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## Is physical fitness sufficient to be mentally tough?

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### Abstract

Sports is a psycho-social activity and it is essential to participate in it to maintain physical fitness and mental toughness. This study compares the physical fitness and psychological variables (mental toughness) of national level Cricket and Softball women players in Karnataka. Sixteen cricket and sixteen softball players were subjected to a physical fitness and a standardized mental toughness test. Physical fitness test included - 30 meters dash, sit and reach test, 6x10 meters shuttle run, bent knee sit-ups, softball throw, 800 meters run and modified push-ups. Standardized test of Dr. Alan Goldberg on mental toughness included the components-rebound ability, ability to handle pressure, concentration, confidence and motivation. Data was statistically analyzed using 't' test to find out the mean difference and standard deviation of physical fitness and mental toughness between the two groups. Out of 7 parameters there was a significant difference in only 2 parameters - flexibility and abdominal strength, in which the cricket players fared better than the softball players. However cricket players were more mentally tough than softball players. Even though there was no significant difference between the two groups in five physical fitness parameters, the cricketers were more mentally tough than the softball players; which indicates that physical fitness alone is not the sole contributor to mental toughness in athletes.

**Keywords:** Physical fitness, psychological fitness, softball, cricket

### 1. Introduction

Modern man leads a sedentary life and his movements are restricted because of the new scientific innovations and the modern exciting world has bestowed upon man very acute stress and strain, which considerably affects the health of the people. To keep physically fit and mentally tough the participation in sports and games and dance activities is essential in modern society. Sports is a psycho-social activity. It has both psychological and social dimensions, besides physical, physiological and technical aspects.

**Physical Fitness:** Physical fitness is the ability of an individual to carry on his daily work with utmost efficiency and also have some amount of reserved energy to meet the emergencies of daily life. Fitness is important at all levels of the game while being essential for top level player; it is beneficial for beginners who will improve both their effectiveness and enjoyment through good standards of fitness. The fitness training for the respective games is the ability for players to cope with the physical demands of the games as well as following the efficient use of its various technical and tactical competencies throughout the match.

**Psychological Fitness:** Sports psychology deals with the psychology of athlete, both at rest and in action. It covers various aspects like personality, psychological conditioning of sportsmen, personality dynamics of athletes and skill acquisition. In India, there has been little attention paid to the psychological preparation of athletes. It is the coach to identify the psychological causes and psychological effects of top performance. It helps to integrate the physical, psychological aspects of sports training so that problems of coaching can be tackled in a better way. To realize the full potential as an athlete or performer, one has to start training their minds as well as their body. Just as they develop physical skills and techniques, one must learn to develop mental skills. Learning to stay relaxed under pressure is what is called "good nerves".

**Cricket:** Cricket is a bat-and-ball team sport that is first documented as being played in

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southern England in the 16th century. The cricket match is played on a cricket field at the center of which is a pitch. The match is contested between two teams of eleven players each. One team bats, trying to score as many runs as possible without being dismissed ("out") while the other team bowls and fields, trying to dismiss the other team's batsmen and limit the runs being scored. When the batting team has used all its available overs or has no remaining batsmen, the roles become reversed and it is now the fielding team's turn to bat and try to outscore the opposition.

**Softball:** Softball is a team sport commonly played in the United States and other countries. It is a direct descendant of baseball. Softball is played between two (2) teams on a large field, which usually is composed of dirt or brick dust infield which contains the diamond and running areas, and a grass outfield. There are 4 bases on the infield (first base, second base, third base, and home plate); the bases are arranged in a square and are typically 45 to 65 feet apart. Near the center of this square is the pitcher's circle, and within the circle is the "rubber", a small flat rectangular area. The object of the game is to score more runs (points) than the other team by batting (hitting) a ball into play and running around the bases, touching each one in succession. The game is played in a series of innings, usually seven. The offense bats and attempts to score runs, while the defense occupies the field and attempts to record outs in a variety of ways. After the defense records 3 outs, the half inning is over and the teams switch roles.

## 2. Research Question

The main purpose of this study was to compare the physical fitness and mental toughness (psychological fitness) of the national level women softball and cricket players through which it would see if being Physically Fit only was enough to be Mentally Tough.

### 2.1 Defining Variables

#### Physical Fitness Variables

**Speed:** Speed is "The ability to make rapid movement of the same type in the shortest possible time".

**Strength:** Strength is "The capacity of an individual to exert muscular force against a resistance".

**Agility:** "The ability to change the position of the body in space rapidly without loss of balance".

**Flexibility:** "The movement of a joint through the full range of motion".

**Endurance:** "The ability to sustain activity and resist fatigue".

#### Psychological Fitness Variables

**Rebound ability:** Bouncing back from setbacks and mistakes<sup>[1]</sup>.

**Pressure:** The exertion of maximum competitive efforts on the opponent, such as the pressure of a hard running attack in football<sup>[2]</sup>.

**Confidence:** A person with who you can share your feelings and secrets<sup>[3]</sup>.

**Concentration:** To give the attention you're mental power or your efforts towards particular activity<sup>[4]</sup>.

**Motivation:** Motives are theoretical concepts used to explain the direction, intensity and persistence of behavioral patterns<sup>[5]</sup>.

**Mental Toughness:** It is a combination of learned skills that help to raise the level of athletes training and competitive performance.

## 2.2. Methodology

The study was conducted on 32 women national level players of Karnataka state out of which 16 cricket players and 16 softball players were selected as subjects for the purpose of the study. The players from both groups were given the same tests; there were 7 items of physical fitness and a standardized test on Mental Toughness.

Along with the literature and opinion, the administrative feasibility in terms of availability of infrastructures, instruments, time factor and cost factor were also given due considerations while selecting the physical fitness variables and mental toughness questionnaire was selected as a psychological variable for the study, the reason for selecting mental toughness is that it is an important aspect for athletes to achieve higher performance. Dr. Alan Goldberg developed mental toughness questionnaire.

The following physical fitness variables were selected and tested for the purpose of this study.

**Table 1:** Physical fitness variables and test items

Sl. No.	Components	Tests
1	Speed	30 Meters Run
2	Flexibility	Sit and Reach Test
3	Agility	6 x 10 Meters Shuttle Run
4	Abdominal Strength	Bent knee Sit - ups
5	Shoulder Explosive Strength	Softball throw
6	Endurance	800 Meters Run
7	Shoulder and Arm Strength	Modified Push - ups

**Table 2:** Mental toughness questionnaire consists of the following

Components	Tests
Rebound ability	Mental Toughness questionnaire developed by Dr. Alan Goldberg
Ability to Handle Pressure	
Concentration	
Confidence	
Motivation	

### Criterion Measurements

#### Physical Fitness Variables

**Speed:** Speed was measured in seconds by conducting 30mts. Run with standing start.

**Flexibility:** Flexibility was measured in centimeters by conducting Sit and Reach test.

**Agility:** Agility was measured in seconds by conducting Shuttle Run test.

**Abdominal Strength:** Abdominal strength was measured count wise by conducting Bent knee Sit-ups with having one minute time.

**Shoulder Explosive Strength:** Shoulder explosive strength was measured in meters by conducting Softball throw test.

**Endurance:** Endurance was measured in seconds by conducting 800mts. Run test.

**Shoulder and Arm Strength:** Shoulder and arm strength was

measured count wise by conducting Modified Push-ups with having one minute time.

Before the conduct of the tests, the subjects were assembled on the testing venue, the help of the coaches was taken to collect the necessary data. The purpose of the test was explained and a demonstration of the entire test was given before the conducting of the test and efforts were made to ensure accuracy and uniformity in the administration of the test.

**Table 3:** Results of Physical fitness

Sl. No.	Components (Tests)	Cricket (SD)	Softball (SD)	't' value
1	Speed (30 Meters Run)	0.603	0.313	1.389
2	Flexibility (Sit and Reach Test)	3.945	5.960	2.081**
3	Agility (Shuttle Run)	1.199	0.826	1.675
4	Abdominal Strength (Bent knee Sit -ups)	6.740	4.828	3.527**
5	Shoulder Explosive Strength (Softball throw)	4.887	6.562	0.797
6	Endurance (800 Meters Run)	12.429	12.745	0.428
7	Shoulder and Arm Strength (Modified Push-ups)	10.954	8.160	0.219
	Physical Fitness	68.307	70.846	0.056

\*\* - Significant at 0.05/0.01 level

**Table 4:** Results of Mental Toughness

Sl. No.	Components	Cricket (SD)	Softball (SD)	't' value
1	Rebounding ability	1.5	1.787	7.150**
2	Handle Pressure	1.5	1.493	5.972**
3	Concentration ability	1.408	1.691	2.557**
4	Confidence level	1.25	1.340	2.680**
5	Motivation	1.046	1.5	2.053**
	Mental Toughness	3.222	5.287	4.852**

\*\* - Significant at 0.05/0.01 level

1. There was not much of a significant difference between the cricket and softball players when physical fitness was considered, except for a difference in flexibility (Sit and reach) and abdominal strength (bent knee sit-ups) where the cricket players fared better than the softball players.
2. There was a significant difference in the psychological variable (Mental Toughness) between the cricket and softball players. The cricket players fared better than the softball players when mental toughness was considered.

#### 4. Discussion

The study clearly shows the difference in mental toughness among the cricket and softball players. This is an indication to improve and plan training schedules of various games appropriately. Coaches need to identify the level of concentration, goal setting, stress management, self-confidence, rebound ability, winning concentration, and imaginary and visualization. They need to determine the points of the mental toughness of players in order to formulate appropriate psychological training program. It is important to identify the weakness and strengthen those aspects. The importance of psychological fitness in sports is brought out in this study. Moreover, it also calls for further investigation on why the mental toughness is lower in Softball players than the Cricket players. The importance and glamour cricket as a game in India has could also be a reason for this aspect of a higher state of mental toughness. Thus we could say that Physical Fitness alone is not sufficient to be Mentally Tough.

#### 5. References

1. Alan Goldberg, Applied Sports Psychology, University of Connecticut: <http://www.competitivedge.com>
2. Grant Land Rice and Editorial Board, the Dictionary of Sports (Cambridge: Cambridge University Press), 1996, 285.
3. Cambridge International Dictionary of English

#### 3. Results

The mean and the standard deviation of the two categories were calculated separately and the difference of the means and standard error of the difference between the means were derived and t-ratio was formulated. The difference was established at 0.05 and 0.01 level as per the 't' ratio for which the values scored above 2.04 and 2.75 respectively are considered to be significant.

- (Cambridge: Cambridge University Press), 1996, 285.
4. Ibid. 28.
5. Robert L Isaacson, Mas L Hott, Milton L Blum. Psychology, the Science of Behavior, (Singapore: Harger International Edition), 1965, 325.