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Assessment Of Lower Limb Explosive Strength In Professional Versus Recreational Cricketer.

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ABSTRACT

Although cricket is commonly referred to as an aerobic sport, players really compete at a variety of speeds and intensities, including running, jumping, diving, and catching, with most play taking place in brief bursts**.** Athletes can jump, sprint, catch, and dive, among other speeds and intensities, when playing cricket. Long stretches of action are interspersed by pauses that take up much of the game.

METHODS- The observational study was conducted in recreational and professional cricketers at Karad. The study was done to find out explosive strength in this cricketers. Prior to conducting the survey, the ethical committee approval was made. Patient selected according to inclusion and exclusion criteria. With permission of 100 players(50 recreational,50 professional) participating in this study and result was obtained by the help of statistician.

RESULT- In this study we found that out of 100 players, professional cricketers demonstrated significantly faster reaction times, faster sprint time and higher vertical jump than recreational cricketers ($p < 0.0001$).

CONCLUSION-Professional players performed noticeably better on both assessments, according to the report. According to these results, professional cricket players benefit greatly from regular strength and conditioning regimens, which also probably increase their explosive power. Recreational players might not receive enough of this kind of structured instruction, which would affect how well they perform. The statistically significant differences, which are distinguished by extremely low p-values (<0.0001), show that these results are extremely dependable and not the result of chance.

Keywords explosive strength, professional, recrational.

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INTRODUCTION

Millions of people worldwide participate in the sport of cricket. Three formats are practiced at the highest level throughout the world. Cricket is sometimes described as an aerobic sport, but when it comes down to it, players compete at different speeds and intensities—jumping, running, catching, and diving—with the majority of play occurring in short bursts.[1]

Cricket requires a lot of physical attributes from the player, including strength, endurance, power, flexibility, speed, agility, and cardiovascular system endurance. When analysed, cricket is played by athletes at a variety of speeds and intensities, including jumping, sprinting, catching, and diving. The majority of the game is spent in pauses, and the actions don't endure for extended periods of time.[2]

In order to plan and train, anticipate performance, and identify talent in a variety of sports, explosive power is a necessary prerequisite for sports that need explosiveness and quick maximal energy production.[3]

The capacity to generate the greatest force in the shortest amount of time is known as explosive strength, and it is a crucial component in tasks requiring the acceleration of the body mass, the mass of particular body components, or the mass of an outside object. [3]

Cricket is described as an aerobic sport, but when you break it down, players are moving at different speeds and intensities—jumping, sprinting, catching, diving—and most of the action happens in short bursts rather than lasting long (e.g., batting, bowling, fielding, wicket keeping, making a run). The purpose of this study is to ascertain how state-level cricket players' explosive power and endurance relate to one another. A cricket player's leg strength and speed have an impact on their performance. These are the two factors that affect the speed and agility required for fielding, wicketkeeping, and running between wickets. Bowlers even need it since it helps them train and assess their ability to absorb the pressures of their legs during delivery. According to another study, both batters and bowlers must have strong lower extremity, upper extremity, and trunk muscles in order to execute ground strokes.[1]

The physiological needs of different cricket roles, including batsmen, fast bowlers, wicketkeepers, and elderly, might differ significantly. Longitudinal studies that measure the mobility patterns of cricket players at every position in Twenty20, multiday, or first-class matches revealed a wide range of game styles. Additionally, cricket's specific positions have a more significant overall physical burden because to their brief layouts (T20/1 day), which are more demanding per interval. It is anticipated that energy expenditure will vary based on the tasks, stance, and cricket format of the players.[1]

Strength and conditioning is a very important element in kind of sports, especially in sports like cricket football racket games etc. this includes a wide spectrum of aspects like speed agility explosive strength aerobic and anaerobic capacities, etc in order to aid performance and better outcome in respective sports.[4]

One often used technique for assessing lower body muscular power is the vertical jump. There is undoubtedly a valid reason to use each of these motions to gauge muscular strength. The validity, reliability, and necessity of using each of these tests to measure muscle power during assessments are all up for debate.[5]

The same fitness component is frequently measured in practice using a variety of field tests. For instance, upper-body strength can be measured with pull-ups, push-ups, flexed-arm hangs, Vermont modified pull-ups, and New York modified pull-ups. Likewise, a number of tests have been created to assess muscle power, either for the legs (Margaria-Kalamen leg-power test, vertical jump, and standing long jump) or the arms (one-hand shot put and medicine ball throw tests). The vertical jump (VJ) test and the standing long jump (SLJ) test are the most widely used power tests in young people, and both have benefits for field-based applications.[6]

More than a century ago, Sargent (Citation1921) created the VJ test, which was initially designed to evaluate or forecast athletic performance in order to identify talent and aid in player development. VJ performance is still used by many sports scouts to find talent (e.g., basketball and football; Teramoto et al., Citation 2016). Validity ($r = .78$) and reliability ($R \geq .90$) of VJ have long been demonstrated (Safrit & Wood, Citation1995) and VJ is positively correlated with total- and lower extremity-lean mass (Stephenson et al., Citation2015) and bone strength (Janz et al., Citation2015; Yingling et al., Citation2020). VJ performance is also linked to individual and sport characteristics like sex, skill level, sport position, and injury risk.[6]

METHODOLOGY-

The permission were obtained from protocol and ethical committees from Krishna Vishwa Vidyapeeth, Karad and research was conducted in recreational and professional cricketers at Karad. This is an observational study checking upon the difference in explosive strength and reaction time amongst professional and recreational players. Samples were included according to inclusion and exclusion criteria. The data was collected by assessing vertical jump test and sprint test. Further analysis of data is done for finding the difference in the results in both the groups.

INCLUSION CRITERIA-

1.Professional Cricketers- Professional cricketers are individuals who play cricket at the highest level, earning their livelihood through the sport.

2.Recreational Cricketers- A recreational cricketer refers to an individual who plays cricket primarily for enjoyment, leisure, and fitness rather than as a professional career.

3.Age group 15-30

EXCLUSION CRITERIA-

1.Athletes with recent injuries.

2.Participants with medical conditions affecting lower limb performance

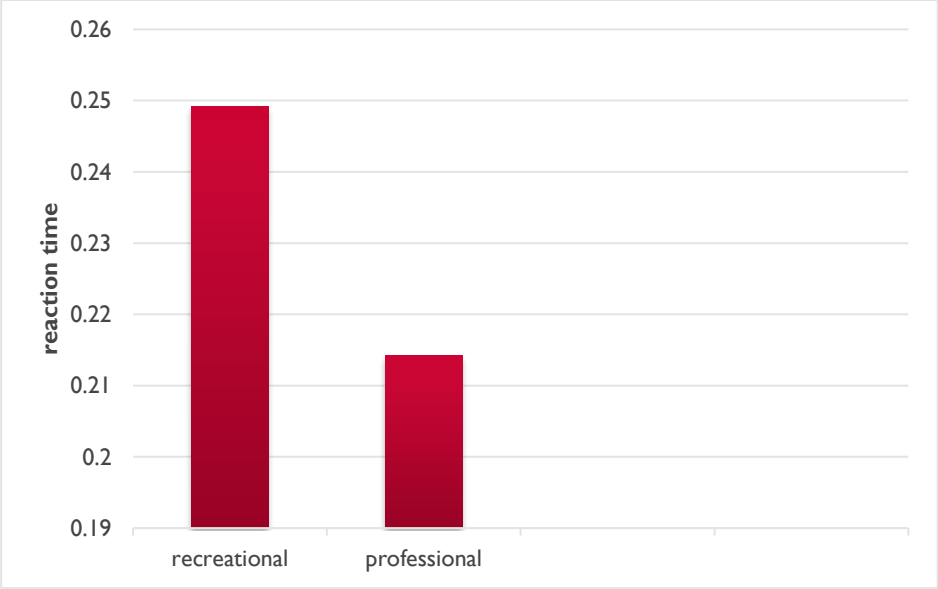
3.Not willing to participate

RESULT-

REACTION TIME

Fig .1

CRICKET	REACTION TIME	T-VALUE	P-VALUE
	Mean ± Standard deviation		
Recreational	0.2492 ± 0.03487	6.605	<0.0001
Professional	0.2142 ± 0.01372		



Interpretation:

Professional cricketers demonstrated significantly faster reaction times than recreational cricketers ($p < 0.0001$).

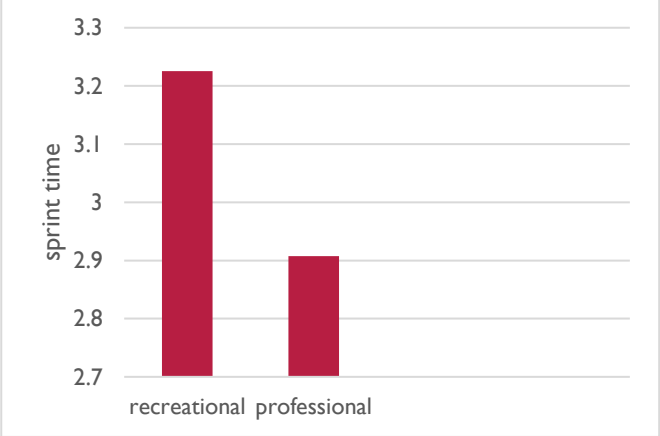
The lower standard deviation in professionals suggests more consistent neuromuscular responsiveness.

This finding indicates that professional training may enhance central processing speed and neuromuscular coordination, which is critical in game situations like catching, batting, and fielding.

SPRINT TIME

Fig.2

CRICKET	SPRINT TIME	T-VALUE	P-VALUE
	Mean ± standard deviation		
Recreational	3.2252 ±0.2553	8.125	<0.0001
professional	2.9076 ±0.1058		



Interpretation: (sprint time)

Professional cricketers had significantly faster sprint times than recreational players ($p < 0.0001$).

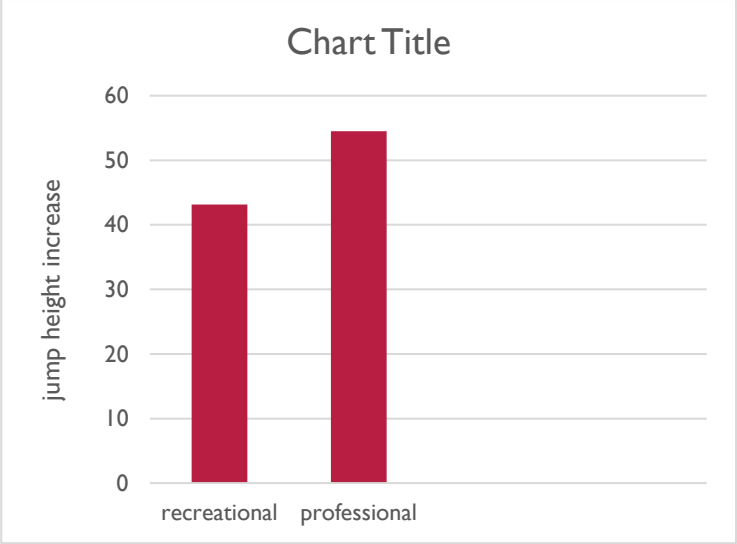
The difference suggests superior anaerobic power, acceleration ability, and muscle coordination in professionals.

This is consistent with structured strength and conditioning programs aimed at maximizing lower limb power output, which is crucial for quick running between wickets and fielding performance.

JUMP HEIGHT INCREASE

Fig.3

CRICKET	JUMP HEIGHT INCREASE	T-VALUE	P-VALUE
	Mean ±standard deviation		
Recreational	43.14 ±3.720	14.465	<0.0001
Professional	54.52 ±4.137		



Interpretation:(jump height)

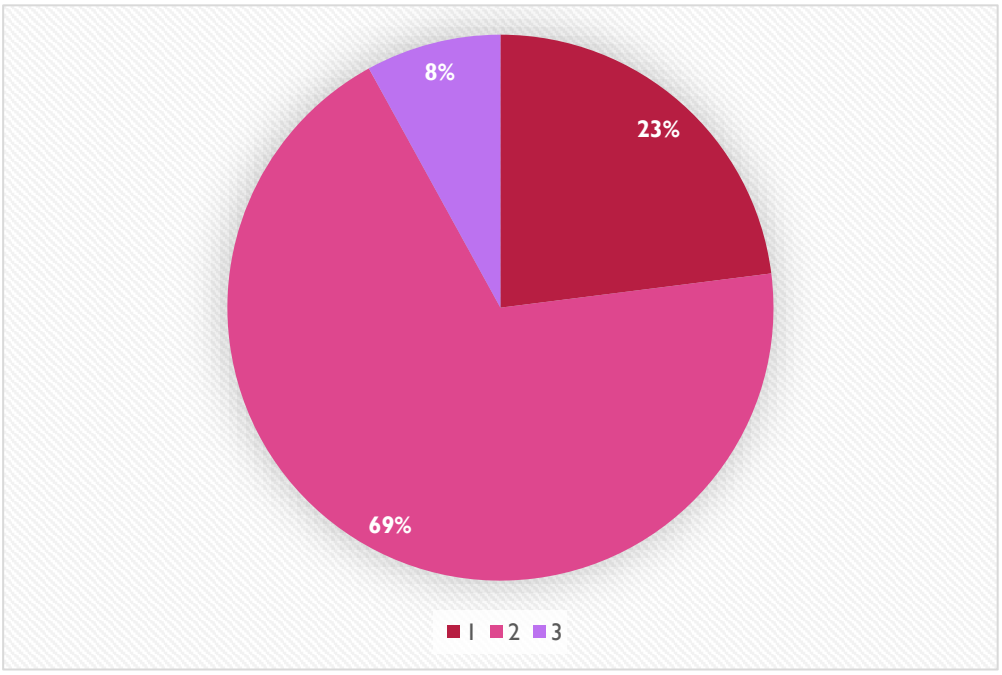
Professionals showed a significantly greater increase in vertical jump height than recreational cricketers ($p < 0.0001$).

This is a direct measure of lower limb explosive strength, indicating higher fast-twitch muscle fibre recruitment and neuromuscular efficiency in trained players.

These differences may reflect the impact of plyometric training, resistance training, and skill-specific drills in professional athletes.

AGE GROUPS

Age Group	No. of Participants
16-20	23
21-25	69
26-30	8



Interpretation (Age Group)

21–25 years (69%): This is the dominant age group, making up the majority of the participants. It suggests that most of the study subjects fall in this young adult range.

16–20 years (23%): This group also constitutes a significant portion.

26–30 years (8%): The smallest group, which may suggest fewer participants.

DISCUSSION-

The current study investigated and compared lower limb explosive strength between professional and recreational cricketers using vertical jump height and 20-meter sprint tests. The results showed that professional cricketers performed significantly better in both assessments, indicating higher explosive strength. This can be attributed to regular participation in structured training programs that include strength, plyometric, and conditioning exercises, which are known to enhance neuromuscular efficiency and muscular power (Turner & Comfort, 2022).

Explosive strength is a critical component in cricket, especially for actions such as sprinting between wickets, throwing, jumping, fast bowling, and quick fielding responses. The vertical jump test is a valid and reliable method to assess lower limb power, reflecting the capability of the muscles to generate force rapidly (Safrit & Wood, 1995). Similarly, sprint performance serves as a measure of speed and acceleration, essential qualities for game-specific performance (Xu, 2023).

Findings from previous research support the results of this study. Sedano Campo et al. (2009) found that plyometric training significantly improved explosive strength and sports-specific performance in soccer players. Similarly, Ghosalkar et al. (2022) observed a positive correlation between vertical jump performance and aerobic capacity in cricketers, highlighting the importance of lower limb power in cricket fitness.

Recreational cricketers, lacking access to formal training regimes, may not develop the same level of explosive strength. This performance gap indicates a need for structured, sport-specific training protocols even at the amateur level. Incorporating resistance and plyometric exercises can potentially improve power output, reduce injury risk, and enhance overall cricket performance.

In conclusion, the study emphasizes the critical role of explosive strength in cricket and underlines the difference in physical preparedness between professional and recreational players, advocating for targeted interventions in amateur training programs.

CONCLUSION-

Across all three parameters—reaction time, sprint time, and jump height—professional cricketers demonstrated significantly superior performance compared to recreational cricketers.

These findings strongly support the hypothesis that structured, high-intensity, sport-specific training programs enhance lower limb explosive strength and functional performance.

The statistically significant differences, characterised by very low p-values (<0.0001), indicate that these outcomes are highly reliable and not attributable to random chance.

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