



## COMPARATIVE ANALYSIS OF PHYSICAL FITNESS COMPONENTS AMONG DIFFERENT TRIBES OF MADHYA PRADESH

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### ABSTRACT

The main purpose of the study was to compare the Physical Fitness Components among various tribes of Madhya Pradesh. Fifty (50) male subjects studying in class 6th, 7th & 8th standard of different schools and hostels from four different tribes of Madhya Pradesh namely Agariya-Gond, Bhil, Sehera & Munda-Mudas, were randomly selected as subjects for the study. The list of students studying in class 6th, 7th, 8th standard was prepared by the research scholar from every tribe separately as per the records provided by Principals/Headmasters of the Schools. The age of the subjects ranged between 11 to 14 years. The data was collected from the schools, residential Schools, hostels situated in various districts of Madhya Pradesh.

**Key Words:** Tribes, Agariya -Gond ,Bhil Sahariya and Munda -Mudas,

### INTRODUCTION

Physical fitness is very necessary for a better quality of life. The history of human movements or physical activity is as old as human existence, it can be traced from the struggle for existence to the struggle for excellence. Real comfort and happiness are indeed experienced when we are in sound health. Although modern man has developed many sophisticated machines, medical equipment and potent medicines, he is still struggling to control diseases. Fitness makes a strong immunity system and saves us from diseases. A fit person can achieve the best goal in life. Health-related fitness is a measure of a person's ability to perform physical activities that requires endurance, strength and flexibility. Physical fitness is one of the most important determinant of sports performance. This kind of fitness is achieved through a combination of regular exercise and inherent ability. According to Census 2011, the total population of the country is 1,210,854,977 (1210.2 million). The scheduled tribe (S.T.) population in India consists of 10,42,81,034 (104.2 million), 8.6% of India's total population. These tribal people are also known as the Adivasis and are the poorest in the country. They are still dependent on hunting, agriculture and fishing. Some of the major tribal groups in India include Gonds, San- thals, Khasis, Bhils, Bhutias and Great Andamanese.

### METHODOLOGY

Two hundred (200) male students within the age group 11 to 14 years belonging four different tribes of Madhya Pradesh were randomly selected as subjects for the study. The four tribes Each tribe consisted of fifty (50) male subjects between the class group of 6th.to 8th.Standard The Scholar selected four tribes of Madhya Pradesh, Namely Agariya, Bhil, Sahariya and Munda-mudas. The Physical Fitness Components, namely muscular strength endurance, speed, agility, explosive strength, and cardiovascular endurance was measured by using "AAHPER" Youth Fitness Test. Muscular strength endurance of shoulder and abdominal was measured by pull-ups and sit-ups respectively, speed was measured by 50 meter sprint, agility was measured by shuttle run, explosive strength of legs was measured by standing broad jump, and cardiovascular endurance was measured by 600 meter run/walk test. In order to compare the means of tribe's first normality assumption of data was checked by the Shapiro-Wilk test. The descriptive statistics of various variables was done by using Mean, SD, and Standard Error to show the univariate analysis of the data. The bivariate analysis was carried out to examine the differences in physical fitness components in between the tribes. The analysis of variance (ANOVA) was applied. The level of significance was set at the 0.05.



Furthermore, the Tukey post hoc means comparison was also used to find out the actual difference between the means when F value was found significant. The graphical Comparison of mean differences in between the tribes was also made for each test.

## Results and Findings

TABLE -1  
 ANALYSIS OF VARIANCE (ANOVA) OF MEANS OF SHOULDER STRENGTH PERFORMANCE  
 AMONG DIFFERENT TRIBES OF MADHYA PRADESH

Source of Variation		Sum of square	df	Mean square	F- ratio	Sig.
Shoulder strength	Between Groups	102.250	3	34.083	3.350	.023
	Within Groups	773.300	196	10.175		
	Total	875.550	199			

The table above depicts the result of the analysis of variance test for shoulder strength performance conducted among the four tribes of Madhya Pradesh. The table clearly revealed that there was a statistically significant difference in Shoulder strength among different tribal groups as the obtained p-value(0.023) was less than 0.05. This indicates that shoulder strength performance of at least one of the tribal groups differs significantly from others.

TABLE-2  
 ANALYSIS OF VARIANCE OF MEANS IN ABDOMINAL STRENGTH PERFORMANCE  
 AMONG DIFFERENT TRIBES OF MADHYA PRADESH

Source of Variation		Sum of square	Df	Mean square	F- ratio	Sig.
Abdominal Strength	Between Groups	1553.450	3	517.817	4.365	.007
	Within Groups	9015.300	196	118.622		
	Total	10568.750	199			

**Results:** The table above depicts the result of the analysis of variance test for Abdominal strength performance conducted among the four tribes of Madhya Pradesh. The table clearly revealed that there was a statistically significant difference in abdominal strength among different tribal groups as the obtained p-value (0.007) was less than 0.05. This indicates that abdominal strength performance of at least one of the tribal groups differs significantly from others.



TABLE-3  
 POST HOC COMPARISON OF ADJUSTED POST TEST MEANS IN ABDOMINAL STRENGTH  
 AMONG DIFFERENT TRIBES OF MADHYA PRADESH

Dependent Variable	(I) Madhya Pradesh Tribes	(J) Madhya Pradesh Tribes	Mean Difference (I-J)	Std. Error	Sig.
Abdominal Strength	Agariya	Bhil	8.70000	3.44416	.064
		Sahariya	11.05000*		.010
		Munda_mudas	2.95000		.827
	Bhil	Agariya	8.70000		.064
		Sahariya	2.35000		.904
		Munda_mudas	5.75000		.347
	Sahariya	Agariya	11.05000*		.010
		Bhil	2.35000		.904
		Munda_mudas	8.10000		.096
	Munda_mudas	Agariya	2.95000		.827
		Bhil	5.75000		.347
		Sahariya	8.10000		.096

The table above shows the Post hoc comparisons of adjusted post-test means in Abdominal strength performance among different tribes of Madhya Pradesh. It is clear from the table that there is significant difference between abdominal strength means of Agariya and Sahariya tribes as the p-values(0.010) was less than 0.05 and was found to be significant at 5% Alpha level(0.05). The result of the significance in the comparisons among other tribes shows that there is no statistical significant difference in their mean abdominal strength as the sig. value is greater than 0.05.

TABLE-4  
 ANALYSIS OF VARIANCE OF MEANS IN AGILITY PERFORMANCE  
 AMONG DIFFERENT TRIBES OF MADHYA PRADESH

Source of variation		Sum of Square	df	Mean Square	F- ratio	Sig.
Agility	Between Groups	15.700	3	5.233	1.978	.124
	Within Groups	201.100	196	2.646		
	Total	216.800	199			

The table above depicts the result of the analysis of variance test for Agility performance conducted among the four tribes of Madhya Pradesh. The table clearly revealed that there was no statistically significant difference in Agility among different tribal groups as the obtained p-value (0.124) was greater than 0.05. This indicates that Agility performance of each of the tribal groups does not differs significantly from others.

TABLE-5  
 ANALYSIS OF VARIANCE OF MEANS IN EXPLOSIVE STRENGTH OF LEGS PERFORMANCE  
 AMONG DIFFERENT TRIBES OF MADHYA PRADESH

Source of variation		Sum of Square	df	Mean Square	F- Ratio	Sig.
Explosive Strength of Legs	Between Groups	.074	3	.025	1.359	.262
	Within Groups	1.387	196	.018		
	Total	1.461	199			



The table above depicts the result of the analysis of variance test for Explosive strength of legs performance conducted among the four tribes of Madhya Pradesh. The table clearly revealed that there was no statistically significant difference in explosive strength of legs among different tribal groups as the obtained p-value (0.262) was greater than 0.05. This indicates that explosive strength performance of each of the tribal groups does not differ significantly from others.

TABLE-6  
 ANALYSIS OF VARIANCE OF MEANS IN SPEED TEST PERFORMANCE  
 AMONG DIFFERENT TRIBES OF MADHYA PRADESH

Source of Variation		Sum of Square	df	Mean Square	F- ratio	Sig.
Speed	Between Groups	88.650	3	29.550	7.414	.000
	Within Groups	302.900	196	3.986		
	Total	391.550	199			

The table above depicts the result of the analysis of variance test for Speed performance conducted among the four tribes of Madhya Pradesh. The table clearly revealed that there was a statistically significant difference in speed among different tribal groups as the obtained p-value (0.00) was less than 0.05. This indicates that 50 Meter Dash (Speed )performance of at least one of the tribal groups differs significantly from others.

TABLE-7  
 POST HOC COMPARISON OF ADJUSTED POST TEST OF SPEED AMONG DIFFERENT  
 TRIBES OF MADHYA PRADESH

Dependent Variable	(I) Madhya Pradesh tribes	(J) Madhya Pradesh tribes	Mean Difference (I-J)	Std. Error	Sig.
Speed	Agariya	Bhil	0.50000	0.6313	.858
		Sahariya	2.25000*		.003
		Munda_mudas	0.15000		.995
	Bhil	Agariya	0.50000		.858
		Sahariya	2.75000*		.000
		Munda_mudas	0.65000		.733
	Sahariya	Agariya	2.25000*		.003
		Bhil	2.75000*		.000
		Munda_mudas	2.10000*		.007
	Munda_mudas	Agariya	0.15000		.995
		Bhil	0.65000		.733
		Sahariya	2.10000*		.007

The table above shows the Post hoc comparisons of adjusted post-test means in speed performance among different tribes of Madhya Pradesh. It is clear from the table that there is significant difference between speed score means between Sahariya and all other tribes .As the significant value between the tribes, Sahariya and Agariya(sig.= 0.003), Sahariya and Bhil(sig.= 0.000), Sahariya and Munda-mudas (sig.= 0.007) was less than 0.05 and was found to be significant at 5% Alpha level(0.05).The result of the significance in the comparisons among other tribes shows that there is no statistical significant difference in their mean score as the sig. value is greater than 0.05.



TABLE-8  
ANALYSIS OF VARIANCE OF MEANS IN CARDIOVASCULAR –ENDURANCE PERFORMANCE  
AMONG DIFFERENT TRIBES OF MADHYA PRADESH

Source of variation		Sum of Square	df	Mean Square	F- ratio	Sig.
Cardiovascular-Endurance	Between Groups	13.940	3	4.647	8.286	.000
	Within Groups	42.621	196	.561		
	Total	56.561	199			

The table above depicts the result of the analysis of variance test for cardiovascular endurance performance conducted among the four tribes of Madhya Pradesh. The table clearly revealed that there was a statistically significant difference in cardiovascular endurance among different tribal groups as the obtained p-value (0.00) was less than 0.05. This indicates that Cardio-vascular endurance performance of at least one of the tribal groups differs significantly from others.

TABLE-9  
POST HOC COMPARISON OF ADJUSTED POST TEST MEANS IN CARDIO-VASCULAR  
ENDURANCE AMONG DIFFERENT TRIBES OF MADHYA PRADESH

Dependent Variable	(I) Madhya Pradesh Tribes	(J) Madhya Pradesh Tribes	Mean Difference (I-J)	Std. Error	Sig.
Cardio-vascular Endurance	Agariya	Bhil	-.02900	0.23681	.999
		Sahariya	-.72100*		.017
		Munda_mudas	.44650		.243
	Bhil	Agariya	.02900		.999
		Sahariya	-.69200*		.023
		Munda_mudas	.47550		.194
	Sahariya	Agariya	.72100*		.017
		Bhil	.69200*		.023
		Munda_mudas	1.16750*		.000
	Munda_mudas	Agariya	-.44650		.243
		Bhil	-.47550		.194
		Sahariya	-1.16750*		.000

The table above shows the Post hoc comparisons of adjusted post-test means in cardiovascular endurance performance among different tribes of Madhya Pradesh. It is clear from the table that there is significant difference between cardiovascular endurance score means between Sahariya and all other tribes of Madhya Pradesh. As the significant value between the tribes, Sahariya and Agariya (sig.= 0.017), Sahariya and Bhil (sig.= 0.023), Sahariya and Mundamudas (sig.= 0.000) was less than 0.05 and was found to be significant at 5% Alpha level (0.05). The result of the significance in the comparisons among other tribes shows that there is no statistical significant difference in their mean score as the sig. value is greater than 0.05.

## DISCUSSION OF FINDINGS

Generally, this study's motive is to examine the physical fitness of Students of various tribes of Madhya Pradesh state to determine the capability of a particular tribe and state meant for a particular game and sports to further the development needed among tribal groups for the upliftment of sports and games. As such, it recorded some results and findings related to its objectives and more.



It is evident from the study and the results that the tribes under the Madhya Pradesh have significantly better and superior performance in the shoulder and abdominal strength compared particularly, the Bhil tribe of Madhya Pradesh had the best performance in the shoulder strength compared to other tribes in the study. The sit-up result showed that the Sahariya tribe of Madhya Pradesh has the best performance in the abdominal strength and endurance ability among the tribes. The findings from the study also revealed that overall, the Madhya Pradesh state with better performance in the explosive power of leg muscles (broad jump) and cardiovascular endurance (600-yard run-walk test). Individually, The Sahariya tribe of Madhya Pradesh was recorded with the best and superior performance in the running speed & explosive strength, explosive power of leg muscles and in the cardiovascular endurance. This may be attributed to the fact that they live in dense forest mostly in Madhya Pradesh and mother earth's borders for their basic needs. The main occupation of the Sahariya tribe is agriculture and their economic conditions are measurable; hence they have to serve as laborers. The tribe's involvement in agriculture and labour activities might have led to improved their genetic endowment over hundred years to enhance the legs' running speed and explosive strength.

### CONCLUSIONS

Based on the results from our analysis and considering the limitations of the study, the following conclusion may be drawn:

1. It may be concluded that male students of Bhil tribe of Madhya Pradesh are significantly superior and stronger in shoulder strength in comparison to Agriaya-Gond, Saharia and Munda-Mudas.
2. It is concluded that high school male students of Saharia tribe are significantly superior in abdominal muscular strength, running speed & cardiovascular endurance in comparison to Agriaya-Gond, Bhil and Munda-Mudas tribes of Madhya Pradesh.
3. It is further concluded that there are no significant differences in agility, explosive leg strength performance in between Agriya-Gond, Bhil, Saharia and Munda-Mudas male students of high school tribes of Madhya Pradesh.

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