

## **A Study of Psychological and Physiological Variable among Athletes**

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### **1.1 Abstract**

In ancient times people lived in the natural environment which forced them to work hard for their livelihood. They had to struggle and fight for their existence. As a consequence they developed the ability for hunting, fishing, fighting and crop caring. The Spartans gave much importance to physical fitness. They also developed skills like running, throwing, jumping, climbing and swimming etcetera. As a result they possessed fitness qualities such as strength, speed, endurance, agility, flexibility, co-ordination etc.

### **1.2 Introduction**

But modern world is the outcome of many scientific inventions through centuries. General physical fitness is the capacity of the body to perform work, to resist disease and infection and to perform work, to resist disease and infection and to resist physical stresses imposed by such things as heat, cold, atmospheric pressure, changes at high altitude or under water and the force of jolts and vibrations.

Physically fit person can handle the everyday workload without stress and discomfort. When one is fit, he looks better, feels better and likely to have more physically energy. When one feels fit the good things of life have more meaning, the sky is bluer, the music sweeter, the food tastier. Thus is true, because all parts of the body are operations at full efficiency. One can work or play harder and recover faster. Exercise could help the individuals to lead a longer life.

### **1.3 Methodology**

In methodology, the design, selection of subjects, selection of variables, reliability of date tests competency, reliability of test, subject reliability, collection of date and the statistical techniques used are described in detail.

#### **1.3.1 Selection of Subjects:**

The investigation had chosen two hundred forty athletes from SRTMU, Athletes College, Nanded and among them eighty runners, eighty jumpers, eighty throwers were selected for subject. All the students were top performer and 18 to 26 years of age.

#### **1.3.2 Design of the Study**

The purpose of this study was to analysis the Psychological parameters and Physiological parameters for athletes. There groups namely:

##### **1. Runners – 80**

- (a) Sprinter – 20
- (b) Middle Distance Runner – 20
- (c) Long Distance Runner – 20
- (d) 20 km Runner – 20

##### **2. Jumpers – 80**

- (a) Long Jump – 20
- (b) Triple Jump – 20
- (c) High Jump – 20
- (d) Pole Jump – 20

### 3. Throwers – 80

- (a) Shot Put – 20
- (b) Discus Throw – 20
- (c) Javelin Throw – 20
- (d) Hammer Throw – 20

**Each Group consists of 80 subjects.**

#### 1.3.3 Selection of Variables:

The investigator will review the available scientific literature, books, journals, periodicals, magazines and research papers pertaining to the study. Taking into consideration the importance of the variables and the relevance of the study the following variables were selected for this investigation.

##### (A) Psychological Variables:

- Anxiety
- Aggression

##### (B) Physiological Variables:

- Resting Pulse Rate Breath
- Holding Time

#### 1.4 Tester's Reliability

The tester's reliability was evaluated along with the reliability best, to determine the reliability of the measurements involved in the study. The tester correlated the data from the pilot study on fort subjects. Tester's competency was evaluated by determine the reliability of the test. The resting pulse rate, breath holding, anxiety and aggression measured twice and intra class correlation was compute between two scores of test-reset. These reliability co-efficient are shown in table.

**TABLE - I**  
**Intra Class Correlation Components – Efficient of Test and Reset Score**

Sr. No.	Name of the Test	Correlation
1.	Resting Pulse Rate	0.95
2.	Breath Holding Time	0.96
3.	Anxiety	0.97
4.	Aggression	0.95

#### 1.5 Scoring

The inventory was scores with the help of a scoring key, which is given below. A separative scoring method was followed for 'positive and negative' statements. The obtained for both positive and negative were added. The range of score will be 15 to 48 points. The higher the score higher the anxiety

##### Score Key

Sr. No.	Response	Score for Positive Statements	Scores for Negative Statement
1.	Hardly ever	1	3
2.	Sometimes	2	2

3.	Often	3	1
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### 1.6 Statistical Techniques

The data were collected from the subjects and treated statistically to find out the significant difference. The investigator use one-way analysis of various (ANOVA), to find out the significant difference among treatment groups. The Sceffe's post loc test was use to find out the paired mean significant difference.

### 1.7 Physiological Variables Resting Pulse Rate

**TABLE - II**

MEAN DIFFERENCE FOR RESTING PULSE RATE AMONG SPRINTERS, MIDDLE DISTANCE RUNNERS, LONG DISTANCE RUNNERS AND 20 Km RUNNERS

	Sprinters	Middle Distance Runners	Long Distance Runners	20 km Runners
Means	59.4	60.0	5.6	5.8

Table - II showed the mean difference for resting pulse rate among Sprinters, Middle distance runners, Long distance runners and 20 km runners. The means of level resting pulse rate are 59.4, 60.0, 5.6 and 5.8 respectively.

**TABLE - II A**

ONE-WAY ANALYSIS OF THE VARIABLES FOR RESTING PULSE RATE AMONG SPRINTERS, MIDDLE DISTANCE RUNNERS, LONG DISTANCE RUNNERS AND 20 km RUNNERS

Source of Variance	df	SS	MS	OF	TF
SST	39	472.775	12.12		
SSB	3	115.875	38.625	3.89	2.84
SSW	36	356.9	9.91		

\*Significant at 0.05 levels.

Table - II A showed the analysis of variance for resting pulse rate among Sprinters, Middle distance runner, Long distance runners and 20km runners.

The obtained F-ratio 3.89 while the F-ratio significance and 0.05 level of confidence was 2.84 for the degree of freedom 3 and 36. Since the obtained F-ratio is higher than the tabulated value it was significant at 0.05 levels and Schiffs post hoc was used to determine the difference among the Sprinters, Middle distance runners, Long distance runners and 20km runners.

**TABLE - II B**

POSR HOC TEST FOR RESTING PULSE RATE AMONG SPRINTERS, MIDDLE DISTANCE RUNNERS, LONG DISTANCE RUNNERS AND 20km RUNNERS

Sprinters	Middle Distance Runners	Long Distance Runners	20 km Runners	M.D.	C.I.

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60	59.4	-	-	0.6	
60	-	57.1	-	2.9	
60	-	-	55.8	4.2	4.67
-	59.4	57.1	-	2.3	
-	59.4	-	55.8	3.6	
-	-	57.1	55.8	1.3	

Table - IIB indicated the mean difference between among Sprinters, Middle distance runners, Long distance runners and 20 km runners are 0.6, 2.9, 4.2, 2.3, 3.6 and 1.3 respectively and it were found that the confident interval was 4.67 at 0.05 levels.

It was found that no significant difference between Sprinters, Middle distance runner, Long distance runners and 20 km runners.

**TABLE - III**

MEAN DIFFERENCE BREATH HOLDING TIME AMONG SPRINTERS, MIDDLE DISTANCE RUNNERS, LONG DISTANCE RUNNERS AND 20 km RUNNERS

	<b>Sprinters</b>	<b>Middle Distance Runners</b>	<b>Long Distance Runners</b>	<b>20 km Runners</b>
Means	35.2	42.5	63.2	65.9

Table III showed the mean difference for breath holding time among Sprinter, Middle distance runner, Long distance runners and 20 km runners are 42.5, 63.3 and 65.9 respectively.

**TABLE - III A**

ONE-WAY ANALYSIS OF THE VARIABLES FOR BREATH HOLDING TIME AMONG SPRINTERS, MIDDLE DISTANCE RUNNERS, LONG DISTANCE RUNNERS AND 20 km RUNNERS

<b>Source of Variance</b>	<b>df</b>	<b>SS</b>	<b>MS</b>	<b>OF</b>	<b>TF</b>
<b>SST</b>	39	9830.4	252.06		
<b>SSB</b>	3	6907.8	2302.6	29.15	2.84
<b>SSW</b>	36	2922.6	78.98		

Table - IIIA showed that the analysis of variance of breath holding time among Sprinter, Middle distance runner, Long distance runners and 20 km runners.

The obtained F-ratio 29.15 while the F-ratio significance at 0.05 levels of confidence was 2.84 for the degree of freedom is 3 and 36. The obtained is higher than the tabulated value it was a significant at 0.05 levels Scheff's post hoc test was used to determine the paired mean difference among Sprinter, Middle distance runner, Long distance runners and 20 km runners.

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**TABLE - III B**  
 POSR HOC TEST FOR BREATH HOLDING TIME AMONG SPRINTERS, MIDDLE  
 DISTANCE RUNNERS, LONG DISTANCE RUNNERS AND 20km RUNNERS

<b>Sprinters</b>	<b>Middle Distance Runners</b>	<b>Long Distance Runners</b>	<b>20 km Runners</b>	<b>M.D.</b>	<b>C.I.</b>
35.2	42.5	-	7.3		
35.2	-	63.2	-	28	
35.2	-	-	65.9	30.7	13.19
-	42.5	63.2	-	20.7	
-	42.5	-	65.9	23.4	
-	-	63.2	65.9	2.7	

Table-III B indicates that the mean difference between Sprinters, Middle distance runners, Long distance runners and 20 km runners are 7.3, 28, 30.7, 20.7, 23.4 and 2.7 respectively. And also it was found confidence interval was 13.19 at 0.05 levels.

It was found that there was a significant difference between sprinters and long distance runners, sprinter and 20 km runners, middle distance runners and long distance runners and middle distance runners and 20 km runners. There was no significant difference between the sprinters and middle distance runners and long distance runners and 20 km runners.

**TABLE - IV**  
 MEAN DIFFERENCE FOR RESTING PULSE RATE AMONG RUNNERS, JUMPERS AND  
 THROWERS

	<b>Runners</b>	<b>Jumpers</b>	<b>Throwers</b>
Means	58.08	64.2	65.2

Table - IV showed the mean difference for the resting pulse rate among runners, jumpers and throwers are 58.08, 64.2 and 65.2

**TABLE - IV A**  
 ONE-WAY ANALYSIS OF THE VARIABLES FOR RESTING PULSE RATE AMONG  
 RUNNERS, JUMPERS AND THROWERS

<b>Source of Variance</b>	<b>df</b>	<b>SS</b>	<b>MS</b>	<b>OF</b>	<b>TF</b>
<b>SST</b>	119	2731.9	22.95		

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<b>SSB</b>	2	1189.6	594.8	45.12	3.07
<b>SSW</b>	117	1542.3	13.18		

Table – IVA showed the analysis of variance for the resting pulse rate among runners, jumpers and throwers.

The obtained F – ratio 45.12 while the F – ration significance at 0.05 levels of confidence was 3.07 for the degree of freedom is 3 and 117. The obtained F – ratio is higher than the tabulated value. It was significant at 0.05 levels of Scheff's post hoc test was used to determine the paired mean difference among the resting pulse rate among runners, jumpers and throwers.

**TABLE – IV B**

POSR HOC TEST FOR RESTING PULSE RATE AMONG RUNNERS, JUMPERS AND THROWERS

<b>RUNNERS</b>	<b>JUMPERS</b>	<b>THROWERS</b>	<b>M.D.</b>	<b>C.I.</b>
58.08	64.2	-	6.12	
58.08	-	65.2	7.12	2.2
-	64.2	65.2	1	-

Table – IVB indicates that the mean difference between the resting pulse rate among runners, jumpers and throwers are 6.12, 7.12 and 1.0 respectively. And also it was found confidence interval was 2.20 at 0.05 levels.

It was found that there was a significant difference between runners and jumpers and runners and throwers. But there was no significant difference between jumpers and throwers.

**TABLE – V**

MEAN DIFFERENCE FOR BREATH HOLDING TIME AMONG RUNNERS, JUMPERS AND THROWERS

	<b>Runners</b>	<b>Jumpers</b>	<b>Throwers</b>
Means	51.7	37.7	33.08

Table – V showed the mean difference for the breath holding time among runners, jumpers and throwers are 51.7, 37.7 and 33.08 respectively.

**TABLE – V A**

ONE-WAY ANALYSIS OF THE VARIABLES FOR BREATH HOLDING TIME AMONG RUNNERS, JUMPERS AND THROWERS

Source of Variance	df	SS	MS	OF	TF
SST	119	21923.3	184.22		
SSB	2	7505.15	3752.575	30.45	3.07
SSW	117	14418.15	123.23		

Table - VA showed the analysis of variance for the breath holding time among runners, jumpers and throwers.

The obtained F - ratio 30.45 while the F - ration significance at 0.05 levels of confidence was 3.07 for the degree of freedom is 2 and 117. The obtained F - ratio is higher than the tabulated value. It was significant at 0.05 levels of Scheff's post hoc test was used to determine the paired mean difference of the breath holding time among runners, jumpers and throwers.

**TABLE - V B**

POSR HOC TEST FOR BREATH HOLDING TIME AMONG RUNNERS, JUMPERS AND THROWER

RUNNERS	JUMPERS	THROWERS	M.D.	C.I.
51.7	37.7	-	14	
51.7	-	33.08	18.62	6.72
-	37.77	33.08	4.62	

Table - VB indicates that the mean difference between the breath holding time among runners, jumpers and throwers are 14, 18.62 and 4.62 respectively. And also it was found confidence interval was 6.72 at 0.05 levels.

It was found that there was a significant difference between runners and jumpers and runners and throwers. But there was no significant difference between jumpers and throwers.

**TABLE - VI**

MEAN DIFFERENCE FOR ANXIETY AMONG RUNNERS, JUMPERS AND THROWERS

	Runners	Jumpers	Throwers
Means	20.18	18.4	17.03

Table - VI showed the mean difference for the anxiety arm runners, jumpers and throwers are 20.18, 18.4 and 17.03 respectively.

**TABLE - VIA**

ONE-WAY ANALYSIS OF THE VARIABLES FOR ANXIETY AMONG RUNNERS, JUMPERS AND THROWERS

Source of Variance	df	SS	MS	OF	TF
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<b>SST</b>	119	4585.8	38.54		
<b>SSB</b>	2	119.52	99.76	2.66	3
<b>SSW</b>	117	4386.28	37.49		

Table – VIA showed the analysis of variance for the anxiety among runners, jumpers and throwers.

The obtained F – ratio 2.66 while the F – ration significance at 0.05 levels of confidence was 3.07 for the degree of freedom is 2 and 117. The obtained F – ratio is lower than the tabulated value. It was significant at 0.05 levels. It was found that there was no significant difference between runners, jumpers and throwers.

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