Schedule Caste and Schedule Tribe Students of 20-25 years in age belonging to Low Socio- Economic Status group

Table-6: 't'-test between Schedule Caste and Schedule Tribe Students of 20-25 years in age belonging to High Socio- Economic Status group in Hand Grip Strength

Schedule Caste Students of High SES Group			Schedule Tribe Students of High SES Group							
n1	Mean	SD	n2	Mean	SD	MD	df	SED	t	Sig. level
11	34.55	8.58	7	42.29	13.39	7.74	16	5.15	1.50	Not Significant

t at 0.05 level = 2.12

Results reveals that Hand Grip Strength between High Socio- Economic Status of Schedule Caste and Schedule Tribe Students, the Mean value were 34.55, 42.29 and Standard Deviation were  $\pm 8.58$ ,  $\pm 13.39$  and there is no significant difference in Hand Grip Strength between Schedule Caste and Schedule Tribe Students of 20-25 years in age belonging to High Socio- Economic Status group as the t-value of 1.50 is less than the criterion t-value of 2.12 at 0.05 level for df 16.

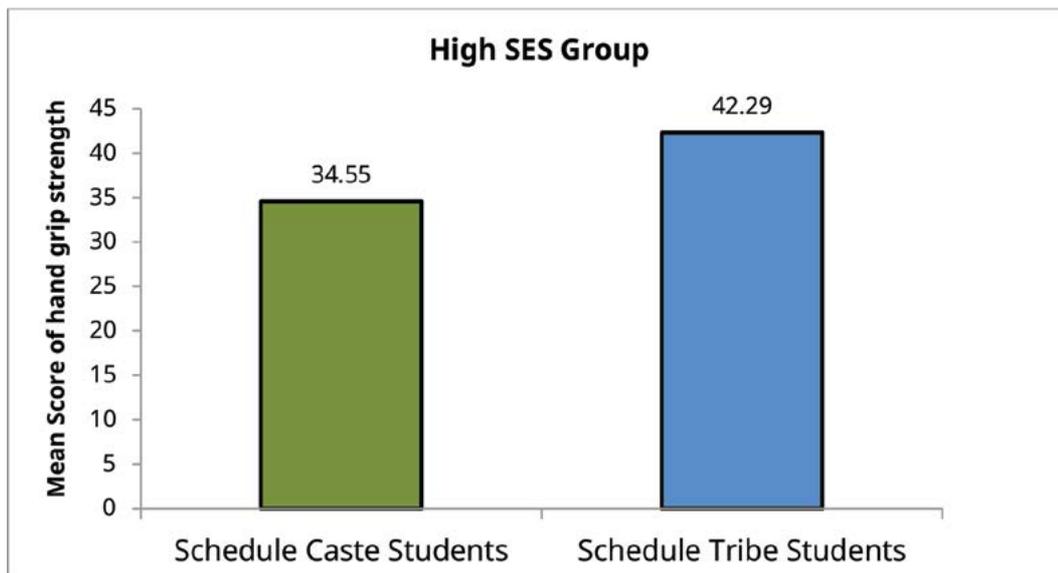


Figure-8: Graph showing the mean scores in Hand Grip Strength between Schedule Caste and Schedule Tribe Students of 20–25 years in age belonging to High Socio- Economic Status group

Table-7: 't'-test between Schedule Caste and Schedule Tribe Students of 20–25 years in age belonging to Low Socio- Economic Status group in Hand Grip Strength

Schedule Caste Students of Low SES Group			Schedule Tribe Students of Low SES Group							
n1	Mean	SD	n2	Mean	SD	MD	df	SED	t	Sig. level
19	32.21	12.15	23	29.39	9.03	2.82	40	3.27	0.86	Not Significant

t at 0.05 level = 2.02

It shows that Hand Grip Strength between Low Socio- Economic Status of Schedule Caste and Schedule Tribe Students, the Mean value were 32.21, 29.39 and Standard Deviation were  $\pm 12.15$ ,  $\pm 9.03$  and there is no significant difference in Hand Grip Strength between Schedule Caste and Schedule Tribe Students of 20–25 years in age belonging to Low Socio- Economic Status group as the t-value of 0.86 is less than the criterion t-value of 2.02 at 0.05 level for df 40.

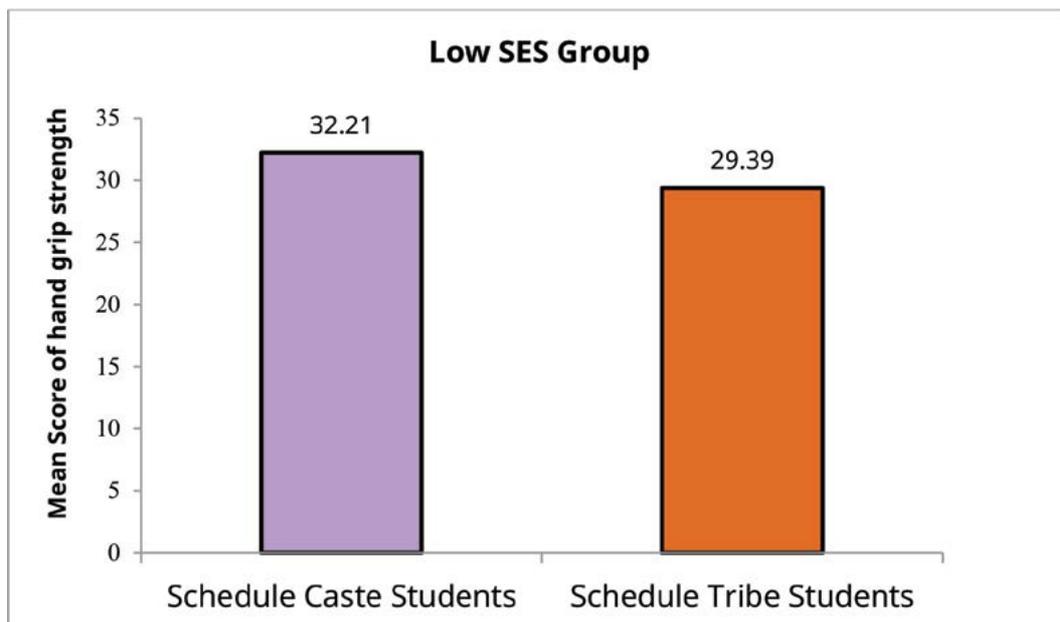


Figure-9: Graph showing the mean scores in Hand Grip Strength between Schedule Caste and Schedule Tribe Students of 20–25 years in age belonging to Low Socio- Economic Status group

Table-8: 't'-test between Schedule Caste and Schedule Tribe Students of 20–25 years in age belonging to High Socio- Economic Status group in Cooper Test

Schedule Caste Students of High SES Group			Schedule Tribe Students of High SES Group							
n1	Mean	SD	n2	Mean	SD	MD	df	SED	t	Sig. level
11	2228.64	497.94	7	2235.71	424.43	7.08	16	228.07	0.03	Not Significant

t at 0.05 level = 2.12

From the above table it shows that Cooper Test between High Socio- Economic Status of Schedule Caste and Schedule Tribe Students, the Mean value were 2228.64, 2235.71 and Standard Deviation were  $\pm 497.94$ ,  $\pm 424.43$  and there is no significant difference in Cooper Test between Schedule Caste and Schedule Tribe Students of 20–25 years in age belonging to High Socio- Economic Status group as the t-value of 0.03 is less than the criterion t-value of 2.12 at 0.05 level for df 16.

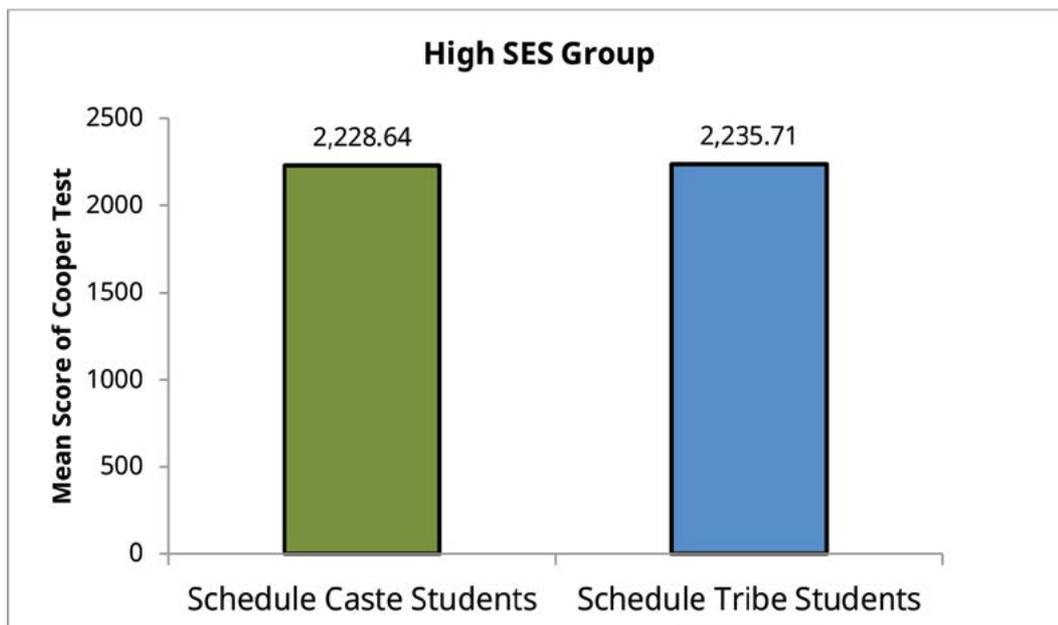


Figure-10: Graph showing the mean scores in Cooper Test between Schedule Caste and Schedule Tribe Students of 20–25 years in age belonging to High Socio- Economic Status group

Table-9: 't'-test between Schedule Caste and Schedule Tribe Students of 20–25 years in age belonging to Low Socio- Economic Status group in Cooper Test

Schedule Caste Students of Low SES Group			Schedule Tribe Students of Low SES Group							
n1	Mean	SD	n2	Mean	SD	MD	df	SED	t	Sig. level
19	2187.11	412.46	23	2070.87	392.71	116.24	40	124.54	0.93	Not Significant

t at 0.05 level = 2.02

From the table it shows that Cooper Test between Low Socio- Economic Status of Schedule Caste and Schedule Tribe Students, the Mean value were 2187.11, 2070.87 and Standard Deviation were  $\pm 412.46$ ,  $\pm 392.71$  and there is no significant difference in Cooper Test between Schedule Caste and Schedule Tribe Students of 20–25 years in age belonging to Low Socio- Economic Status group as the t-value of 0.93 is less than the criterion t-value of 2.02 at 0.05 level for df 40.

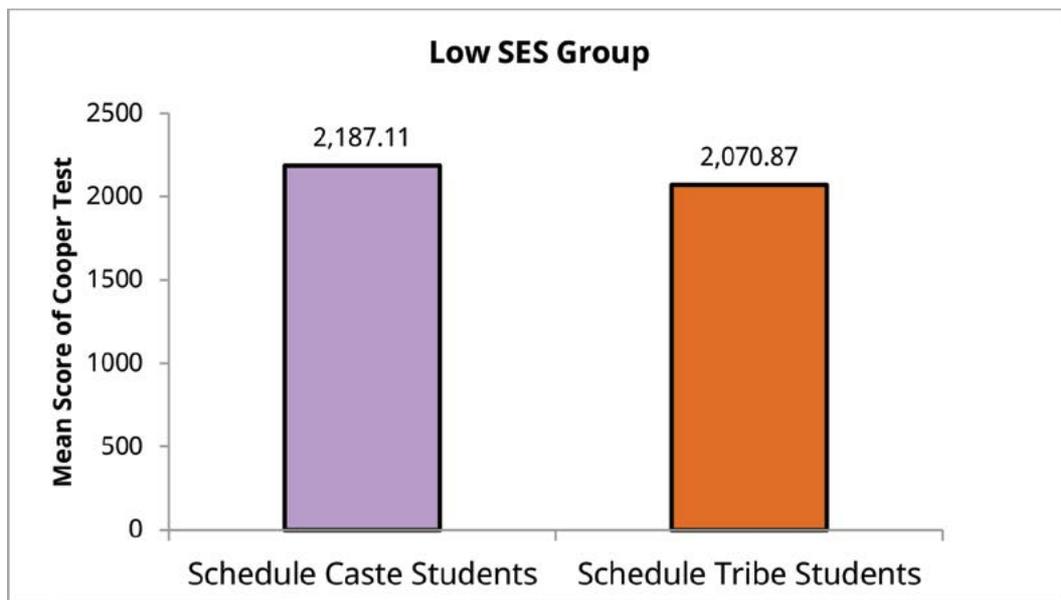


Figure-11: Graph showing the mean scores in Cooper Test between Schedule Caste and Schedule Tribe Students of 20–25 years in age belonging to Low Socio- Economic Status group

Table-10: 't'-test between Schedule Caste and Schedule Tribe Students of 20–25 years in age belonging to High Socio- Economic Status group in 4 × 10 meter Run

Schedule Caste Students of High SES Group			Schedule Tribe Students of High SES Group							
n1	Mean	SD	n2	Mean	SD	MD	df	SED	t	Sig. level
11	10.94	1.03	7	11.38	0.97	0.44	16	0.49	0.90	Not Significant

t at 0.05 level = 2.12

Table-11 shows that 4x10 meter Run between High Socio- Economic Status of Schedule Caste and Schedule Tribe Students, the Mean value were 10.94, 11.38 and Standard Deviation were  $\pm 1.03$ ,  $\pm 0.97$  there is no significant difference in 4 × 10 m Run between Schedule Caste and Schedule Tribe Students of 20–25 years in age belonging to High Socio- Economic Status group as the t-value of 0.90 is less than the criterion t-value of 2.12 at 0.05 level for df 16.

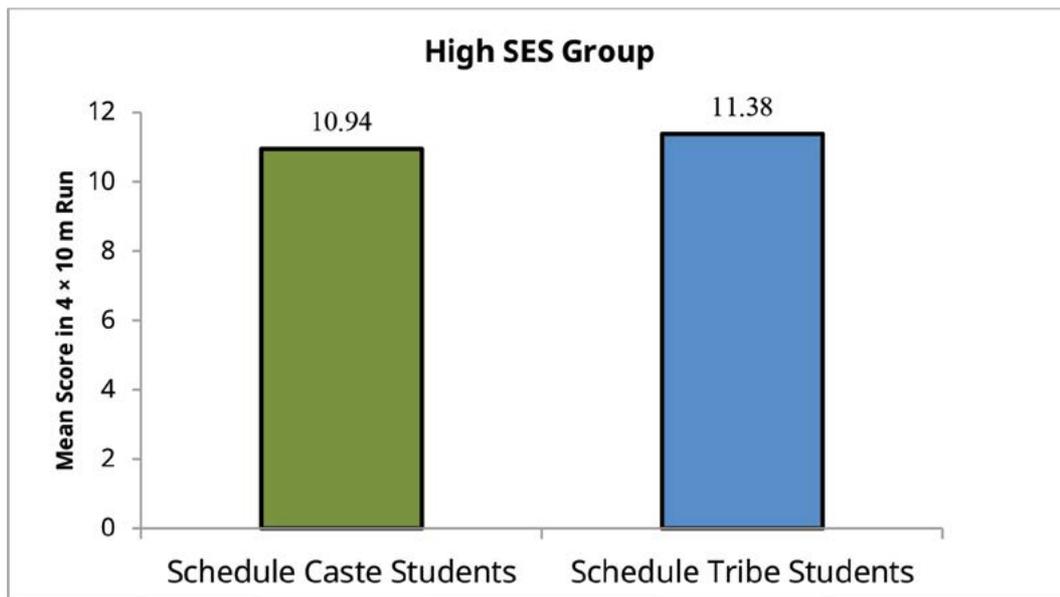


Figure-12: Graph showing the mean scores in 4 × 10 m Run between Schedule Caste and Schedule Tribe Students of 20–25 years in age belonging to High Socio- Economic Status group

Table-11: 't'-test between Schedule Caste and Schedule Tribe Students of 20–25 years in age belonging to Low Socio- Economic Status group in 4 × 10 meter Run

Schedule Caste Students of Low SES Group			Schedule Tribe Students of Low SES Group							
n1	Mean	SD	n2	Mean	SD	MD	df	SED	t	Sig. level
19	11.65	1.49	23	11.92	1.44	0.26	40	0.45	0.58	Not Significant

t at 0.05 level = 2.02

Table-12 shows that 4x10 meter Run between Low Socio- Economic Status of Schedule Caste and Schedule Tribe Students, the Mean value were 11.65, 11.92 and Standard Deviation were  $\pm 1.49$ ,  $\pm 1.44$  there is no significant difference in 4 × 10 meter run between Schedule Caste and Schedule Tribe Students of 20–25 years in age belonging to Low Socio- Economic Status group as the t-value of 0.58 is less than the criterion t-value of 2.02 at 0.05 level for df 40.

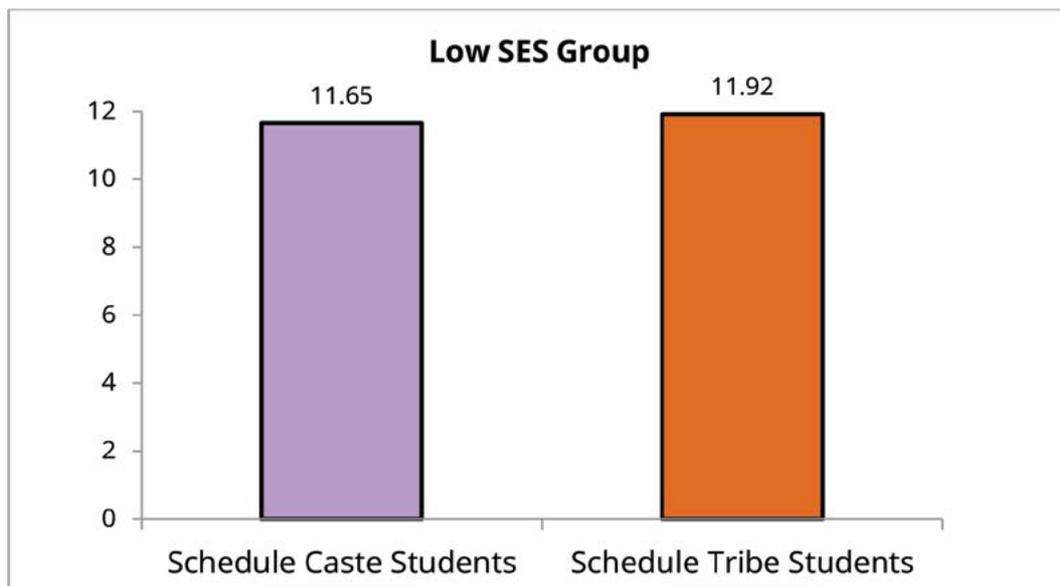


Figure-13: Graph showing the mean scores in 4 × 10 meter run between Schedule Caste and Schedule Tribe Students of 20-25 years in age belonging to Low Socio- Economic Status group

## CONCLUSION

After the careful analysis of data, following conclusions were drawn from the study

1. No significant differences were observed in 50 meter Run of High and Low both Socio-economic Statuses between schedule caste and schedule tribe students in the age group 20-25 years.
2. No significance differences were observed in Vertical Jump of High and Low both Socio-economic Statuses between schedule caste and schedule tribe students in the age group 20-25 years.
3. No significance differences were observed in Hand Grip Strength of High and Low both Socio-economic Statuses between schedule caste and schedule tribe students in the age group 20-25 years.
4. No significance differences were observed in Cooper Test of High and Low both Socio-economic Statuses between schedule caste and schedule tribe students in the age group 20-25 years.
5. No significance differences were observed in Shuttle Run (4x10 meter run) of High and Low both Socio-economic Statuses between schedule caste and schedule tribe students in the age group 20-25 years.

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# PREVALENCE AND ASSOCIATIONS OF EXERCISE-ASSOCIATED MUSCLE CRAMP (EAMC) AMONG TEENAGE FEMALE FOOTBALLERS AT BKSP: A FIELD-BASED STUDY

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S M Zahangir Alam Rony\*\*\*\*4



## ABSTRACT

Exercise-associated muscle cramp (EAMC) is a common phenomenon among adolescent athletes. This study aimed to assess the incidence of EAMC among 30 female footballers aged 14–18 years, based on results from the Beep Test (aerobic capacity) and the Modified Sit-and-Reach Test (flexibility). Data revealed a notable correlation between lower aerobic fitness and higher incidence of cramping episodes. The findings highlight the need for targeted conditioning programs to reduce the risk of EAMC in adolescent female athletes.

**Keywords:** Exercise-associated muscle cramp, beep test, female footballers, adolescence, flexibility, aerobic fitness

## INTRODUCTION

Exercise-associated muscle cramp (EAMC) is a transient, involuntary, and painful contraction of skeletal muscle that often occurs during or after intensive physical activity. Adolescent female athletes, particularly those undergoing intense physical training like football, are susceptible to such cramps due to multiple physiological and environmental factors. Although EAMC is multifactorial in nature, two modifiable components—cardiorespiratory fitness and flexibility—are frequently implicated. This study investigates the association between aerobic fitness (via the Beep Test) and flexibility (via the Modified Sit-and-Reach Test) and the incidence of EAMC among teenage female footballers at BKSP.

## METHODS

**Participants:** Thirty female footballers aged between 14 and 18 years from a national sports training institution (BKSP) participated in this cross-sectional study.

**Procedure: Each participant underwent:**

1. Beep Test (20-meter shuttle run) to assess aerobic capacity.
2. Modified Sit-and-Reach Test to evaluate lower-body flexibility.

After a standardized training session (90 minutes including warm-up, drills, and small-sided games), all athletes were monitored for signs of muscle cramping during and post-exercise for up to 60 minutes.

**Data Collection:** Beep Test scores were recorded as final level and shuttle number. Sit-and-reach scores were recorded in centimeters. Incidence of EAMC was documented based on athlete reporting and direct observation by research assistants.

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## RESULTS

**Table-1: shows the age distribution of the participants.**

Table-1: Participant Demographics

Age Group	Number of Players	Percentage (%)
14-15	10	33.3
16-17	12	40.0
18	8	26.7

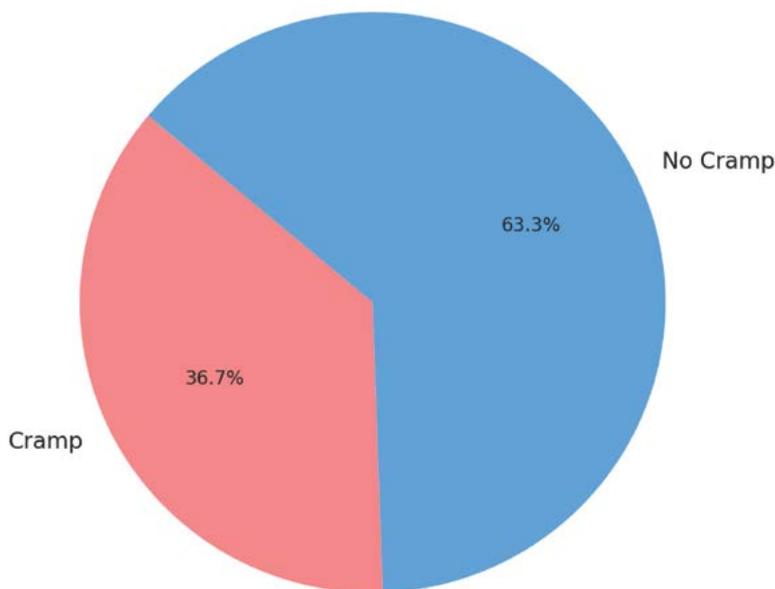
Out of 30 athletes, 11 (36.7%) experienced exercise-associated muscle cramps. Those who experienced cramping had significantly lower beep test scores (average level  $6.2 \pm 1.1$ ) compared to non-cramping peers (average level  $8.4 \pm 0.9$ ),  $p < 0.01$ . Flexibility scores were also lower among the cramping group (mean 19.5 cm vs 25.3 cm),  $p < 0.05$ . A moderate negative correlation was found between beep test performance and incidence of EAMC ( $r = -0.52$ ), and a similar trend with flexibility ( $r = -0.41$ ).

**Table-2: compares performance metrics between cramp and non-cramp groups.**

Table-2: comparison Between Cramp vs Non-Cramp Groups

Group	Average Beep Test Score	Average Flexibility (cm)	Number of Participants
Cramp Group	6.2	19.5	11
Non-Cramp Group	8.4	25.3	19

**Figure-1: presents the proportion of athletes who experienced muscle cramps.**



## DISCUSSION

The results suggest a significant association between poor aerobic fitness, limited flexibility, and EAMC among teenage female footballers. This aligns with previous research suggesting fatigue and reduced neuromuscular control as contributors to muscle cramps. Improving aerobic capacity and flexibility through structured conditioning programs may reduce cramp susceptibility.

## CONCLUSION

The present study highlights a noteworthy prevalence of exercise-associated muscle cramp (EAMC) among adolescent female footballers at BKSP. The findings suggest that athletes with comparatively lower aerobic capacity and reduced flexibility are more susceptible to developing EAMC. These results reinforce the theory that neuromuscular fatigue and suboptimal conditioning are major contributing factors.

Beyond physical training, this study underscores the importance of preventive strategies such as pre-season screening, individualized fitness plans, and athlete education on hydration and recovery protocols. Coaches and sports medicine professionals should implement periodized training programs that integrate flexibility and aerobic capacity development, especially in teenage female athletes who may be at greater risk due to physiological and hormonal factors.

Longitudinal studies with larger cohorts, as well as interventional research, are recommended to establish causality and explore whether improvements in flexibility and endurance can sustainably reduce EAMC occurrences in this population.

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# EPIDEMIOLOGY OF INJURIES AMONG YOUNG-ADULT MALE FOOTBALL PLAYERS OF BANGLADESH KRIRA SHIKKHA PROTISHTHAN (BKSP)

Dr. Md. Asfan Afroz Akash\*



## ABSTRACT

The study analyzed the epidemiology of injuries among young adult footballers aged 18 to 21, using a retrospective cohort design. Research on youth football injuries is limited, and incorporating real-world outcomes can help establish injury prevention protocols. Understanding causes, mechanisms, and injury types is crucial for developing effective strategies. Data from 35 male footballers (aged 18-21 years) at the Bangladesh Institute of Sports was analyzed over two seasons, revealing a total injury incidence rate of 4.18 (95% CI: 3.38-4.98) per 1000 hours of exposure, with a significant difference between matches and training. The injury burden was 60.72 (95% CI: 59.92,61.52) days per 1000 hours, and the median severity was 7 days. Running caused most lower limb injuries, with musculotendinous types mainly affecting the thighs. Defenders were at more risk, with most injuries occurring on artificial surfaces. October had the most injuries. Active range of motion testing was the main diagnostic technique, and thigh muscle and knee ligament injuries caused the most time lost. The study highlights the significant issue of injuries among youth football players, with matches having 11-fold higher incidences than training sessions. Further research and epidemiological studies can help youth soccer organizations make informed decisions about training protocols.

**Keywords:** Injury Epidemiology, Sports Injury, Football Injury, Young-Adult.

## ACKNOWLEDGMENT

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## INTRODUCTION

Football, known as “The Beautiful Game,” is the most popular sport globally, with an estimated 250–265 million players (Jaber et al., 2022; Pandey, 2022). It demands exceptional physicality, agility, and skill, ranking among the most strenuous sports (Bush et al., 2015). Footballers engage in intense activities such as tackling, shielding, and aerial duels, which expose them to significant physical contact and collision risks (Bush et al., 2015). Match officials also experience considerable physiological stress (Bradley et al., 2009). Players cover 7–12 km per match, incorporating high-intensity runs, sprints, jumps, and rapid directional changes (Bradley et al., 2007; Indharty et al., 2011; Kádár et al., 2023). However, these demands elevate injury risk, potentially affecting individual and team performance while imposing financial burdens on football organizations (Sprouse et al., 2020). Muscle injuries often lead to prolonged impairment, while injuries can impact players’ physical and psychological well-

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being, necessitating comprehensive rehabilitation (Ekstrand et al., 2011; Christino et al., 2016; Giannotti et al., 2011).

Football injuries are classified as contact or non-contact. Contact injuries result from direct collisions, while non-contact injuries stem from overuse, inadequate strength and conditioning, poor warm-up routines, or playing surface interactions (Paget et al., 2020). Junge and Dvorak (2004) reported that contact injuries account for 12%–28% of cases, whereas non-contact injuries, primarily from running and turning, range from 26%–59%. Overuse injuries constitute 9%–34% of season-long ailments, and reinjuries account for 20%–25% of cases. The lower limb is the most affected area, with 88% of injuries occurring in the thigh (26%), knee (22%), and ankle (21%) (Jaber et al., 2022). Effective injury prevention strategies are essential for safeguarding players' health and ensuring long-term participation (Giannotti et al., 2011).

Several studies highlight high injury incidence rates in football. López-Valenciano et al. (2020) reported 8.1 injuries per 1000 hours of exposure, with notable differences between matches (36.0 injuries/1000 hours) and training (3.7 injuries/1000 hours). The Football Association Injury and Illness Surveillance Study (2020) corroborated these findings, demonstrating higher injury rates in matches compared to training. Sprouse et al. (2020) observed similar patterns at both senior and youth levels, with match injuries (31.8±15.9 vs. 29.8±9.7 per 1000 hours) exceeding training injuries (3.8 vs. 4.0 per 1000 hours). Light et al. (2021) further identified higher injury incidence at age 21 (4.8/1000 hours) than at age 18 (2.9/1000 hours).

Despite extensive research on football injuries, gaps remain in age-specific epidemiological data. Young adult footballers (18–21 years) represent a critical demographic undergoing rapid physiological adaptation while serving as key talents for clubs and national teams (Jaber et al., 2022). This age coincides with essential stages of skeletal and musculotendinous development, increasing susceptibility to injuries (Apley, 2010; Johnson et al., 2022). Growth-related factors contribute to 51% of muscle, bone, and growth-plate injuries, with rapid growth rates ( $\geq 7.2$  cm/year) elevating injury risk by 74% (Kemper et al., 2015; Mandorino et al., 2022). Youth footballers' vulnerability underscores the need for targeted injury prevention strategies (Koutures et al., 2010; Mandorino et al., 2023). Deehan et al. (2007) highlighted the long-term consequences of sustained injuries, affecting both performance and future health.

This study investigates injury epidemiology among 18–21-year-old footballers by analyzing two consecutive seasons of injury data. It aims to assess injury incidence, burden, severity, types, mechanisms, onset, causes, diagnostic methods, and management protocols. Additionally, a comparative analysis between match and training injuries will enhance understanding of injury trends in youth football. Addressing these factors is crucial for developing tailored injury prevention and management strategies, ultimately safeguarding young players' health and career prospects.

## METHOD

### Participants and Study Design

This study included 35 male football players aged 18–21 years from the Bangladesh Institute of Sports. The sample size aligns with prior epidemiological research for this age group, ensuring data consistency (Jaber et al., 2022; Eirale et al., 2013). A descriptive retrospective cohort design was adopted to analyze injury epidemiology over two consecutive seasons (2022–23 and 2023–24) using existing medical records (Swart et al., 2022). All participants were informed about the study's purpose, data collection process, and their right to withdraw before anonymization. Ethical standards were upheld per Harriss et al. (2022), with no conflicts of interest.

### Data Collection and Anonymization

Injury data were obtained from BKSP's official medical records, maintained in both physical logs and Microsoft Excel. Recorded variables included injury date, chief complaints, affected site, type, suspected cause, surface type, activity at onset, days missed, severity, diagnostic tests, and management plans. Definitions and injury reporting followed the IOC Consensus (Bahr et al., 2020) and its football-specific extension (Walden et al., 2023). Injuries were defined as tissue damage or functional impairment due to kinetic energy transfer (Walden et al., 2023), and cases preventing participation for at least one day post-incident were included (Sprouse et al., 2020). Injury severity and burden were reported per Bahr et al. (2020) and related studies (Fuller et al., 2006; Sprouse et al., 2020). All data were anonymized to protect participant privacy, in adherence to ethical research standards (Harriss et al., 2022).

### Injury Incidence, Severity, and Burden

Injury incidence was determined by dividing the number of injuries by total exposure time, expressed as injuries per 1000 exposure hours (Huggland et al., 2005). Exposure time encompassed training and match durations per participant (Jaber et al., 2022). Severity classification was based on time loss: mild (1–7 days), moderate (8–28 days), severe (28–90 days), and major (>90 days) (Bahr et al., 2020; Sprouse et al., 2020). Median days lost and interquartile ranges (IQR) were calculated. Injury burden, measured as days missed per 1000 exposure hours, assessed the impact of injuries on player availability (Jaber et al., 2022).

### Injury Classification and Mechanism

Injuries were categorized using the Orchard Sports Injury Classification System (OSICS) (Fuller et al., 2006), classifying anatomical regions as head/neck, upper limb, trunk, and lower limb. Injury types included muscle, bone, ligament, tendon, bursa, fascia, and neurological injuries. Injury onset was classified as acute or gradual, with mechanisms categorized as contact or non-contact (Walden et al., 2023). Causes of injuries were analyzed to inform prevention strategies and enhance player safety (Walden et al., 2023).

### Statistical Analysis

Descriptive statistical analysis was conducted using Microsoft Excel. Incidence and burden calculations included 95% confidence intervals (CI), while severity was reported as median with lower and upper quartiles. Data were analyzed across both seasons (2022–23 and 2023–24) and separately for matches and training sessions. Graphs and charts illustrated

injury trends over time. Inferential statistical analysis employed the z-score method to identify significant differences in incidence rates between matches and training sessions, with a significance threshold of  $p < 0.05$  (Lindenfeld et al., 1994).

## RESULTS

A total of 105 match and training injuries occurred in two seasons (2022-23 & 2023-24). Footballers had a total of 717 hours of exposure time, consisting of 142 hours of match play and 575 training hours over two seasons. 63.81% (n=67) of injuries were recorded during the 2022-23 season, and the rest of the 36.19% (n=38) injuries were recorded in the 2023-24 season. Days lost from football activities due to an injury ranged from 2 to 450 days with an average of 14.51 days (Table 1). Fuller et al. (2006) stated that a career-ending injury refers to an injury that ultimately leads to the retirement of the player. No career-ending injuries were reported in the current cohort.

**Table-1: Number of Injuries, Number of Days lost, and exposure by event types (Match and Training) per player during both (2022-23 and 2023-24) seasons.**

Season	2022-23	2023-24	Total
<b>Injuries</b>	<b>67</b>	<b>38</b>	<b>105</b>
Training Injuries	35	20	55
Match Injuries	32	18	50
Total Days loss	1208	316	1524
Training Days loss	737	146	883
Match Days loss	471	170	641
Match Exposure Hours	72.5	69.5	142
Training Exposure Hours	294	281	575

### 3.1 Injury Incidence and Burden

A total of 105 match and training injuries were recorded over two seasons (2022-23 & 2023-24). The total exposure time was 717 hours, with 142 match hours and 575 training hours. Most injuries (63.81%, n=67) occurred in the 2022-23 season, while 36.19% (n=38) were recorded in 2023-24. Days lost due to injury ranged from 2 to 450 days, with an average of 14.51 days per injury (Table 1). No career-ending injuries were reported in this cohort.

Training sessions accounted for 52.38% (n=55) of injuries, whereas 47.61% (n=50) occurred during matches. The total injury incidence rate was 4.18 (95% CI: 3.38-4.98) per 1000 hours of exposure. Match incidence (32.01; 95% CI: 23.14-40.88 per 1000 hours) was significantly higher than training incidence (2.73; 95% CI: 2.01-3.45 per 1000 hours), with a Z-score of 17.25 ( $p < 0.05$ ) (Appendix 1). Injury burden was 60.72 (95% CI: 59.92-61.52) days/1000 hours, peaking at 590.59 (95% CI: 576.69-604.49) days/1000 hours for matches in 2022-23 and dropping to 14.84 (95% CI: 13.95-15.73) days/1000 hours for 2023-24 training sessions (Table 2).

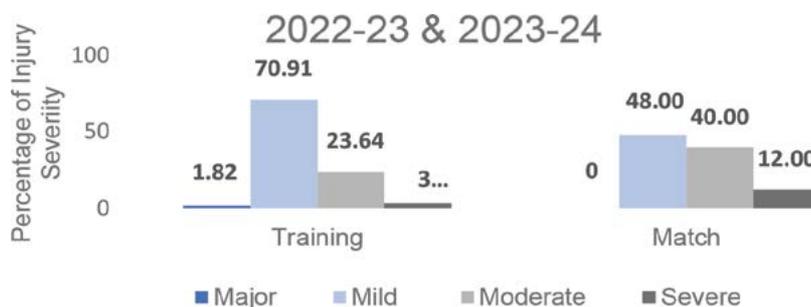
**Table-2: Number of injuries, Incidence, Day loss Median (IQR), and Burden among seasons and different activities.**

	No. of Injuries	Incidence with 95%CI=N (Lowest, Highest)	Day loss Median (IQR)=N (Lower QR, higher QR)	Burden with 95%CI=N (Lowest, Highest)
Match Injuries	50	32.01 (23.14,40.88)	9 (5,14)	410.37 (401.50,419.24)
Training Injuries	55	2.73 (2.01,3.45)	7 (4,9)	43.87 (43.15,44.59)
Total in 2022-23	67	5.22 (3.97,6.47)	7 (5,14)	94.17 (92.92,95.42)
Total in 2023-24	38	3.10 (2.12,4.08)	7 (3.25,9)	25.75 (24.77,26.73)
Match Injury '23	32	40.12 (26.22,54.02)	12 (6.5,21)	590.59 (576.69,604.49)
Training Injury '23	35	3.40 (2.27,4.53)	7 (5,9.5)	71.62 (70.49,72.75)
Match Injury '24	18	23.54 (12.66,34.42)	7 (3.25,9.75)	222.36 (211.48,233.24)
Training Injury '24	20	2.03 (1.14,2.92)	4.5 (3.75,7.50)	14.84 (13.95,15.73)
Total Injuries	105	4.18 (3.38,4.98)	7 (4,14)	60.72 (59.92,61.52)

### Injury Severity

Mild injuries (1–7 days lost) were the most frequent (60%, n=63). The median severity was 7 days (IQR: 4–14), with the highest median (12 days, IQR: 6.5–21) recorded for match injuries in 2022–23 (Table 2). ACL injuries with meniscal tears were the most severe training injuries.

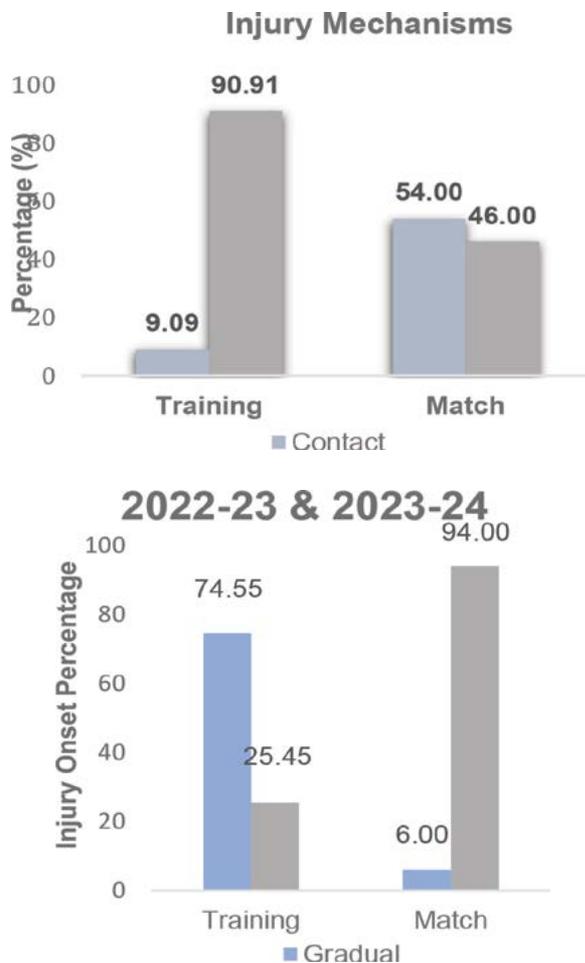
**Figure-1: Injury Severity percentage in different activities.**



### Injury Mechanism, Onset, and Playing Surface

Non-contact injuries (69.52%, n=73) were predominant, especially during training (90.91%, n=50) (Figure 2). Acute injuries (58.10%, n=61) were more common than gradual injuries (41.90%, n=44), with acute injuries occurring mainly in matches (94%, n=47) and gradual injuries during training (74.55%, n=41) (Figure 3). Most injuries (84.76%, n=89) occurred on artificial surfaces.

Figure-2: Injury Mechanism & Onset percentages in different activities & seasons.



### Injury Type and Causes

Muscle injuries (32.38%, n=34) were most common, while severe injuries involving ligaments and cartilage constituted 0.95% of cases (Figure 4). Running was the leading cause of injury (25.71%, n=27), while 9.52% (n=10) had an unknown cause (Walden et al., 2023).

Figure-4: Overall different Injury types in both seasons and activities.

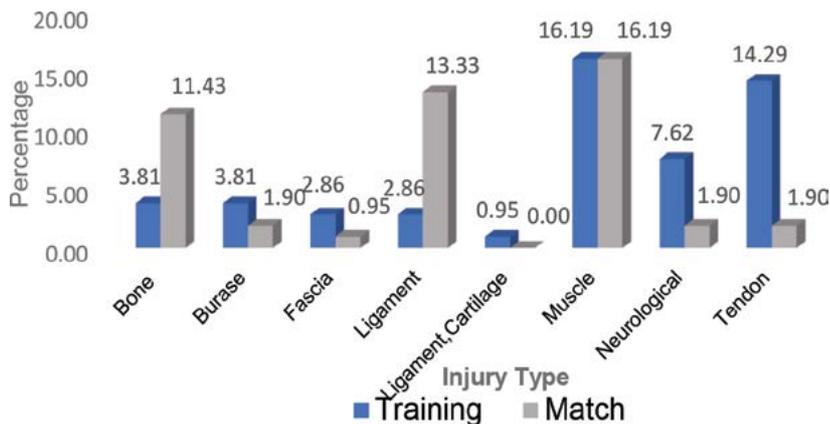
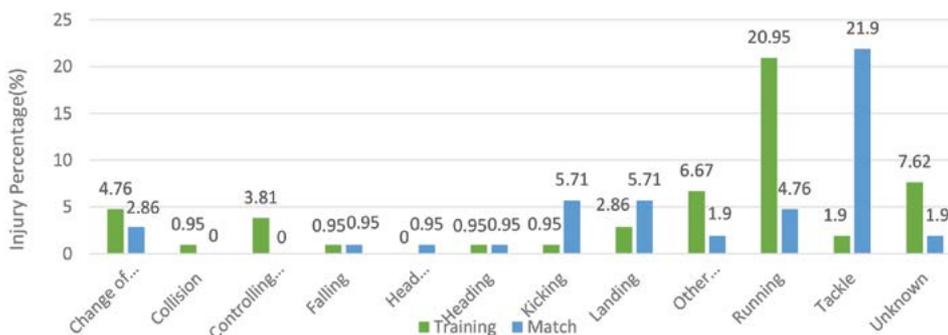


Figure-5: Percentages of different causes between activities.



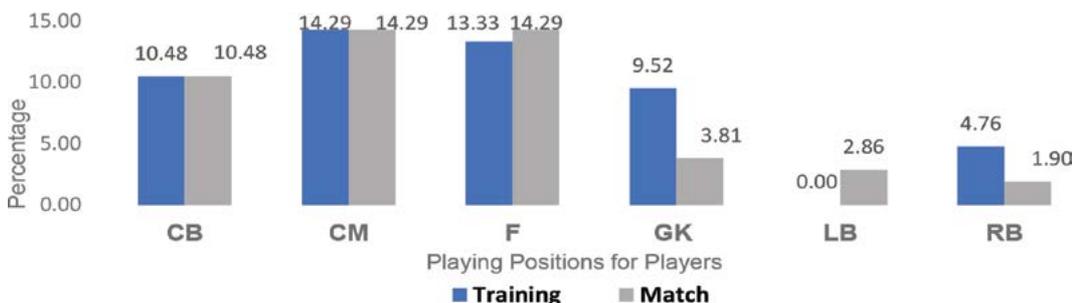
### Playing Position

Defenders sustained the most injuries (30.48%, n=32, Burden = 30.60 days/1000 hours) (Table 3). However, midfielders had the highest injury count (28.57%, n=30) across matches and training (Figure 6).

Table 3. Injury percentage, absence days, mean severity, and burden for different playing positions.

Playing Position	Number of Injuries	Injury Percentage	Absence days	Mean Severity	Burden
Goalkeeper	14	13.33	204	14.57	8.13
Defender	32	30.48	768	24.00	30.60
Midfielder	30	28.57	213	7.10	8.49
Forward	29	27.62	339	11.69	13.50
<b>Total</b>	<b>105</b>	<b>100%</b>	<b>1524</b>	<b>14.51</b>	<b>60.72</b>

Figure-6: Injury extent between different playing positions in training and matches.



### Injury Locations (OSICS) and Affected Body Parts

Lower limb injuries (82.86%, n=87) were the most frequent, with thigh injuries (n=31, Incidence = 1.20/1000 hours, Burden = 11.23 days/1000 hours) being the most affected (Table 4). Knee injuries had the highest burden (21.75 days/1000 hours).

Table-4: Number of injuries, Injury Incidence, and Burden in different body areas (OSICS).

Body region	Injury location	Number of injuries	Incidence/ 1000hr exposure	Burden (days)/ 1000hr exposure
Head-Neck	Head-Neck	3	0.12	1.2
Upper limb	Shoulder	6	0.23	2.7
	Wrist & Hand	1	0.03	0.07
Trunk	Chest and Abdomen	1	0.03	0.83
	Lumbar & Back	7	0.27	1.27
Lower Limb	Hip/Groin	2	0.07	0.27
	Thigh	31	1.2	11.23
	Knee	11	0.44	21.75
	Lower Leg	14	0.55	5.10
	Ankle	17	0.6	11.87
	Foot	12	0.47	4.38

### Injury Months

October recorded the highest injuries (32.38%, n=34), followed by November (n=20), September (n=16), and February (n=12). The lowest injury count was in August and December (n=1) (Figure 8).

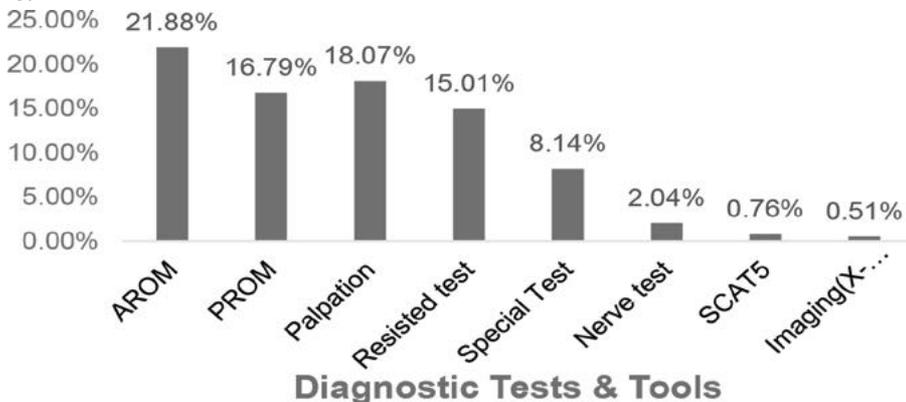
Figure-8: Overall extension of injuries in different months of both seasons and activities.



### Diagnostic tests and tools

Eight diagnostic tools (n=327) were used, with active range of motion testing (21.88%, n=86) and palpation (18.07%, n=71) being most frequent (Figure 9). Overall, 8.14% (n=32) of injuries required a special diagnostic test to make a diagnosis. On the other hand, 0.76% (n=3) injury needed integrated diagnostic tools like Sports Concussion Assessment Tool-5 (SCAT5) (Figure 9).

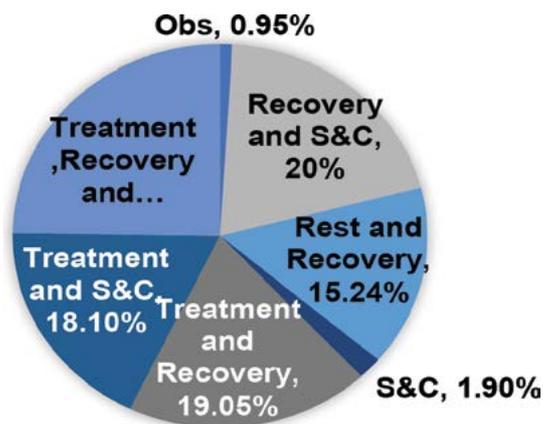
Figure-9: Graphical representation of diagnostic methods for the overall injuries in both seasons.



### Management and Rehabilitation

Treatment and rehabilitation were required in 24.76% (n=26) of cases, while 75.34% (n=79) received other management approaches (Figure 10).

Figure 10. Pie chart showing percentages of rehabilitation and management plan for overall injuries in both seasons.



## DISCUSSION

This study provides a comprehensive analysis of injury epidemiology among male youth footballers at the Bangladesh Institute of Sports, highlighting key differences in injury incidence between match and training settings. The findings reveal a significantly higher injury incidence rate in matches [32.01 (95% CI: 23.14, 40.88) per 1000 hours] compared to training sessions [2.73 (95% CI: 2.01, 3.45) per 1000 hours]. This disparity aligns with existing literature, emphasizing the increased physicality, external pressures, and higher intensity of competitive matches (Cezarino et al., 2020). The substantial difference underscores the necessity of tailored injury prevention strategies, particularly for match scenarios, to protect young athletes' health and career prospects.

Comparative analysis with previous studies demonstrates variations in injury rates across different age groups, competitive levels, and methodological approaches. The overall injury incidence in this study (4.18 per 1000 hours) exceeded the 1.86 per 1000 hours reported in Brazilian youth footballers (Cezarino et al., 2020) but was lower than the 4.8 per 1000 hours observed in French youth players (Le Gall et al., 2006). These discrepancies may be attributed to differences in injury definition, study duration, and data collection methods. For instance, this study employed a 24-hour time-loss injury definition, whereas other studies, such as Price et al. (2004), used a 48-hour threshold. The adoption of a more stringent criterion in this study aligns with recommendations by Fuller et al. (2006), enhancing the accuracy and clinical relevance of the findings.

Beyond incidence rates, this study assessed injury burden, a critical metric quantifying time lost due to injuries. The overall injury burden was 60.72 days per 1000 hours of exposure, with match-related injuries imposing a significantly higher burden [410.37 days per 1000 hours] compared to training injuries [43.87 days per 1000 hours]. This finding supports previous research demonstrating that match-related injuries contribute disproportionately to time loss (Sprouse et al., 2020). The predominance of mild injuries (60%) in this cohort is

consistent with previous studies on European youth footballers (Petersen et al., 2000; Le Gall et al., 2006). Notably, mild injuries were more frequent in training sessions (70.91%), while moderate (40%) and severe (12%) injuries were more prevalent in matches, reinforcing the correlation between match intensity and injury severity.

A critical observation in this study was the high prevalence of non-contact injuries (69.52%), corroborating findings by Cezarino et al. (2020), who reported that approximately 60% of injuries were non-contact. This highlights the need for targeted injury prevention strategies, particularly those aimed at improving neuromuscular control, movement efficiency, and training load management. Muscle injuries (32.38%) emerged as the most common injury type, aligning with existing literature (Jaber et al., 2022). Previous studies have attributed muscle injuries to inadequate strength, high-force contact, and muscle fatigue from prolonged exposure (Fuller et al., 2006). Addressing these risk factors through structured strength and conditioning programs could significantly reduce muscle injury incidence.

This study identified running (25.71%) as the primary cause of injuries during training, while tackling (21.90%) was the leading cause in matches. These findings support previous research indicating that sudden changes in motion and direction contribute significantly to football-related injuries (Cezarino et al., 2020; Kádár et al., 2023). The thigh (29.52%) was the most frequently affected body part, a trend also observed in previous studies (Johnson et al., 2022). The vulnerability of the thigh to injuries may be linked to rapid growth spurts, muscle-to-bone adjustments, and high eccentric load demands. Given this, targeted injury prevention programs should focus on thigh-strengthening exercises and flexibility training.

Analysis by playing position revealed that defenders, particularly center-backs, sustained the highest number of injuries. This aligns with prior studies (Jaber et al., 2022), suggesting that defenders are exposed to frequent high-impact collisions and rapid directional changes. Conversely, goalkeepers sustained the fewest injuries, consistent with previous research (Della et al., 2018). These findings underscore the necessity of position-specific injury prevention protocols tailored to the unique demands of different playing roles.

### **Seasonal and Environmental Influences on Injury Risk**

This study found that injuries peaked in October (32.38%), followed by November (19.05%) and September (15.24%), consistent with prior research on seasonal injury patterns (Maniar et al., 2023). Increased injury rates in the early season may be linked to inadequate pre-season conditioning and sudden workload spikes. Artificial playing surfaces were associated with the highest injury rates, corroborating evidence that synthetic turf increases the risk of lower-limb injuries (Gould et al., 2023). These findings highlight the importance of optimizing training load progression and ensuring high-quality playing surfaces to minimize injury risk.

This study also evaluated the diagnostic and management approaches used for injuries. Active range of motion (ROM) testing was the primary diagnostic tool, with specialized tests and imaging utilized for more severe injuries. Conditions like concussions were diagnosed using standardized protocols such as SCAT5, ensuring accurate assessment and appropriate management. Injury treatment followed a structured approach encompassing rehabilitation, strength training, and progressive return-to-play protocols. This aligns with contemporary

best practices emphasizing early rehabilitation and structured load progression to prevent re-injury (Beudart et al., 2022). The study highlights that early identification and intervention significantly reduce recurrence risk, ensuring long-term player availability and performance sustainability.

### **Significance and Limitations**

While previous studies have explored youth football injuries, their applicability to real-world injury prevention remains limited (Olsen et al., 2004). This study adds valuable data by examining real-world injury mechanisms, diagnostic methods, and management protocols, offering practical insights for injury prevention strategies in this specific age group. The findings emphasize the importance of understanding injury mechanisms to develop targeted interventions (Jaber et al., 2022).

Despite its strengths, this study has limitations. The sample was restricted to a single institute's youth footballers, limiting the generalizability of findings. Although the sample size was robust compared to similar studies (Cezarino et al., 2020; Jaber et al., 2022), a larger, multi-center study would enhance reliability and external validity. Exposure data was verified against official records, yet training session attendance relied on coach-reported data, which introduces the potential for reporting bias. Implementing electronic tracking systems for attendance and exposure monitoring could improve accuracy (Cezarino et al., 2020).

The study duration (two seasons) was sufficient to analyze injury trends, yet a longer follow-up period could provide deeper insights, particularly on re-injury rates, a crucial aspect of injury epidemiology (Walden et al., 2023). Future research should incorporate longitudinal studies with injury surveillance over extended seasons to explore injury patterns across different developmental stages.

### **Conclusion**

This study provides critical insights into the epidemiology of injuries in youth football, emphasizing the significantly higher injury incidence in matches compared to training. Muscle and ligament injuries, particularly in the thigh, knee, and ankle, were the primary contributors to time loss, with non-contact mechanisms predominating. Additionally, seasonal variations and environmental factors played a crucial role in injury patterns. These findings underscore the necessity for position-specific prevention strategies, structured strength and conditioning programs, and improved monitoring systems to mitigate injury risks. Implementing age-appropriate injury prevention protocols and systematically evaluating their effectiveness through longitudinal research is essential. Future studies with larger cohorts, multi-institutional participation, and extended follow-ups are needed to establish comprehensive, evidence-based injury prevention frameworks that ensure the long-term well-being and performance sustainability of youth footballers.

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**COMPREHENSIVE  
POSTOPERATIVE  
PHYSIOTHERAPY  
MANAGEMENT FOR  
COMBINED ACL, MCL,  
AND POL INJURIES OF  
RIGHT KNEE JOINT: A  
CASE REPORT**

**Joy Saha\***

## ABSTRACT

Post-surgical ACL, MCL, and POL refer to the recovery period following surgical procedures to repair or reconstruct torn ligaments in the knee joint. ACL (anterior cruciate ligament) and MCL (medial collateral ligament) are two important ligaments that stabilize the knee joint, while POL (posterior oblique ligament) is a structure that helps prevent lateral (outside) instability of the knee. After surgery to repair or reconstruct these ligaments, patients typically undergo a rehabilitation program to regain strength, flexibility, and range of motion in the affected knee. The length and intensity of this recovery period can vary depending on the specific procedure and individual patient factors. A 26-year-old male patient had recent surgical procedure to repair a torn anterior cruciate ligament (ACL), medial collateral ligament (MCL), and posterior oblique ligament (POL). The injury occurred during a high-impact sporting event, resulting in significant instability and pain in the affected knee joint. The patient underwent a successful surgical procedure to reconstruct the damaged ligaments and is currently undergoing a demanding rehabilitation program to regain strength, flexibility, and range of motion in the affected limb. In this case ROM exercise, passive resistance exercise, active resistance exercise, gym activities, balance and co-ordination activities apply as an intervention. Through a combination of manual therapy techniques and therapeutic exercises the patient was able to gradually regain function and return to their pre-injury level of activity. Regular monitoring and progress assessments ensured that the treatment plan was personalized to the patient's individual needs and goals, with a focus on promoting long-term joint health and preventing future injury.

**Keywords:** Post-Surgical, ACL, PCL, POL, Physiotherapy, Case study.

## INTRODUCTION

Anterior Cruciate Ligament (ACL), Medial Collateral Ligament (MCL), and Posterior Oblique Ligament (POL) injuries often occur concomitantly, presenting a complex clinical scenario that demands a comprehensive and specialized approach to postoperative physiotherapy management. This intricate combination of ligamentous injuries poses unique challenges, necessitating a tailored rehabilitation program to optimize functional outcomes and restore joint stability. The significance of effective postoperative physiotherapy cannot be overstated in the rehabilitation process following combined ACL, MCL, and POL injuries. This integrated approach focuses not only on the individual ligaments but also on addressing the synergistic relationship among them. The ACL provides crucial anterior stability, the MCL offers medial support, and the POL contributes to posterior stability, making a multifaceted treatment strategy essential for successful recovery.

Physiotherapy plays an essential role in the comprehensive management of patients following surgical interventions for anterior cruciate ligament (ACL), medial collateral ligament (MCL), and posterior oblique ligament (POL) injuries. These ligamentous injuries are common, often demanding surgical reconstruction to restore stability and function of

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the knee joint. The post-surgical rehabilitation process is crucial for optimizing outcomes and facilitating the patient's return to normal activities. An evidence-based approach to post-surgical rehabilitation is essential for achieving successful outcomes in ACL reconstruction. The rehabilitation protocol should address specific phases, encompassing early protection, progressive strengthening, neuromuscular control, and functional training (Wilk et al., 2012). Additionally, the management of MCL injuries involves a nuanced approach. As highlighted by early controlled motion, gentle stretching, and strengthening exercises form the cornerstone of rehabilitation after MCL repair. The physiotherapist must tailor the rehabilitation program to the patient's individual characteristics and the surgical technique employed (Noyes et al., 2010). In the context of POL injuries, which are often associated with Multiligamentous knee injuries, the rehabilitation process necessitates a comprehensive understanding of ligament healing and functional restoration. Emphasize the importance of early range of motion exercises, muscle activation, and proprioceptive training to address the complexities of POL reconstruction (Notably, Fanelli and Edson, 2012).

However, in this study, we report a 26-year-old male patient had recent surgical procedure to repair a torn anterior cruciate ligament (ACL), posterior cruciate ligament (PCL), and posterior oblique ligament (POL). The injury occurred during a high-impact sporting event, resulting in significant instability and pain in the affected knee joint. The patient underwent a successful surgical procedure to reconstruct the damaged ligaments and is currently undergoing a demanding rehabilitation program to regain strength, flexibility, and range of motion in the affected limb. Physiotherapy management of post-surgical ACL, MCL, and POL patients is a dynamic and evidence-driven process. By incorporating targeted exercises, progressive rehabilitation protocols, and individualized care, physiotherapists play a crucial role in facilitating optimal recovery and functional restoration for patients undergoing ligamentous knee surgery. Research in this area has underscored the importance of incorporating evidence-based practices into the postoperative rehabilitation protocol. A thorough understanding of the biomechanics and functional anatomy of the knee joint, along with the latest advancements in physiotherapeutic techniques, guides clinicians in tailoring interventions to meet the specific needs of patients with combined ligament injuries.

## CASE STUDY

A 26-year-old male patient presented with a complex knee injury following a traumatic incident. Initial clinical assessments and diagnostic imaging revealed significant damage to the anterior cruciate ligament (ACL), medial collateral ligament (MCL), and the posterior oblique ligament (POL) of the knee joint. He came to the physiotherapy department of CRP had recent surgical procedure to repair a torn anterior cruciate ligament (ACL), posterior cruciate ligament (PCL), and posterior oblique ligament (POL) of right knee joint. In his case Anterior Cruciate Ligament (ACL): Complete tear, Medial Collateral Ligament (MCL): Grade III sprain and Posterior Oblique Ligament (POL): Partial tear. The patient underwent a comprehensive surgical procedure on 15 October, 23 to address the multi-ligamentous knee injury. The surgical team performed an ACL reconstruction, repaired the torn MCL through and addressed the partial tear of the POL with. The injury occurred during a high-impact sporting event, resulting in significant instability and pain in the affected knee joint. The

patient underwent a successful surgical procedure to reconstruct the damaged ligaments and is currently undergoing a demanding rehabilitation program to regain strength, flexibility, and range of motion in the affected limb.

### **Physical examination**

The physical examination should be broadly systemic as well as focused on neurological findings. To begin with check the vital sign like BP, HR, Pulse rate, respiratory rate. All sign undergoes in normal value.

### **Subjective Assessment**

- Assessment Date: 07.11.2024
- Name: Md Ali Islam
- Age: 26 years
- Sex: Male
- Hand dominant: Right
- Current symptoms or status:
  - Patient complains mild pain and decrease range of motion of right knee joint.
- Social History:
  - Occupation: Service Holder
- Other information:
  - Medications: Yes
  - Diagnostic Tests/Investigations: MRI
- Agg factor: On activities
- Ease factor: At rest
- Paresthesia: No
- Severity of pain: Mild
- Onset: Sudden
- Duration: 2 months

### **Objective Assessment**

#### **General Observation**

- Swelling: (+)
- Deformity: (+)
- Muscle wasting: (+)

Gait: Abnormal gait

**Active movements:**

- Pain: (+)
- ROM: Decrease range of motion
- Williness to move: Painful

**Passive movement:**

- Pain: (+)
- ROM: Decrease range of motion
- End feel: Hard

Static Muscle Testing: Grade- 4/5

Neurological test: Intact

Diagnosis/ source of problem: Post Surgical Condition Right Knee Joint.

**Physiotherapy Intervention:**

**Table-1: Physiotherapy Intervention, Dose & Outcome.**

Weeks	Intervention	Dose	Outcome
1 <sup>st</sup> to 2 <sup>nd</sup>	Counselling		<ul style="list-style-type: none"> <li>• Patient motivated</li> <li>• Increase ROM</li> </ul>
	Patient education		
	Soft tissue mobilization Patellar mobilization	<ul style="list-style-type: none"> <li>• 05 minutes</li> </ul>	
	Ice	<ul style="list-style-type: none"> <li>• 07 minutes</li> </ul>	
	<b>ROM/Flexibility</b> <ul style="list-style-type: none"> <li>• Seated Gastroc stretch with towel/strap</li> <li>• Standing Gastroc/soleus stretch</li> <li>• Seated/supine Hamstring stretch</li> </ul>	<ul style="list-style-type: none"> <li>• Intensity: 10 Reps</li> <li>• Sets: 3</li> </ul>	
	Passive ROM exercise <ul style="list-style-type: none"> <li>• Seated heel slides</li> </ul>	<ul style="list-style-type: none"> <li>• Intensity: 10 Reps</li> <li>• Sets: 3</li> </ul>	
3 <sup>rd</sup> to 4 <sup>th</sup>	Patellar mobilization	05 minutes	<ul style="list-style-type: none"> <li>• Increase ROM</li> <li>• Reduced pain</li> </ul>
	<b>ROM/Flexibility</b> <ul style="list-style-type: none"> <li>• Seated Gastroc stretch with towel/strap</li> <li>• Standing Gastroc/soleus stretch</li> <li>• Seated/supine Hamstring stretch</li> </ul>	<ul style="list-style-type: none"> <li>• Intensity: 10 Reps</li> <li>• Sets: 3</li> </ul>	
	Soft tissue mobilization Patellar mobilization	05 minutes	
	Ice	07 minutes	
	Passive ROM exercise	<ul style="list-style-type: none"> <li>• Intensity: 10 Reps</li> <li>• Sets: 3</li> </ul>	

5 <sup>th</sup> to 6 <sup>th</sup>	<b>Gym Activities:</b> <ul style="list-style-type: none"> <li>• Leg extension</li> </ul>	Intensity: 10 Reps	Increase
	<ul style="list-style-type: none"> <li>• Static cycle (10min)</li> <li>• Wall squat</li> <li>• Hamstring curls on medicine ball</li> <li>• Abduction/Adduction/Extension leg raises: maintain quad contraction</li> <li>• Standing calf raises</li> </ul>	Sets: 3	ROM • Reduced pain
	<b>Balance and proprioception:</b> <ul style="list-style-type: none"> <li>• Weight shifts side to side</li> <li>• Single limb stance with knee slightly flexed on stable surface</li> </ul>	<ul style="list-style-type: none"> <li>• Intensity: 10 Reps</li> <li>• Sets: 3</li> </ul>	
	Soft tissue mobilization Patellar mobilization	05 minutes	
	Passive ROM exercise	<ul style="list-style-type: none"> <li>• Intensity: 10 Reps</li> <li>• Sets: 3</li> </ul>	
7 <sup>th</sup> to 8 <sup>th</sup>	<b>Gym Activities:</b> <ul style="list-style-type: none"> <li>• Leg extension</li> <li>• Leg curl</li> <li>• Leg press</li> <li>• Static cycle (10min)</li> <li>• Half squat</li> <li>• Abduction/Adduction/Extension leg raises: maintain quad contraction</li> <li>• Standing calf raises</li> </ul>	<ul style="list-style-type: none"> <li>• Intensity: 10 Reps</li> <li>• Sets: 3</li> </ul>	
	<b>Balance and proprioception:</b> <ul style="list-style-type: none"> <li>• Weight shifts side to side</li> <li>• Single limb stance with knee slightly flexed on stable surface</li> <li>• Single leg standing with eye close</li> </ul>	<ul style="list-style-type: none"> <li>• Intensity: 10 Reps</li> <li>• Sets: 3</li> </ul>	
9 <sup>th</sup> to 10 <sup>th</sup>	<b>Gym Activities:</b> <ul style="list-style-type: none"> <li>• Leg extension</li> <li>• Leg curl</li> <li>• Leg press</li> <li>• Static cycle (10min)</li> <li>• Squat</li> <li>• Abduction/Adduction/Extension leg raises: maintain quad contraction</li> <li>• Standing calf raises with weight</li> </ul>	<ul style="list-style-type: none"> <li>• Intensity: 10 Reps</li> <li>• Sets: 3</li> </ul>	<ul style="list-style-type: none"> <li>• Full ROM</li> <li>• Improved balance and coordination</li> <li>• Improved muscle strength</li> </ul>

<p><b>Balance and proprioception:</b></p> <ul style="list-style-type: none"> <li>• Continue previous advanced difficulty levels</li> <li>• BOSU: both sides, double and single limb balance and squats</li> <li>• Y balance</li> <li>• Ladder drills</li> </ul>	<ul style="list-style-type: none"> <li>• Intensity: 10 Reps</li> <li>• Sets: 3</li> </ul>	
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## DISCUSSION

Certainly, managing a patient post-surgical ACL (Anterior Cruciate Ligament), MCL (Medial Collateral Ligament), and POL (Posterior oblique ligament) injuries involves a comprehensive physiotherapy approach. This discussion will outline key aspects of the physiotherapy management, citing relevant literature.

**Early Postoperative Phase: Cryotherapy and Pain Management:** Immediate post-surgery, cryotherapy plays a crucial role in reducing swelling and pain. Studies like that emphasize the effectiveness of early cryotherapy in managing postoperative pain (Dauty et al., 2018).

**Range of Motion (ROM) Exercises:** Early initiation of gentle passive and active-assisted ROM exercises is essential. Early mobilization contributes to improved outcomes in ACL reconstruction (Noyes et al., 2017).

**Strengthening Phase: Quadriceps Strengthening:** Strengthening the quadriceps is crucial for knee stability. The importance of quadriceps strength in ACL rehabilitation (Kim et al., 2020).

**Hamstring Strengthening:** Addressing hamstring strength is equally important. A significant correlation between hamstring strength and functional outcomes post-ACL reconstruction (Ithurburn et al., 2016).

**Functional Rehabilitation: Proprioceptive Training:** Incorporating proprioceptive exercises is vital for improving joint position sense. Proprioceptive training has been associated with reduced risk of reinjury (Zouita et al., 2019).

**Agility and Neuromuscular Training:** Integrating agility and neuromuscular training aids in improving dynamic stability. The role of neuromuscular training in preventing secondary ACL injuries (Hewett et al., 2016).

**Return to Sport Criteria: Functional Testing:** Implementing functional tests, such as the single-leg hop test or the drop jump test, helps assess the patient's readiness to return to sports. The importance of functional testing in predicting return to sports after ACL reconstruction (Grindem et al., 2016).

**Patient Education: Adherence and Compliance:** Educating the patient on the importance of adherence to the rehabilitation program and postoperative precautions is crucial. The impact of patient compliance on outcomes after ACL reconstruction (Ardern et al., 2016).

Knee rehabilitation, commonly referred to as knee rehab, is a critical aspect of the recovery process for individuals who have undergone knee surgery, suffered a knee injury, or are managing chronic knee conditions. The primary goals of knee rehab are to reduce pain, improve range of motion, strengthen the muscles surrounding the knee joint, and enhance overall functional capacity. This rehabilitation process is typically guided by healthcare professionals, including orthopedic surgeons, physiotherapists, and athletic trainers. Regular assessments and adjustments to the rehabilitation program are made based on the patient's progress. The duration and intensity of knee rehab vary depending on factors such as the type of injury or surgery, individual fitness levels, and adherence to the prescribed exercises. Compliance with the rehabilitation program is crucial for achieving optimal outcomes and preventing the recurrence of knee issues. A structured physiotherapy program is pivotal in optimizing outcomes for post-surgical ACL, MCL, and POL patients. The cited studies underscore the evidence-based principles guiding the rehabilitation process.

## CONCLUSION

In conclusion, the physiotherapy management of post-surgical ACL, MCL, and POL patients plays a vital role in optimizing recovery and restoring functionality. Through a comprehensive rehabilitation program, including exercises to improve strength, flexibility, and proprioception, coupled with modalities to manage pain and inflammation, physiotherapy aims to enhance the patient's overall well-being. Individualized care, gradual progression, and close monitoring are essential elements in ensuring a successful rehabilitation process. The combined efforts of the patient and physiotherapist contribute to achieving optimal outcomes and returning the individual to an active and functional lifestyle.

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# MENTAL HEALTH OF HOCKEY AND FOOTBALL FEMALE PLAYERS OF BKSP – A COMPARATIVE STUDY

Nusrat Sharmeen\*



## ABSTRACT

Sixty Five Female sportsperson were selected for the study from Bangladesh Krira shikkha Protishtan. They were from the Football ( N= 34 ) and Hockey ( N = 31). The age of the subjects ranged from 11 to 17 years. The mental health questionnaire prepared by Goldberg (1972) and later translated into Bangla by Sarkar and Rahman (1989) was used for measuring the mental health of the subjects. The performance of the subjects in all the selected variables was statistically analyzed using 't' test. The statistical analysis of the study revealed that there was significant difference in the mental status of the subjects. Within the limitations of the present investigation and on the basis of findings it has been noticed that there is significant difference in the mental health of Football and Hockey female players of BKSP.

**Keywords:** Mental Health, Hockey & Football Female Players.

## INTRODUCTION

Mental health refers to a person's emotional, psychological, and social well being. It affects how individuals think, feel, and behave in their daily lives. It also influences how they handle stress, relate to others, and make decisions.

Good mental health doesn't mean the absence of mental illness but involves a state of well-being where a person can:

- Cope with the normal stresses of life,
- Work productivity, and
- Contribute to their community

Mental health can be influenced by factors such as genetics, life experiences, family history and social support. Taking care of mental health is essential, and this includes practices life self-care seeking therapy, maintaining healthy relationships, and developing coping skills.

A sportsperson's mental health is critical to their overall performance, well-being, and longevity in their career. While athletes are often admired for their physical prowess, their health plays an equally important role in their success and resilience. Here's an overview:

## CHALLENGES UNIQUE TO ATHLETES

1. **Pressure to Perform:** Athletes often face intense expectations from coaches, fans, sponsors and themselves, which can lead to anxiety or stress.
2. **Injuries:** Physical injuries can take a toll on mental health, causing frustration, depression or fear of re-injury.
3. **Burnout:** The rigorous training schedules and constant competition can lead to physical and emotional exhaustion.

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4. **Identity and Retirement:** Many athletes tie their identity to their sports, and retirement or setbacks can lead to a loss of purpose or direction.
5. **Public Scrutiny:** High-profile athletes often deal with criticism, social media pressure, and a lack of privacy, which can exacerbate feelings of stress or insecurity.

### MENTAL HEALTH ISSUES COMMON AMONG ATHLETES

**Anxiety:** Pre-competition nervousness can sometimes spiral into chronic anxiety.

**Depression:** Feelings of failure, injury setbacks, or isolation during training can lead to depression.

**Eating Disorders:** Certain Sports emphasize weight or appearance, which can trigger unhealthy eating behaviors.

**Substance Abuse:** Some may turn to substances as a way to cope with pressure or enhance performance.

**Performance Anxiety:** The fear of failure or making mistakes can hinder performance and impact confidence.

### IMPORTANCE OF MENTAL HEALTH IN SPORTS

**Improved Performance:** Mental resilience helps athletes focus, stay motivated, good mental health helps them cope effectively. Mental health in sports is just as important as physical health. Athletes face intense pressure to perform, which can lead to stress, anxiety, and even depression. Addressing mental well-being helps improve focus, resilience, and overall performance.

#### Here's why mental health matter in sports:

1. **Performance Enhancement:** A healthy mind leads to better decision making, concentration and confidence on the field.
2. **Stress Management:** Athletes deal with immense pressure from competition, expectations, and social media scrutiny good mental health helps them cope effectively.
3. **Injury Recovery:** Psychological resilience plays a key role in how athletes recover from injuries. Anxiety and frustration can slow healing, while a positive mindset speeds up rehabilitation.
4. **Longevity in Sports:** Athletes who take care of their mental health are more likely to have longer, more fulfilling careers. Burnout is a common issue when mental well being is ignored.
5. **Team Dynamics & Leadership:** Good mental health fosters better communication, teamwork, and leadership, skills, leading to stronger team cohesion.
6. **Personal Well-being:** Beyond sports, mental health affects an athlete's personal life. Managing emotions, relationships, and self-worth is crucial for overall happiness.

More teams and organizations are recognizing the importance of mental health, integrating sports psychologists and wellness programs into training regimens. When mental health is prioritized, athletes not only perform better but also enjoy a healthier, more balanced life.

## MATERIALS AND METHODS

The subjects for the study were Female Hockey (N-31) and Female Football (N-34) players who were regular students of Bangladesh Krira Shikkha Protishtan. All the subjects were residing in the hostels of the Institute and following more or less same training and academic schedule. They all participated in systematic training programme on all the working days except Fridays. Except on Saturday they had two training schedules, one in the morning and another in the evening. The duration of both the session was two hours. The Mental Health Questionnaire (M.H.Q-12) prepared by Goldberg (1972) and translated in Bengali by Sarkar and Rahman (1989) was used for measuring the mental health of students. The questionnaire has four response keys and they are 1. Not at all 2. Somewhat 3. Quite a bit 4. To the maximum extent. To ensure maximum co-operation from the Football and Hockey female players the investigator had a prior meeting with the players in the presence of their coaches. The purpose of the study was clearly explained to them so that there no confusion among the players regarding the study. All the players agreed to extend full co-operation. The directions were given to the subjects as per the requirements of the questionnaire and they were provided sufficient time to complete the questionnaire and were provided sufficient time to complete questionnaire.

## RESULTS

The analysis of data to mental health of the subjects is presented in the following table.

**Table-1: Significance of mean difference of mental health between Football and Hockey players**

Group	Mean	Mean Difference	SD	SE	t ratio
Football (Girls)	10.11	1.89	6.36	1.10	1.71
Hockey (Girls)	12		1.14		

\*Significant at .05 level

t (63)= 1.67

## DISCUSSION

The statistical analysis of data shows that the difference in the means of mental health of Football and Hockey female players are statistically significant. Mental health is just as important as Physical fitness in sports. Athletes who prioritize mental well being tend to perform better, recover faster and sustain longer careers. Any disturbance in the equilibrium between physical and mental performance will usually create a cause and effect relationship and impaired mental health will lead inexorably to an equivalent physical result. A body of science of Sports Psychology has grown dramatically in recent years as the demand for better understanding the mind/body relationship in all sports has increased. The statistical analysis of data shows that difference in the means of mental health of female Football and Hockey player is statistically significant. In 2021, women's Hockey was introduced at BKSP for the first time. Within a very short period, they have been participating in various national and international tournaments, earning recognition along the way.

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# ACL RECONSTRUCTION REHABILITATION OUTCOME MEASUREMENT OF A FOOTBALL PLAYER

Asish Mondal\*



## ABSTRACT

Anterior cruciate ligament (ACL) reconstruction is a common surgical procedure aimed at restoring knee stability and function following injury. Rehabilitation plays a critical role in determining long-term outcomes, yet measuring success remains complex due to variability in patient goals, functional demands, and assessment tools. This abstract explores current approaches to evaluating ACL reconstruction rehabilitation outcomes, focusing on objective measures (e.g., range of motion, strength, and joint stability) and subjective measures (e.g., patient-reported outcomes like quality of life and satisfaction). Emerging technologies, such as wearable sensors and biomechanical analysis, are enhancing precision in tracking progress, while standardized scoring systems, including the Knee Injury and Osteoarthritis Outcome Score (KOOS) and International Knee Documentation Committee (IKDC) form, remain widely utilized. Despite advances, challenges persist in aligning outcome metrics with individual patient expectations and activity levels. This review underscores the need for a multidimensional, patient-centered framework to optimize rehabilitation strategies and improve post-surgical recovery assessment.

**Keywords:** .....

## INTRODUCTION

Anterior Cruciate Ligament (ACL) injuries are common among football players, often requiring surgical reconstruction followed by a structured rehabilitation program. The purpose of this case study is to evaluate the rehabilitation outcome of a professional football player who underwent ACL reconstruction. ACL injuries are far more prevalent in sports involving jumping, pivoting, or rapid directional changes. Studies suggest an incidence of 0.5–3 injuries per 1,000 athlete-exposures in high-risk sports like soccer, basketball, and American football. Female athletes are 2–8 times more likely to suffer an ACL injury than males, due to factors like hormonal influences, neuromuscular differences, and anatomical variations (e.g., narrower femoral notch, greater Q-angle).

## COMMON MECHANISMS OF ACL INJURY

### 1. Non-Contact Injuries (Most Common, 70-80%)

- **Sudden deceleration:** Stopping quickly while running.
- **Pivoting with a planted foot:** Changing direction while the foot is firmly on the ground.
- **Landing awkwardly:** From a jump with the knee in a valgus (inward) position.
- **Hyperextension:** Knee extending beyond its normal range.

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## 2. Contact Injuries (20-30%)

- **Direct blow to the knee:** Especially from the side, causing excessive valgus force.
- **Collision or fall:** Opponent tackling the leg, forcing the knee to twist unnaturally.

### PATIENT PROFILE

- **Name:** Alman Rahman
- **Age:** 22
- **Position:** Midfielder
- **Injury:** Complete ACL tear (Right knee)
- **Surgery:** ACL reconstruction using a hamstring autograft
- **Rehabilitation Duration:** 9 months

### REHABILITATION PROTOCOL AFTER ACL RECONSTRUCTION SURGERY

Rehabilitation after ACL reconstruction surgery is a structured, progressive process aimed at restoring knee strength, stability, and function while preventing re-injury. The protocol typically follows phases based on healing, muscle activation, and functional progression. Recovery takes approximately 6 to 12 months, depending on individual progress, surgery type, and rehabilitation intensity

#### Phase 1: Immediate post-op (0-2 Weeks)

##### Goals:

- Protect the graft.
- Reduce pain and swelling.
- Regain knee extension and mobility.
- Activate quadriceps muscles.

##### Key Exercises: Range of Motion (ROM)

- Passive knee extension to 0° (full extension).
- Knee flexion as tolerated (goal: 90° by week 2).

##### Strengthening:

- Quadriceps sets (isometric).
- Straight leg raises.
- Ankle pumps to prevent blood clots.

##### Walking & Support:

- Crutches: Weight-bearing as tolerated (WBAT).
- Knee brace: Locked in full extension initially, unlocked as ROM improves.

## **Phase 2: Early Rehab (2-6 Weeks)**

### **Goals:**

- Regain near-full range of motion (0°-120° flexion).
- Improve quadriceps control.
- Reduce swelling.

### **Key Exercises: ROM & Mobility**

- Heel slides, seated knee flexion/extension.
- Patellar mobilization.

### **Strengthening:**

- Leg presses (light resistance).
- Step-ups and mini squats.
- Glute bridges and core activation.

### **Walking:**

- Transition off crutches if gait is normal.
- Focus on proper heel-to-toe walking pattern.

## **Phase 3: Strengthening & Neuromuscular Control (6-12 Weeks)**

### **Goals:**

- Regain full ROM.
- Increase strength, balance, and proprioception.
- Normalize walking and light functional movements.

### **Key Exercises:**

#### **Strengthening:**

- Bodyweight squats, lunges, step-ups.
- Resistance bands for hamstrings and glutes.
- Cycling and elliptical for cardio.

Balance & Proprioception:

#### **Single-leg stance with balance pads.**

- Controlled, light agility drills (side steps).

#### **Functional Training:**

- Focus on symmetrical leg strength to prevent compensations.

### **Phase 4: Advanced Strength & Agility (3-6 Months)**

#### **Goals:**

- Regain 80-90% leg strength compared to the uninjured leg.
- Introduce sports-specific drills.
- Improve dynamic control and stability.

#### **Key Exercises:**

##### **Plyometrics:**

- Jump squats, box jumps, and lateral hops.
- Focus on soft landings to reduce knee stress.

##### **Agility & Running Progression:**

- Jogging → sprinting → cutting and pivoting drills.
- Ladder drills, shuttle runs, figure-8s.

##### **Strength Training:**

- Weighted squats, deadlifts, and step-ups.
- Hamstring and core exercises for stability.

### **Phase 5: Return to Sport (6-9 Months)**

#### **Goals:**

- Achieve full strength and confidence.
- Pass functional tests for return to sports.
- Prevent re-injury through neuromuscular training.

#### **Outcome Measurements:**

To assess the rehabilitation progress, multiple outcome measures were utilized:

##### **1. Knee Range of Motion (ROM)**

- Pre-rehabilitation: 10°-85°
- Post-rehabilitation: 0°-135° (full ROM restored)

##### **2. Strength Testing (Isokinetic Dynamometry)**

- Quadriceps/Hamstring Strength Ratio: Improved from 50% to 90% compared to the uninjured leg

##### **3. Single-Leg Hop Test**

- Initial: 60% of uninjured leg distance
- Final: 95% of uninjured leg distance

##### **4. Y-Balance Test (Dynamic Stability Measurement)**

- Initial: 75% reach compared to the uninjured leg
- Final: 98% reach compared to the uninjured leg

**5. Psychological Readiness (ACL-RSI Scale)**

- Initial Score: 40/100 (low confidence in return to sport)
- Final Score: 85/100 (high confidence in return to sport)

**6. Functional Movement Screen (FMS)**

- Initial: Score of 12/21
- Final: Score of 18/21

**Return to Play Decision:**

The athlete was cleared for return to full training at 8 months post-surgery and participated in competitive football at 9 months. The final return-to-play assessment included:

- Completion of sport-specific drills without pain or instability
- Achievement of 90% limb symmetry in functional tests
- Positive psychological readiness score

## CONCLUSION

The structured rehabilitation program led to a successful return to football for the athlete, with full functional restoration and minimal residual deficits. Objective outcome measures were essential in monitoring progress and guiding return-to-play decisions. This case highlights the importance of evidence-based rehabilitation strategies for ACL reconstruction in football players.

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# **A COMPARATIVE STUDY ON MENTAL FITNESS STATUS BETWEEN MALE AND FEMAL FOOTBALL SPORTSPERSONS OF BKSP IN BANGLADESH**

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## ABSTRACT

The purpose of the present study was to find out Mental Fitness Status between Male and Female Football Sportspersons of BKSP in Bangladesh. The subjects of the study were 66 sportspersons which were 36 Male and 30 Female Football Sportspersons in BKSP. The age ranges of the subjects were 12 to 20 years. The subjects were all regular and residential students of BKSP. Anxiety Control, Concentration, Confidence, Mental Preparation, Motivation, Team Emphasis and Sports Competitive Anxiety Test (SCAT) were selected as Psychological Variable is used for measuring Mental Fitness Status of the Sportspersons. Psychological Skill Inventory for Sport (PST) prepared by Mahoney, Gabel, Perking (1987) and Sports Competitive Anxiety Test (SCAT) Questionnaire' developed by Martens, Vealey, and Burton (1990). Mean, Standard Deviation and Independent t-test were used to analysis the data, and level of significant was set at 0.05. Significant differences were found among the Anxiety control, Concentration, Confidence, Mental preparation and Sport competitive anxiety test (SCAT) and there were no found significant differences among the Motivation and Team emphasis between Male and Female Football Sportspersons of BKSP in Bangladesh.

**Keywords:** Mental Fitness, Anxiety Control, Concentration, Confidence, Mental Preparation, Motivation, Team Emphasis and SCAT.

## INTRODUCTION

Mental fitness is defined as a state of well-being and having a positive sense of how we feel, think, and act, like how physical fitness refers to the ability of your body systems to work together efficiently to allow you to be healthy and perform activities of daily living. Mental fitness is the ability to think clearly, respond to challenges, and maintain a positive state of mind. It's a broad concept that includes your psychological resources, emotional balance, and resilience.

Mental fitness is just as important as physical fitness for sports performance. Mental fitness can help athletes make better decisions, perform better, and recover from setbacks. Mental training is the preparation of an individual's mind to improve and reach their peak performance. Sports psychology considers mental training as an integral part of athletic performance, with a specific focus on helping athletes to break through the mental stigmas that are keeping them from putting forth their peak potentials. To improve one's peak performance in sports, a number of mental training methods such as self-talk, imagery, goal setting, physical relaxation, mindfulness training, biofeedback, yoga-based mental training, and cognitive training have been proposed by various scholars.

Peak performances are those magic moments when the sportspersons put it all together both physically and mentally. Its focus is on the mental side of peak performance and how the mind interacts with the body in ultimately producing performance. Most sportspersons

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and coaches will acknowledge that at least 40% to 90% of success in sports is due to mental factors. The higher the skill level, the more important the mental aspects become. In fact, on the elite competitive level, it is not uncommon to hear that the winner invariably comes down to who is the strongest sportspersons mentally on a given day!

Our athletic performance division focuses on developing both the mental and physical capabilities of a person as well as the connection between them. Our team enhances both the physical and mental performance by helping to analyze performance gaps and develop solutions allowing individuals to perform at your peak potential. Our goal is to maximize athletic performance and ultimately create a competitive advantage for individuals and teams.

Our mental conditioning element provides techniques and strategies including positive thinking, concentration, and visualization to develop the mental aspect. Our physical segment encompasses both nutritional education and fitness. .

The idea of using mental training in sports was first systematically introduced in Soviet Union in 1950s. Later in the 1970s and 1980s, other Eastern Bloc countries, including East Germany and Romania, systematically applied mental training to sports. In 1938,

American sport psychologist Coleman Griffith was assigned to the Chicago Cubs professional baseball team to develop the players' performances. In the 1950s, David Tracy was hired as a mental training consultant for the St. Louis Browns professional baseball team. He used relaxation techniques, self-talk, thought- stopping, and hypnosis to help athletes perform. Richard M. Suinn, an American clinical psychologist, evaluated the usefulness of mental training (relaxation, imagery, and behavioral rehearsal) in elite skiers. By the 1980s, mental skills training was promising to become a major focus for research and practices in North American sport psychology. Today, the application of mental training in sports is growing widely around the world.

It is believed that all the top class sportspersons are more or less equal in their physical capacities and training techniques (Sotoodeh, Talebi, Hemayattalab, & Arabameri, 2012), and the ultimate difference in winning edge is determined based on the psychological presence (Hille, 2014). As mentioned above, it is believed that the physiological and physical factors are more important in performance; hence preparations were determined based on athlete's muscle fiber type, anatomical structure and size, energy metabolism, body response to exercise and cardiovascular fitness (Forrester, 2013). Now it is realized that psychological factors determine how closely an athlete comes to the absolute limits of performance. That means psychological factors can very well explain the variation in day-to-day athletic performance without any significant changes in the player's physical condition (Weinberg & Gould, 2011).

Attention and concentration are separate psychological skills combined below due to their overlapping conception. Attention involves focusing mental ability on a current task. Concentration entails sustaining attention over a period of time, while being aware of environmental and situational factors (Harris & Harris, 1984; Weinberg & Gould, 2007). It is particularly important during lengthy sporting competitions.

Mahoney and Avener (1977) compared 1976 U.S Olympic qualifiers and non-qualifiers in men's gymnastics and found that the finalists coped more easily with competitive mistakes, were better able to control and utilize anxiety, had higher self-confidence and more positive self-talk, had more gymnastics related dreams, and had more frequent imagery of an internal versus external nature. Canadian National Wrestling Team qualifiers compared with no-qualifiers were higher in self-confidence, close to reaching their maximum athletic potential, more able to block anxiety one hour prior to and during competition, and experienced fewer negative self-thoughts one hour prior to competition (Highlen& Bennett, 1979)

Rushall (1989) has stated that "Psychology is the key to sports excellence.' For example, when the physical, technical and mental readiness of Olympic sports was assessed, only mental readiness significantly predicted Olympic success (Orlick&Partington 1988). Additionally, in *Golf My Way*, Jack Nicklaus states that mental preparation is the single most critical element in peak performance. This is not a particularly surprising statement considering that Nicklaus believes golf is 90% mental.

The study of the 1988 U.S Olympic wrestling teams (Gould, Ecklund, & Jackson, 1990) also revealed many similar findings to Orlick and Partington's study of Canadian Olympic athletes concerning use of psychological skills. The wrestlers utilized four general dimensions of mental skill. Imagery skills were the most frequently reported mental skill. Imagery was used to create positive images; mentally rehearse tactics, strategies, and techniques: relax; and reinforce goals and objectives. Thought control techniques such as thought stopping, self-talk, positive thinking, and prayer were common. Emotional control skills were used to regulate activation level and to create feelings associated with optimal performance.

The difference between women and men in physical practice is well established and, by extension, therefore, also in mental skills. Several studies have attempted to highlight this distinction by studying the effect of gender on the acquisition of mental skills, such as Russell (2021) and Nicholls (2009), which focused on similarities and possible differences between females and males concerning mental skills. Results showed a significant relationship between mental toughness and gender. In contrast, the studies conducted by Kruger & Pienaar (2014), based on the ACSI-28 questionnaire, show that there are no differences between males and females. Contrary to this result, the study by Du Plessis et al., (2019) states that males have higher averages than females in the different mental skills measured. Güleri & Erhan (2017) examine these differences in mental skills according to gender and sports practices experience. The results show that no significant difference exists between females and males in the mental skills measured. Sarikabak (2020) states that boys are stronger mentally than girls in the same context..

Mental fitness plays a key role in sports performance, helping athletes focus, manage stress, and recover from setbacks. It can also help athletes sustain motivation and enhance their performance.

- **Focus:** Helps athletes maintain concentration during training and competition
- **Stress management:** Helps athletes handle the pressure of high-stakes events and daily training
- **Performance enhancement:** Helps athletes translate physical training into successful performance
- **Recovery:** Helps athletes bounce back from injuries or poor performances
- **Motivation:** Helps athletes maintain the drive to train consistently and compete

### How to improve mental fitness

Mental training can help athletes improve their mental fitness. This can include:

- **Visualization:** Rehearsing competitions mentally
- **Positive self-talk:** Increasing confidence and reducing anxiety
- **Goal setting:** Helping athletes move with a sense of purpose and direction
- **Mental practice:** Rehearsing ideal reactions after making mistakes

## MARERIALS AND METHODS

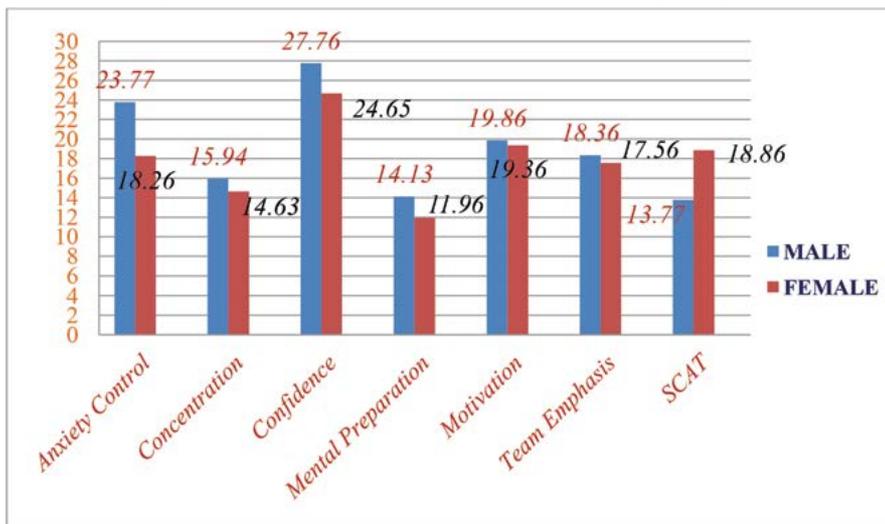
The subjects of the present study were 66 sportspersons which were 36 Male and 30 Female Football Sportspersons in BKSP. The age ranges of the subjects were 12 to 20 years. The subjects were all regular and residential sportspersons in BKSP. Anxiety Control, Concentration, Confidence, Mental Preparation, Motivation, Team Emphasis and SCAT were selected as Mental Fitness. Psychological Skill Inventory for Sport (PST) prepared by Mahoney. Gabiel, Perking (1987) and Sports Competitive Anxiety Test (SCAT) Questionnaire' developed by Martens, Vealey, and Burton (1990).

## RESULTS

Means, Standard Deviation and t-ratios were computed in order to analysis the separately for Male and Female Football Sportspersons in BKSP. The level of significance chosen was .05 levels. The statistical analysis of data has been separately presented for Psychological Variable according to table.

**Table-1**

Means of Mental Fitness like Anxiety Control, Concentration, Confidence, Mental Preparation, Motivation, Team Emphasis and SCAT for the Male and Female Sportspersons in BKSP



**Table-2**

Means, Standard Deviation and t-ratios of Mental Fitness like Anxiety Control between Male and Female Football Sportspersons in BKSP.

Group	Size	Mean	Mean Difference	SD	't' ratio
Male	36	23.77	5.5	4.51	5.98
Female	30	18.26	5.5	3.32	5.98

\* Significant at .05 level

t. 05(64) = 1.66

The analysis of data in Table 02 reveals that there is significant difference in Mental Fitness like Anxiety Control between Male and Female Football Sportspersons in BKSP. The t-ratio-5.98 is more than the table value of 1.66 required for the difference to be significant at .05 levels.

**Table-3**

Means, Standard Deviation and t-ratios of Mental Fitness like Concentration between Male and Female Football Sportspersons in BKSP.

Group	Size	Mean	Mean Difference	SD	't' ratio
Male	36	15.95	.32	3.69	1.72
Female	30	14.63	.32	2.52	1.72

\*Significant at .05 level

t. 05(64) = 1.66

The analysis of data in Table 03 reveals that there is significant difference in Mental Fitness like Concentration between Male and Female Football Sportspersons in BKSP. The t-ratio-1.72 is more than the table value of 1.66 required for the difference to be significant at .05 levels.

**Table-4**

Means, Standard Deviation and t-ratios of Mental Fitness like Confidence between Male and Female Football Sportspersons in BKSP.

Group	Size	Mean	Mean Difference	SD	't' ratio
Male	36	27.75	3.12	5.35	2.88
Female	30	24.63	3.12	3.46	2.88

\*Significant at .05 level t. 05(64) = 1.66

The Table 04 shows that there is significant difference in Mental Fitness like Confidence between Male and Female Football Sportspersons in BKSP. The obtained t-value of 2.88 is more than table value of 1.66.

**Table-5**

Means, Standard Deviation and t-ratios of Mental Fitness like Mental Preparation between Male and Female Football Sportspersons in BKSP.

Group	Size	Mean	Mean Difference	SD	't' ratio
Male	36	14.13	2.17	4.55	2.64
Female	30	11.96	2.17	1.88	2.64

\* Significant at .05 level t. 05(64) = 1.66

The Table 05 reveals that there is significant difference in Mental Fitness like Mental Preparation between Male and Female Football Sportspersons in BKSP. The obtained t-value of 2.64 is less than table value of 1.66.

**Table-6**

Means, Standard Deviation and t-ratios of Mental Fitness like Motivation between Male and Female Football Sportspersons in BKSP.

Group	Size	Mean	Mean Difference	SD	't' ratio
Male	36	19.86	.50	4.56	.53
Female	30	19.36	.50	3.16	.53

\* Not significant at .05 level t. 05(64) = 1.66

The Table 06 shows that there is no significant difference in Mental Fitness like Motivation between Male and Female Football Sportspersons in BKSP. The obtained t-value of 0.53 is less than table value of 1.66.

**Table-7**

Means, Standard Deviation and t-ratios of Mental Fitness like Team Emphasis between Male and Female Football Sportspersons in BKSP.

Group	Size	Mean	Mean Difference	SD	't' ratio
Male	36	18.36	.80	3.84	.95
Female	30	17.56	.80	3.09	.95

\* Not significant at .05 level t. 05(64) = 1.66

The Table 07 shows that there is no significant difference Mental Fitness like Team Emphasis between Male and Female Football Sportspersons in BKSP. The obtained t-value of 0.95 is less than table value of 1.66.

**Table-8**

Means, Standard Deviation and t-ratios of Mental Fitness like SCAT between Male and Female Football Sportspersons in BKSP.

Group	Size	Mean	Mean Difference	SD	't' ratio
Male	36	13.77	-5.09	3.48	-5.69
Female	30	18.86	-5.09	2.75	-5.69

\* Significant at .05 level t. 05(64) = 1.66

The Table 08 shows that there is significant difference in Mental Fitness like SCAT between Male and Female Football Sportspersons in BKSP. The obtained t-value of -5.69 is more than table value of 1.66.

## DISCUSSION

The purposes of the present study were to find out of Mental Fitness status between Male and Female Football Sportspersons of BKSP in Bangladesh. The age ranges of the subjects were 12 to 20 years. The subjects were all regular and residential students of BKSP. Anxiety Control, Concentration, Confidence, Mental Preparation, Motivation, Team Emphasis and SCAT were selected as Psychological Variable for measuring Mental Fitness Status. Psychological Skill Inventory for Sport (PST) prepared by Mahoney. Gabiel, Perking (1987) and Sports Competitive Anxiety Test (SCAT) Questionnaire' developed by Martens, Vealey, and Burton (1990). Mean, Standard Deviation and Independent t- test were used to analysis the data, and level of significant was set at 0.05. Significant differences were found among the Anxiety control, Concentration, Confidence, Mental preparation and Sport competitive anxiety test (SCAT) and there were no significant differences were found among the Motivation and Team emphasis between Male and Female Football Sportspersons of BKSP in Bangladesh.

Generally the successful sportsperson are more preoccupied with their sport in a more positive way. This is reflected by more thoughts, imagery, daydreams, and dreams relative to their sport, with the content tending to be more positive. In a number of the studies, successful sportspersons were found to have less anxiety immediately before and during competition. Successful sportspersons are able to control their anxiety to a facilitative level and often are highly activated, which they interpret in a positive manner. Most of the better sportspersons also have a higher ability to rebound from mistakes. One might conjecture that this could be a consequence of higher self-confidence, more optimal control of anxiety and better concentration skills. The result of the present study may be attributed to the reasons expressed above. Considering the results in this study and the previous research cited, it is evident female athletes are more capable, concerning mental skills. Females are more practiced at setting goals, have the best capacity for mental practice and have better control of stress. Males are more focused on performance and prepare better than females their competition

## CONCLUSIONS

The present research has revealed that Mental Fitness Status of Male Football sportspersons is better than the Female Football sportspersons in BKSP. Psychological and mental support personalized to the individual, as opposed to general conditioning exercises, is also beneficial to the athlete's autonomy and self-control.. Mental Fitness is a critical element in athletic performance. Moreover, the content of this action must not be the same for all. This study showed that there are significant differences between females and males football sportspersons in BKSP. Assessing each athlete's psychological needs and mental skills to build a mental intervention adapted to their potential will be interesting. We should explore how different factors, athletic, psychological, and mental, can affect performance. Finally, we should must give particular attention to the differences in mental skills between males and females in their psychological and mental support.

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