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A STUDY ON PHYSICAL FITNESS PROFILE OF WOMEN CRICKETERS FROM MUMBAI

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ABSTRACT

Physical fitness plays a pivotal role in modern cricket, where high-intensity movements, endurance, agility, and strength are critical for optimal performance. The dynamic nature of the game, combining sprinting, throwing, batting, bowling, and fielding, places significant physical demands on players. For women's cricket, in particular, improving physical fitness is essential not only for enhancing performance but also for minimizing the risk of injuries and sustaining long-term athletic development. Assessing the fitness levels of cricketers based on their playing positions and age can provide valuable insights into their specific training needs. In pursuit of this objective, the current study focused on establishing the physical fitness profile of women cricketers from Mumbai. A total of 101 women cricketers from Mumbai were selected as participants. The study focused on assessing their physical fitness parameters to construct a comprehensive physical fitness profile. Descriptive statistical analyses were conducted to interpret the collected data. The findings revealed that All-rounders and wicketkeepers have better Cardiovascular Endurance, All-Rounders and wicketkeepers have better Muscular Endurance, All-Rounders have better Muscular Strength, Wicketkeepers have better Body Composition, and All-Rounders have better Flexibility, as reflected in their physical fitness profiles. Moreover, the study established a comprehensive physical fitness profile intended to serve as a foundational reference for future research and athlete monitoring in women's cricket.

KEYWORDS: *Cricketer Profile, Physical Fitness, Cricketers' Positions*

INTRODUCTION

Cricket is a cultural phenomenon that has crossed the threshold of social boundaries. Cricket has a massive fan following across the world, and it's no exaggeration to say that it lives in the hearts of millions of Indians. Cricket is an increasingly sophisticated and demanding sport in terms of performance. It has evolved into a highly professional game, where players who possess the ability to dominate the field can shape their entire careers and secure their futures. This has led to tremendous participation and intense competition within the sport. The growing demands of the game require cricketers to maintain peak physical condition. Players endure long hours on their feet, with bursts of sprinting while batting, bowling, and fielding alongside explosive movements like leaping, throwing, and quick turns. Peak fitness is essential not just to prevent injuries, but to stay sharp, especially when facing fast bowlers.

The present study has been carried out to,

- To measure the Physical Fitness of Women's Cricketers from Mumbai
- To identify the Physical Fitness profile of Women Cricketers from Mumbai
- To compare the mean score of Physical Fitness Profile according to positions (Bowlers, Batters, Allrounders, and Wicket keepers) and age group.

METHODOLOGY

Subjects:

To fulfill the purpose of the study, the purposive sampling technique was employed. A total of 101 women cricketers registered at various training centers affiliated with the Mumbai Cricket Association were selected as the sample for this study. All participants provided written informed consent before data collection. Physical fitness tests were administered in the morning session only, under the standardized natural environmental conditions.

Design and Procedure of the Study

The present study aimed to develop the Physical Fitness Profiles of Women Cricketers. To achieve this objective, the researcher employed a descriptive survey design.

Study Variables and their Measures:

A total of eleven physical fitness parameters, namely Cardiovascular Endurance, Muscular Endurance, Muscular Strength, Flexibility, Body Composition, Agility, Balance, Speed, Power, Reaction time, and Coordination, were measured. The unit of measurement of the physical fitness parameters are presented in the table below.

Table 1.
Physical Fitness Parameters

Sr. No.	Tests	Tools/ Equipment	Unit of Measure
1	**Harvard Step Test**	16-inch box, metronome app, stopwatch	Fitness Index
2	**Sit ups**	Stopwatch	No. / min
3	**Grip dynamometer**	Dynamometer	Kg
4	**Sit and Reach**	Flexometer	Inches
5	**Waist-Hip ratio**	Measuring tape	Cm
6	**Shuttle Run**	Wooden blocks, stopwatch	Sec
7	**Stork Stand Test**	Stopwatch	Sec
8	**Standing Broad Jump**	Measuring tape	Meter
9	**30-meter dash**	Stopwatch	Sec
10	**Nelson Hand Reaction Time Test**	Ruler	Cm
11	**Ball Transfer**	Tennis balls, bucket, stopwatch	Sec

Statistical Analyses:

The present study aims to develop a physical fitness profile of women cricketers. Accordingly, descriptive statistics, including mean, standard deviation, minimum, and maximum values, were adopted.

RESULTS AND DISCUSSION:

The study presents the physical fitness profile of women cricketers, categorized by playing positions such as all-rounder, batter, bowler, and wicket-keeper.

Physical Fitness Profile of Wicketkeepers:

The physical fitness profile of a wicketkeeper is presented as health-related physical fitness and skill-related physical fitness components.

Table 2.
Descriptive Analysis of Health-related Physical Fitness of Wicketkeepers.

Health-Related Physical Fitness Components	Cardiovascular Endurance	Muscular Endurance	Muscular Strength (Left)	Muscular Strength (Right)	Flexibility	Body Composition
Mean	59.28	26.3	23.65	21.6	7.9	0.74
SD	22.03	6.25	2.81	3.54	5.9	0.041
Minimum	29.54	19	20	18	2	0.68
Maximum	97.4	37	30	30	19	0.8

As per Table 2, on average, the wicketkeeper's Cardiovascular Endurance, Muscular Endurance, Muscular Strength (Left), Muscular Strength (Right), Flexibility, and Body Composition were 59.28 ±22.03, 26.3 ± 6.25, 23.65 ± 2.81, 21.06 ± 3.54, 7.9 ± 5.9, and 0.74 ± 0,041, respectively.

Table 3.
Descriptive Analysis of Skill-Related Physical Fitness of Wicketkeepers.

Skill-Related Physical Fitness Components	Power	Speed	Balance	Agility	Reaction Time	Coordination
Mean	1.39	6.5	60	12.2	4.27	34.89
SD	0.19	0.56	0	1.13	1.44	2.67
Minimum	1	5.62	60	10.68	2.1	31.24
Maximum	1.48	7.46	60	13.74	6.4	39.65

As per Table 3. on average, the wicketkeeper's Power, Speed, Balance, Agility, Reaction Time, and Coordination were 1.39 ± 0.19, 6.5 ± 0.56, 60 ± 0, 12.2 ± 1.13, 4.27 ± 1.44, and 34.89 ± 2.67, respectively. The highest mean score was found in cardiovascular Endurance 59.28 ±22.03, Muscular Endurance 26.3 ± 6.25, and Agility 12.2 ± 1.13.

Physical Fitness Profile of Batters:

The physical fitness profile of batters is presented as health-related physical fitness and skill-related physical fitness components.

Table 4.
Descriptive Analysis of Health-Related Physical Fitness of Batters.

Health-Related Physical Fitness Components	Cardiovascular Endurance	Muscular Endurance	Muscular Strength (Left)	Muscular Strength (Right)	Flexibility	Body Composition
Mean	41.69	23.72	22.65	23.51	9.2	0.73
SD	18.3	4.67	3.27	3.34	8.29	0.06
Minimum	15.5	16	16	17	-4	0.61
Maximum	81.62	37	29	29	23	0.83

As per Table 4. on average, the batter's Cardiovascular Endurance, Muscular Endurance, Muscular Strength (Left), Muscular Strength (Right), Flexibility, and Body Composition were 41.69 ± 18.3, 23.72 ± 4.67, 22.65 ± 3.27, 23.51 ± 3.34, 9.2 ± 8.29, and 0.73 ± 0.06, respectively.

Table 5.
Descriptive Analysis of Skill-Related Physical Fitness of Batters.

Skill-Related Physical Fitness Components	Power	Speed	Balance	Agility	Reaction Time	Coordination
Mean	1.38	6.42	58.09	12.71	5.16	35.01
SD	0.2	0.42	4.81	1.13	1.49	1.85
Minimum	1.01	5.32	41	11.05	2.1	31.97
Maximum	1.7	7.26	60	14.73	7.4	39.04

As per Table 5, on average, the Batter's Power, Speed, Balance, Agility, Reaction Time, and Coordination were 1.38 ± 0.2, 6.42± 0.42, 58.09 ± 4.81, 12.71 ± 1.13, 5.16 ± 1.49, and 35.01 ± 1.85, respectively. The highest mean score was found in cardiovascular Endurance 41.69 ± 18.3, Balance 58.09 ± 4.8, and Coordination 35.01 ± 1.85

Physical Fitness Profile of Bowlers:

The physical fitness profile of bowlers is presented as health related physical fitness and skill related physical fitness components.

Table 6.
Descriptive Analysis of Health-Related Physical Fitness of Bowlers.

Health-Related Physical Fitness Components	Cardiovascular Endurance	Muscular Endurance	Muscular Strength (Left)	Muscular Strength (Right)	Flexibility	Body Composition
Mean	50.68	24.41	23.14	23.52	9.85	0.72
SD	19.07	4.67	3.75	3.62	7.84	0.06
Minimum	18.2	17	16	16.5	-8	0.6
Maximum	60.46	35	30	31	24	0.84

As per Table 6. on average, the Bowler Cardiovascular Endurance, Muscular Endurance, Muscular Strength (Left), Muscular Strength (Right), Flexibility, and Body Composition were 50.68 ± 19.07, 24.41 ± 4.67, 23.14 ± 3.75, 23.52 ± 3.62, 9.85 ± 7.84 and 0.72 ± 0.06 respectively.

Table 7.
Descriptive Analysis of Skill-Related Physical Fitness of Bowlers.

Skill-Related Physical Fitness Components	Power	Speed	Balance	Agility	Reaction Time	Coordination
Mean	1.38	6.85	59.35	12.72	4.9	35.16
SD	0.25	0.5	2.52	1.09	1.61	2.52
Minimum	0.76	5.62	49	10.21	2.1	30.51
Maximum	1.87	7.95	60	14.9	7.9	39.48

As per Table 7. on average, the Bowler Power, Speed, Balance, Agility, Reaction Time, and Coordination were 1.38 ± 0.25, 6.85± 0.5, 59.35 ± 2.52, 12.72 ± 1.09, 4.9 ± 1.61 and 35.16 ± 2.52 respectively. The highest mean score was found in cardiovascular Endurance 41.69 ± 18.3, Balance 58.09 ± 4.8, and Coordination 35.01 ± 1.85. The highest mean score was found in cardiovascular Endurance 50.68 ± 19.07, Balance 59.35 ± 2.52, Coordination 35.16 ± 2.52 and agility 12.72 ± 1.09.

Physical Fitness Profile of Allrounders:

The physical fitness profile of Allrounders is presented as health-related physical fitness and skill related physical fitness components.

Table 8.
Descriptive Analysis of health-related physical fitness of All-rounders.

Health-Related Physical Fitness Components	Cardiovascular Endurance	Muscular Endurance	Muscular Strength (Left)	Muscular Strength (Right)	Flexibility	Body Composition
Mean	72.52	28.58	25.33	26.75	12.83	0.75
SD	20.7	5.47	5.4	5.06	7.37	0.05
Minimum	32.6	20	17	20	3.5	0.66
Maximum	94.03	36	35	34	26	0.86

As per Table 8. on average, the Allrounder's Cardiovascular Endurance, Muscular Endurance, Muscular Strength (Left), Muscular Strength (Right), Flexibility, and Body Composition were 72.52 ± 20.7, 28.58 ± 5.47, 25.33 ± 5.4, 26.75 ± 5.06, 12.83 ± 7.37 and 0.75 ± 0.05 respectively.

Table 9.
Descriptive Analysis of Skill-Related Physical Fitness of Allrounder women's cricketer players.

Skill-Related Physical Fitness Components	Power	Speed	Balance	Agility	Reaction Time	Coordination
Mean	1.43	6.17	60	12.45	3.66	34.41
SD	0.23	0.41	0	1.31	1.41	2.65
Minimum	1.19	5.67	60	10.72	2.2	31.2
Maximum	1.8	6.82	60	14.59	6.9	39.31

As per Table 9. on average, the Allrounder's Power, Speed, Balance, Agility, Reaction Time, and Coordination were 1.43 ± 0.23, 6.17± 0.41, 60 ± 0, 12.45 ± 1.31, 3.66 ± 1.41, and 34.41 ± 2.65, respectively. The highest mean score was found in cardiovascular Endurance 72.52 ± 20.7, Balance 60 ± 0, Coordination 34.41 ± 2.65 and agility 12.45 ± 1.31.

DISCUSSION

The present study aimed to analyze and compare the physical fitness profiles of women cricketers from Mumbai across different playing positions, like batters, bowlers, all-rounders, and wicketkeepers. The findings provide valuable insights into both **health-related** and **skill-related** fitness components, highlighting the diverse physical demands placed on each category of players.

The results revealed that all-rounders recorded the highest mean **Cardiovascular Endurance** and **Muscular Endurance** with an average of 72.52 ± 20.7, 28.58 ± 5.47 followed by wicketkeepers 59.28 ± 22.03, 26.3 ± 6.25, respectively. This superior endurance among all-rounders may be attributed to their dual role in both batting and bowling, which requires sustained aerobic capacity and efficient energy utilization. Similar observations were reported by Habib Noorbhai and Khumalo (2021), who emphasized that all-rounders exhibit higher aerobic endurance due to their combined physical workload during matches and training.

With respect to **Muscular Strength**, all-rounders again demonstrated superior grip strength Right: **26.75 ± 5.06 kg**, Left: **25.33 ± 5.4kg** compared to wicketkeepers **23.65 ± 2.81kg** left hand and bowlers (**23.52 ± 6.62 kg** right hand). This suggests that their comprehensive training routines effectively enhance both hands muscle power. These results are consistent with previous findings by Gabbett (2000), who reported that players involved in multiple disciplines develop greater overall muscular coordination and functional strength.

In terms of **Flexibility**, measured via the sit-and-reach test, all-rounders recorded the highest mean value (**12.83 ± 7.37 cm**), followed by bowlers (**9.85± 7.84 cm**). Talupuru et al. (2016) similarly highlighted the significance of flexibility and core stability in improving dynamic movement efficiency in cricket.

The **Body Composition**, assessed using the waist-hip ratio (WHR), indicated that all-rounders possessed the nearly adequate mean WHR **0.75 ± 0.05**, followed by wicketkeepers **0.74 ± 0.041**, batters **0.73 ± 0.06**, and bowlers **0.72 ± 0.06**. A lower WHR reflects a healthier distribution of body mass, which contributes to agility and reduced fatigue during prolonged play. This finding corroborates Nazeer et al. (2018), who reported that optimal body composition supports better energy efficiency and movement control.

For **Agility**, measured through the 4×10 m shuttle run, wicketkeepers performed best with an average time of **12.2 ± 1.13 s**, followed by all-rounders **12.45 ± 1.31**, while batters **12.71 ± 1.13** and bowler **12.72 ± 1.09 s** demonstrated slightly slower responses. This outcome reflects the constant reactive demands placed on wicketkeepers during gameplay. Their superior **reaction time** average **12.2 ± 1.13** further confirms the necessity of fast perceptual processing and quick motor response, vital for fielding close to the wicket.

The **Speed test (30 m sprint)** revealed that all-rounders had the fastest mean time **6.17 ± 0.41**, indicating superior explosive leg power and acceleration. This supports their need for rapid movement in both batting and bowling contexts. Similarly, **vertical jump height**, representing lower-body power, was highest among wicketkeepers **6.5 ± 0.56**, followed by Batter **6.42 ± 0.42**, and bowlers **6.85 ± 0.5**. The **Reaction Time** and the Power revealed that all-rounders had the best reaction time and power test mean are **3.66 ± 1.41** and 1.43 **±0.23** indicating best neuromuscular coordination and explosive power compare to batter, bowlers and wicketkeepers

The results of **Coordination** revealed that Bowlers has better coordination 35.16 ± 2.52, whereas wicketkeepers and all-rounders had the best **balance** mean as **60 ± 0** than other categories. Overall, these findings suggest that **all-rounders possess the most balanced and superior physical fitness profiles**, excelling in endurance, strength, speed, power, flexibility and Reaction Time. In other hand, **batters** and **bowlers** possess better coordination, whereas, wicketkeepers are more agile

These results emphasize the need for **position-specific conditioning programs** for women cricketers. Batters and bowlers may benefit from targeted endurance and flexibility training, while maintaining their existing strengths. Moreover, integrating evidence-based fitness assessments into regular training routines could assist coaches in optimizing player performance, reducing injury risk, and ensuring long-term athletic development.

CONCLUSION

The current research concludes that playing roles has a considerable effect on physical fitness qualities of female cricketers. All-rounders showed the highest balanced and highest performance in health- and skill-related components, followed by wicketkeepers, bats, and bowlers, respectively. These variations indicate the peculiar physiological and functional requirements of each job in the game. The results show that tailored, role-oriented exercise programs could increase performance and reduce injury in female cricketers. With a holistic approach to conditioning that combines physical and mental well-being, women cricketers could develop their best performance and long-lasting athletic longevity.

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