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## A Comparative Study of Upper Body Muscular Strength among the Students of Different Socioeconomic Status

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ARTICLE INFORMATION	ABSTRACT
<p><b>Corresponding Author:</b> Santosh Kumar</p> <p><b>Article history:</b> Received: 15-06-2022 Revised: 22-06-2022 Accepted: 28-06-2022 Published: 30-06-2022</p> <p><b>Key words:</b> Upper body muscular strength, students, socio-economic status.</p>	<p><i>The purpose of the study was to compare the upper body muscular strength among students of different socio-economic statuses. Using a simple random sampling technique, the researcher selected 12 colleges with 2 colleges from each district from the Lucknow region. Again 3600 male students aged between 18-22 years were randomly selected from these 12 colleges and they were divided into three income groups, that is high-income group, middle-income group, and low-income group by using the Socio-Economic Status Scale Questionnaire developed by G. P. Srivastava (1978) and from three groups a total of 300 students, 100 students each from the high-income group, middle-income group and low-income group were selected for the purpose of this study using a stratified random sampling technique. The upper body muscular strength was measured by the 1-RM bench press ratio test. To compare the upper body muscular strength among students of different socioeconomic status, one-way analysis of variance (ANOVA) was used followed by L.S.D. (least significant difference) wherever applicable. All statistical function was performed using SPSS v.16 software and the significance level was set at 0.05. It was found that Significant differences were found in upper body muscular strength between the High-Income Group and Low-Income Group, the Middle-Income Group, and Low Income Group as well as the High-Income Group and Middle Income Group.</i></p>

### Introduction

“Health promotion is a recognised component of present-day in school education which is designed to prepare each youngster to deal with life’s academic, cultural and practical needs”. He further mentioned that as an achievement, health is integrated with all aspects of school life, which contribute to the effectiveness and enjoyment to life of each youngster. Good health in school is an outgrowth of man’s constant for more effective and more enjoyable living.<sup>1</sup> Anderson (1968). Robert (1973) has expressed that physical fitness is a matter of fundamental importance to an individual’s well-being and is the basis for all other forms of excellence. With the increased mechanism, there has been a continued decrease in the number of tasks that require an expenditure of energy and sufficient vigorous exercises. As a result, individuals cannot maintain adequate levels of physical fitness.<sup>2</sup> According to Hastad & Lacy 1994), “The health related physical fitness domain in characterized by those aspects of physical fitness that affect on individual’s functional health physical well-being. It is becoming an accepted practice for physical fitness testing to emphasize health related components, including body composition ratio of leanness to fatness, cardiovascular efficiency, muscular strength and endurance and flexibility of lower back and posterior thigh area”.<sup>3</sup> According to National Center for Educational Statistics (2008) Socioeconomic status (SES) is an economic and sociological combined total measure of a person work experience and of an individual or family socioeconomic and social position in relation to others, based on income, education, and occupation. When analysing a family socioeconomic status, the household income, earners education, and occupation are examined, as well as combined income, versus with an individual, when their own attributes are assessed. “Socio-Economic Status in terms of primary conditions and characteristics is determined through vocation, income and wealth, home and its locations, education, activity and associations”.<sup>4</sup> Socio-Economic Status in terms of primary conditions and characteristics is determined through vocation, income and wealth, home and its locations, education, activity and associations (Soreson Herbert; 1977)<sup>5</sup>. Socio-economic status (SES) is an economic and sociological combined total measure of a person’s

work experience and individual's or family's economic and social position in relation to others based on him or her income, education and occupation also. When analyzing family socio-economic status and income of households, education and occupation of earners are examined. As well as an individual versus combined income when their own attributes are assessed National Centre for Educational Statistics (2008)<sup>6</sup>. Robert (1973) has expressed that physical fitness is a matter of fundamental importance to individual's well-being and is the basis for all other forms of excellence. With increased mechanism there has been a continue decrease in the number of tasks that require an expenditure of 3 energy and sufficient vigorous exercises. As a result individual can not maintain adequate levels of physical fitness. Adequate levels of physical fitness should be developed early in life and continuously should be maintained through regular participation in the well-designed activities and programmes to promote the total well being of an individual. Children should be fit for participation in the play activities of childhood, through which they develop organic vigour, physical strength and other fitness qualities.<sup>7</sup> Strength is the key to the success in modern sports and games. Such a statement may sound extreme, but nevertheless, it is true, strength however, is the key element because it is more easily improved than the other elements. It is in fact the only element that can be improved with one hundred percent success.<sup>8</sup> The best way to develop strength is through an organized program of weight training, strength and power are accessible to all. If the program is started during Junior high school, while the body is developing and maturing rapidly, and is continued through high school, many boys will be successful who otherwise would never have been given a chance. For the same reason, college coaches should start the strength building program with their freshman teams at earliest possible date. College coaches should be recruited with knowledge that strength can be readily developed through systematic training. If a body is outstanding in high school simply because he is stronger than everyone else, he may have a very difficult time in college; Speed, skill and desire are much more important qualities to be looked after. If a boy has these, he has a chance to be outstanding even if he is relatively weak when he comes to the college. All the needs is the desire to be the best. The necessary strength can be added through isometric and isotonic training to make such a boy as good as he wants to be.<sup>9</sup> in athletics, some amount of resistance has to be over come and the greater the resistance, stronger should be the sportsman. A high level of speed, endurance, technique and other coordinated abilities are impossible if the sportsman lacks the requisite amount of strength, which is regarded as the ability of the sportsman to over come resistance orto act against it. The strength can be dynamic or static. The static (isometric) and dynamic (isotonic) strength are two principal types of strength which we come across in athletics. A more accurate measure of strength can be obtained by using dynamometers or tensiometers instruments which measure force. The maximum strength which is the highest possible resistance, a sportsman can over come through voluntary contractions of the muscles, the explosive strength which is the ability of the sportsman to overcome resistance with high speed, and the strength endurance which is the ability to act against resistance under conditions of fatigue can be developed through different weight training exercises and flexibility exercises. The maximum strength, strength endurance can be dynamic or static and the explosive strength can be dynamic.<sup>10</sup>

The aim of the study was to compare the upper body muscular strength among students of different socio-economic status groups and try to improve their life on the right track.

## Materials and methods

### Sample:

For the present study total 3600 male samples from six districts in Lucknow region i.e. Hardoi, Barabanki, Lucknow, Raebareli, Sitapur and Unnao (12 colleges with two colleges from each district from the region) aged between 18-22 years were randomly selected from these 12 colleges and they were divided into three income groups that are high income group, middle income group and low income group by using socio-economic status.

### Variables:

- a) Independent variables: Sex (Male)
- b) Dependent variables: upper body muscular strength

### 2.3 Measuring Tool:

The data was collected using the Socio-Economic Status Scale Questionnaire developed by G. P. Srivastava (1978)<sup>11</sup> and from three groups a total of 300 students, 100 students each from high-income group, middle-income group and low income group were selected for the purpose of this study using stratified random sampling technique.

### Procedure:

The upper body muscular strength was measured by 1 RM bench test. The subject was asked to perform an adequate warm up with 5-10 reps of light-to-moderate weight then after a minute rest perform two heavier warm up sets of 2-5 reps, with two minute rest between sets then performed the one-rep-max attempt with proper technique. If the lift is successful, rest was administered on two subjects at a time. Both were asked to take positions behind the starting line. The starter used the clapper to give start. At the sound of the clapper, the timekeepers on the watches and stopped, the moment subjects finished the 50metre dash, the stopwatches pressed to stop. The time was taken in seconds. Performance was recorded in seconds to the nearest tenth of a second.

### Data Analysis:

For the statistical treatment in this study one way analysis of variance (ANOVA) was applied to find out the significance difference among different socio-economic groups in relation to their upper body muscular strength level status. The level of significance was set at 0.05.

**Results and discussion:**

**Table 1.** Descriptive statistics

Variable	Groups	N	Mean	S.D.	Std. Error
Upper Body Muscular Strength	High	100	18.53	3.38	.33
	Middle	100	19.42	2.32	.23
	Lower	100	22.64	2.93	.29

**Table 2.** Analysis of Variance (ANOVA) for the variable “Upper Body Muscular Strength”

	Sum of Squares	Df	Mean Square	F
Between Groups	935.09	2	467.543	
Within Groups	2522.31	297	8.493	
Total	3457.39	299		55.05*

\*Significant at 0.05 level of confidence; Tab  $F_{(0.05)} = 2.99$

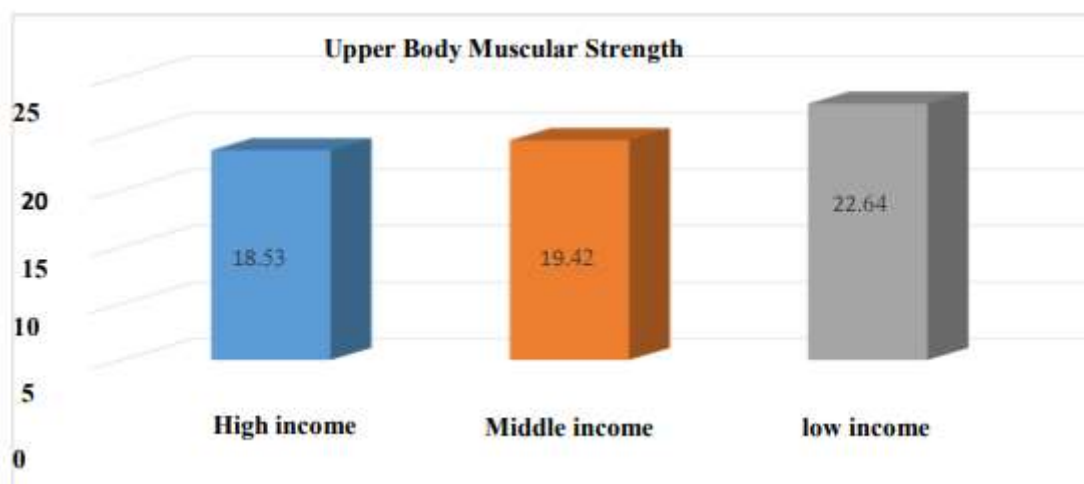
From the above cited Table 2 it is found the calculated F value (55.05) found more than tabulated F (2.99), hence there is significant difference exist among High Income Group, Middle Income Group and Low Income Group in the variable Upper Body Muscular Strength. Further Least significant difference (LSD) was carried out to know the mean significance difference among the selected income groups and it is presented in the following Table 3.

**Table 3.** Mean wise comparison among High Income Group, Middle Income Group and Low Income Group for the variable “Upper Body Muscular Strength”

High	Middle	Low	MD	Sig.
18.53	19.42		0.89*	.032
18.53		22.64	4.11*	.000
	19.42	22.64	3.22*	.000

\*Significant at 0.05 level of confidence.

Mean wise comparison for the variable Upper Body Muscular Strength is presented in the above cited Table 3, and from the table it is found that significant difference exists between High Income Group and Middle Income Group, High Income Group and low Income Group, Middle Income Group and Low Income Group.



**Fig 1.** Difference of mean among High Income Group, Middle Income Group and Low Income Group on “Upper Body Muscular Strength”

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