A COMPARATIVE STUDY OF LUNG CAPACITY AND VITAL CAPACITY AMONG DIFFERENT STREAMS STUDENT IN CHAUDHARY CHARAN SINGH UNIVERSITY MEERUT

Dr. Ambuj Sharma[1], Kpil Kumar[2]
[1]*Assistant Professor, Faculty of Physical Education & Sports,*
[2]*Research Scholar, Department of Physical Education & Sports,*
Shri Khushal Das University, Hanumangarh (Raj.).

***Abstract*- Introduction: The objective of this study was to investigate the lung capacity and vital capacity among different streams student in Chaudhary Charan Singh University Meerut (U.P.). Another objective of the study was to find out the lung capacity and vital capacity among different streams male and female students in Chaudhary Charan Singh University Meerut (U.P.).**

Methods: The subject for this study wear selected 400 students different streams in Chaudhary Charan Singh University, Meerut. The subjects wear equal divided in four groups 100 students for Physical Education stream (50 male and 50 Female Students), 100 students for Science stream (50 male and 50 Female Students), 100 students for Commerce stream (50 male and 50 Female Students) and 100 students for Arts stream (50 male and 50 Female Students). The age of the subjects wear ranged between 18 to 22 years. The selected variables to be compared were lung capacity and vital capacity. To measure lung capacity among different streams student in Chaudhary Charan Singh University Meerut, Spiro Meter was used and To measure Vital Capacity among different streams student in Chaudhary Charan Singh University Meerut, Dry-Spirometer was used. To find out significant of lung capacity and vital capacity among different streams student in Chaudhary Charan Singh University Meerut and find out the lung capacity and vital capacity among different streams male and female students in Chaudhary Charan Singh University Meerut, the one-way analysis of variance was used. The level of significance was set at .05 levels. Results and Discussion: The result reveals the one-way analysis of variance that there was significant difference (p>.05) find for lung capacity and vital capacity among different streams student in Chaudhary Charan Singh University Meerut and significant difference (p>.05) find out the lung capacity and vital capacity among different streams male and female students in Chaudhary Charan Singh University Meerut.

***Index Terms*- lung capacity and vital capacity, Stream, Student**

I. INTRODUCTION

The word physical education is unfortunate in contemporary usage, which means that education is achieved through the medium of reading of books, but not through other important experiences and from many sources. But physical education does not mean that we are educating the body, i.e. developing physical powers or developing physical skills for ourselves only. Modern physical education sees these skills as a means and then in itself as a complete or continuous end.

Man is an active creature. Despite the temptations for inaction which arises from modern techniques, humans are not fundamentally involved or sedentary creatures. He has the ability of movement to save his existence. He has all necessary neuromuscular mechanisms that make the movement possible. As the heartbeat, lung expansion and contract, nerve impulse synapses, through their complex network of cells, the digestive tract encourages the whole basic gross motor activity. Without these basic elements no living can live and be physically resent from the time the man is alive, he should proceed anyway.

Under physiological factors, we usually include those functions of the organism that are affected by changes in the external environment. As the sports competition creates an atmosphere of psychological pressure, various body capabilities such as heart rate, lung capacity, blood pressure etc. are affected, which personally affect the performance level of individual participants or teams. These factors can help prevent

external psychological pressures, adversely affect these vital physical functions.

II. METHODOLOGY

The subject for this study wear selected 400 students different streams in Chaudhary Charan Singh University, Meerut. The subjects wear equal divided in four groups 100 students for Physical Education stream (50 male and 50 Female Students), 100 students for Science stream (50 male and 50 Female Students), 100 students for Commerce stream (50 male and 50 Female Students) and 100 students for Arts stream (50 male and 50 Female Students). The age of the subjects wear ranged between 18 to 22 years. The selected variables to be compared were lung capacity and vital capacity. To measure lung capacity among different streams student in Chaudhary Charan Singh University Meerut, Spiro Meter was used and To measure Vital Capacity among different streams student in Chaudhary Charan Singh University Meerut, Dry-Spirometer was used. To find out significant of lung capacity and vital capacity among different streams student in Chaudhary Charan Singh University Meerut and find out the lung capacity and vital capacity among different streams male and female students in Chaudhary Charan Singh University Meerut, the one-way analysis of variance was used. The level of significance was set at .05 levels.

III. FINDINGS OF THE STUDY

Lung Capacity

To find out lung capacity among Physical Education, Science, Commerce and Arts stream students, analysis of variance was used and presented in table-01.

TABLE-2

Analysis of variance of lung capacity among Physical Education, Science, Commerce and Arts stream students

Source of Variance	df	SS	MSS	F-ratio
Between Group	3	332346.75	110782.25	490.105*
Within Group	396	89511	226.038	

*Significant at .05 level

F-Value required to be significant at .05 level (3, 396) = 3.83

The value shown in table-01 clearly indicates that the F-Value calculated is much higher than the required value to be the significant. Further the mean difference among the Physical Education, Science, Commerce and Arts stream students in relation to their lung capacity level through post hoc test were computed which are presented in the following tables and also are represented by figure-I.

TABLE-02

Comparison of lung capacity among Physical Education, Science, Commerce and Arts stream students

Physical Education Stream	Science Stream	Commerce Stream	Arts Stream	M.D	C.D
525.35	451.25			74.1	
525.35		471.55		53.8	
525.35			505.55	19.8	4.167*
	451.25	471.55		-20.3	
	451.25		505.55	-54.3	
		471.55	505.55	-34	

*Significant at .05 level

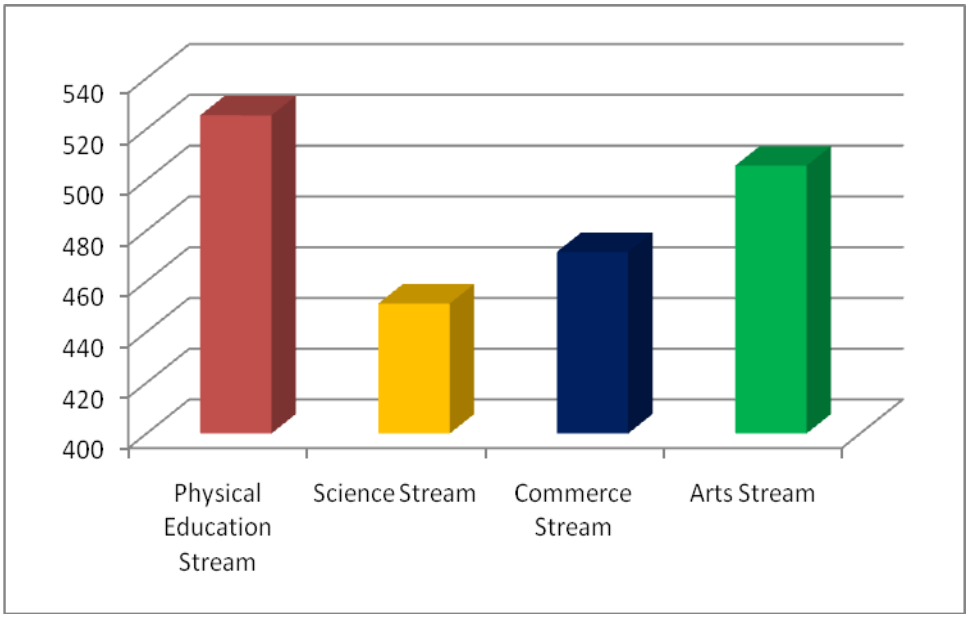
F-Value required to be significant at .05 level (3, 396) = 3.83

The post hock test is to compare the lung capacity among Physical Education, Science, Commerce and Arts stream students. It has clearly revealed the significant difference between the student of Physical Education and Science stream where the calculated mean difference found (74.1), Physical Education and Commerce stream where the calculated mean difference found (53.8), Physical Education and Arts stream where the calculated mean difference found (19.8), Science and Commerce stream where the calculated mean difference found (-20.3), Science and Arts stream where the calculated mean

difference found (-54.3) and Commerce and Arts stream where the calculated mean difference found (-34) was higher than the required value 4,167. The required value was much lower than the calculated value at .05 level of significant.

The scores are also illustrated in the figure-I

Figure-I



To find out lung capacity among Physical Education, Science, Commerce and Arts stream male students, analysis of variance was used and presented in table-03.

TABLE-03

Analysis of variance of lung capacity among Physical Education, Science, Commerce and Arts stream male students

Source of Variance	df	SS	MSS	F-ratio
Between Group	3	173306.500	57768.833	225.961*
Within Group	196	50109	255.658	

*Significant at .05 level

F-Value required to be significant at .05 level (3, 196) = 2.68

The value shown in table-03 clearly indicates that the F-Value calculated is much higher than the required value to be the significant. Further the mean difference among the Physical Education, Science, Commerce and Arts stream male students in relation to their lung capacity level through post hoc test were computed which are presented in the following tables and also are represented by figure II.

TABLE-04

Comparison of lung capacity among Physical Education, Science, Commerce and Arts stream male students

Physical Education Stream	Science Stream	Commerce Stream	Arts Stream	M.D	C.D
523.50	447.80			75.70	6.267*
523.50		470.80		52.70	
523.50			505.30	18.20	
	447.80	470.80		-23	
	447.80		505.30	-57.5	
		470.80	505.30	-34.5	

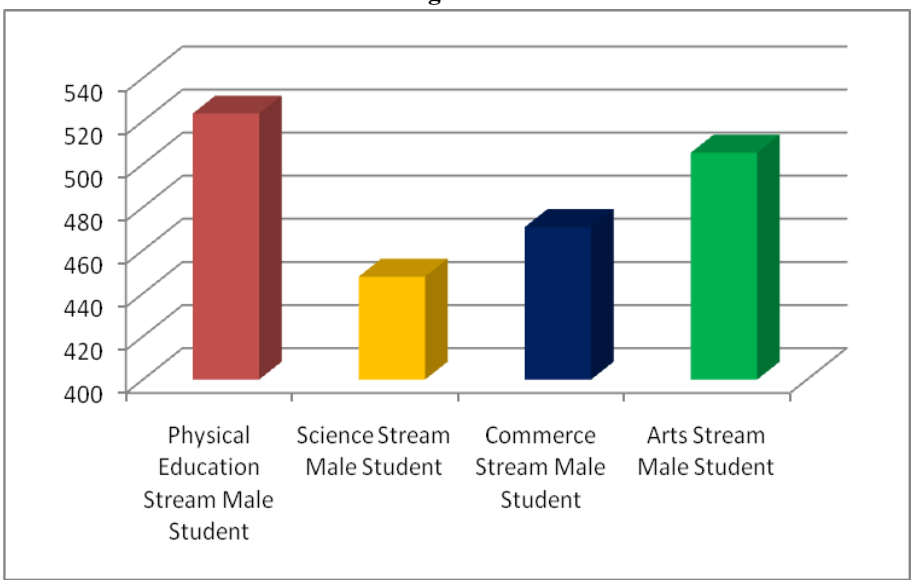
*Significant at .05 level

F-Value required to be significant at .05 level (3, 196) = 2.68

The post hock test is to compare the lung capacity among Physical Education, Science, Commerce and Arts stream male students. It has clearly revealed the significant difference between the male student of Physical Education, Science, Commerce and Arts stream. The required value was much lower than the calculated value at .05 level of significant.

The scores are also illustrated in the figure-II

Figure-II



To find out lung capacity among Physical Education, Science, Commerce and Arts stream female students, analysis of variance was used and presented in table-8.

TABLE-05

Analysis of variance of lung capacity among Physical Education, Science, Commerce and Arts stream female students

Source of Variance	df	SS	MSS	F-ratio
Between Group	3	159643	53214.333	275.875*
Within Group	196	37807	192.893	

*Significant at .05 level

F-Value required to be significant at .05 level (3, 196) = 2.68

The value shown in table-05 clearly indicates that the F-Value calculated is much higher than the required value to be the significant. Further the mean difference among the Physical Education, Science, Commerce and Arts stream female students in relation to their lung capacity level through post hoc test were computed which are presented in the following tables and also are represented by figure III.

TABLE-06

Comparison of lung capacity among Physical Education, Science, Commerce and Arts stream female students

Physical Education Stream	Science Stream	Commerce Stream	Arts Stream	M.D	C.D
527.20	454.70			72.5	5.444*
527.20		472.30		54.9	
527.20			505.80	21.4	
	454.70	472.30		-17.6	
	454.70		505.80	-51.1	
		472.30	505.80	-33.5	

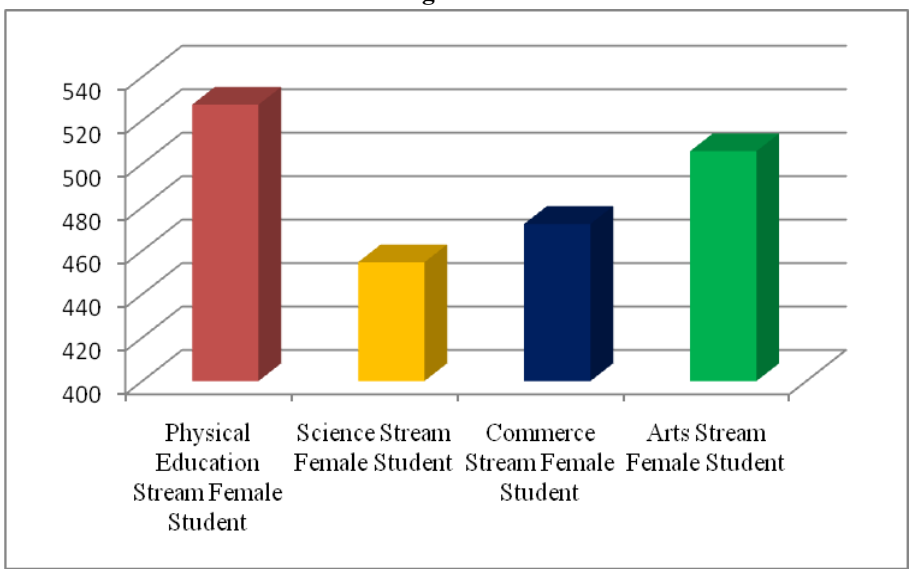
*Significant at .05 level

F-Value required to be significant at .05 level (3, 196) = 2.68

The post hock test is to compare the lung capacity among Physical Education, Science, Commerce and Arts stream female students. It has clearly revealed the significant difference between the female student of Physical Education, Science, Commerce and Arts stream. The required value was much lower than the calculated value at .05 level of significant.

The scores are also illustrated in the figure-III

Figure-III



Vital Capacity

To find out vital capacity among Physical Education, Science, Commerce and Arts stream students, analysis of variance was used and presented in table-07.

TABLE-07

Analysis of variance of vital capacity among Physical Education, Science, Commerce and Arts stream students

Source of Variance	df	SS	MSS	F-ratio
Between Group	3	54721368.75	18240456.25	518.269*
Within Group	396	13910375	35127.21	

*Significant at .05 level

F-Value required to be significant at .05 level (3, 396) = 3.83

The value shown in table-07 clearly indicates that the F-Value calculated is much higher than the required value to be the significant. Further the mean difference among the Physical Education, Science, Commerce and Arts stream students in relation to their vital capacity level through post hoc test were computed which are presented in the following tables and also are represented by figure IV.

TABLE-08

Comparison of vital capacity among Physical Education, Science, Commerce and Arts stream students

Physical Education Stream	Science Stream	Commerce Stream	Arts Stream	M.D	C.D
5354	4392			962	51.959*
5354		4626		728	
5354			5033	321	
	4392	4626		-234	
	4392		5033	-641	
		4626	5033	-407	

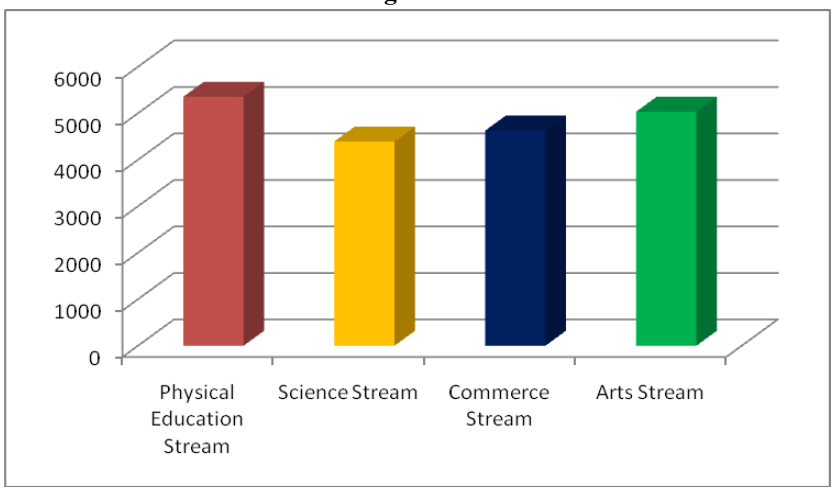
*Significant at .05 level

F-Value required to be significant at .05 level (3, 396) = 3.83

The post hock test is to compare the vital capacity among Physical Education, Science, Commerce and Arts stream students. It has clearly revealed the significant difference between the student of Physical Education and Science stream where the calculated mean difference found (962), Physical Education and Commerce stream where the calculated mean difference found (728), Physical Education and Arts stream where the calculated mean difference found (321), Science and Commerce stream where the calculated mean difference found (-234), Science and Arts stream where the calculated mean difference found (-641) and Commerce and Arts stream where the calculated mean difference found (-407) was higher than the required value 4,167. The required value was much lower than the calculated value at .05 level of significant.

The scores are also illustrated in the figure-IV

Figure-IV



To find out vital capacity among Physical Education, Science, Commerce and Arts stream male students, analysis of variance was used and presented in table-09.

TABLE-09

Analysis of variance of vital capacity among Physical Education, Science, Commerce and Arts stream male students

Source of Variance	df	SS	MSS	F-ratio
Between Group	3	29405250	9801750	256.889*
Within Group	396	7478500	38155.612	

*Significant at .05 level

F-Value required to be significant at .05 level (3, 196) = 2.68

The value shown in table-09 clearly indicates that the F-Value calculated is much higher than the required value to be the significant. Further the mean difference among the Physical Education, Science, Commerce and Arts stream male students in relation to their vital capacity level through post hoc test were computed which are presented in the following tables and also are represented by figure V.

TABLE-10

Comparison of vital capacity among Physical Education, Science, Commerce and Arts stream male students

Physical Education Stream	Science Stream	Commerce Stream	Arts Stream	M.D	C.D
5364	4368			996	
5364		4607		757	
5364			5031	333	75.57*
	4368	4607		-239	
	4368		5031	-663	
		4607	5031	-424	

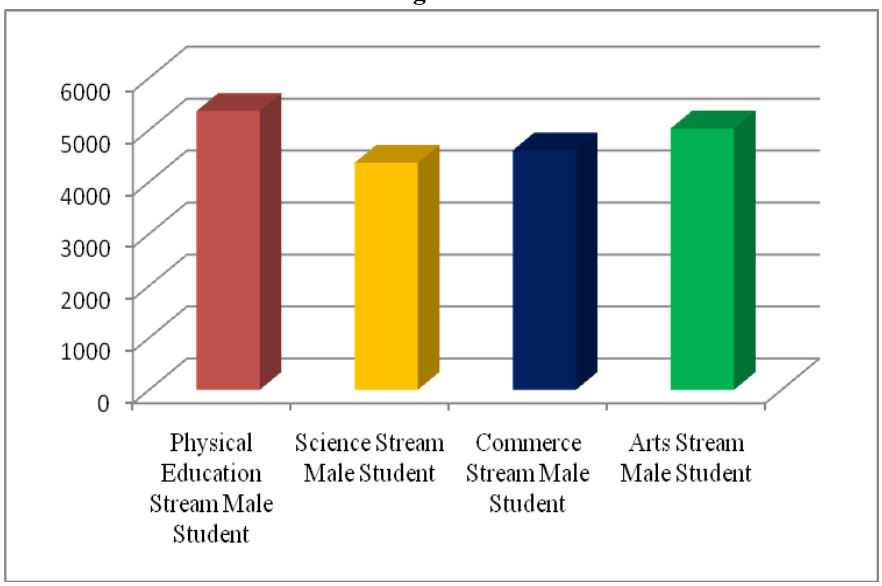
*Significant at .05 level

F-Value required to be significant at .05 level (3, 196) = 2.68

The post hock test is to compare the vital capacity among Physical Education, Science, Commerce and Arts stream female students. It has clearly revealed the significant difference between the male student of Physical Education, Science, Commerce and Arts stream. The required value was much lower than the calculated value at .05 level of significant.

The scores are also illustrated in the figure-V

Figure-V



To find out vital capacity among Physical Education, Science, Commerce and Arts stream female students, analysis of variance was used and presented in table-11.

TABLE-11

Analysis of variance of vital capacity among Physical Education, Science, Commerce and Arts stream female students

Source of Variance	df	SS	MSS	F-ratio
Between Group	3	25390637.500	8463545.833	262.234*
Within Group	396	6325850	32274.745	

*Significant at .05 level

F-Value required to be significant at .05 level (3, 196) = 2.68

The value shown in table-11 clearly indicates that the F-Value calculated is much higher than the required value to be the significant. Further the mean difference among the Physical Education, Science, Commerce and Arts stream female students in relation to their vital capacity level through post hoc test were computed which are presented in the following tables and also are represented by figure VI.

TABLE-11

Comparison of vital capacity among Physical Education, Science, Commerce and Arts stream female students

Physical Education Stream	Science Stream	Commerce Stream	Arts Stream	M.D	C.D
5344	4416			928	70.42*
5344		4646		698	
5344			5035	309	
	4416	4646		-230	
	4416		5035	-619	
		4646	5035	-389	

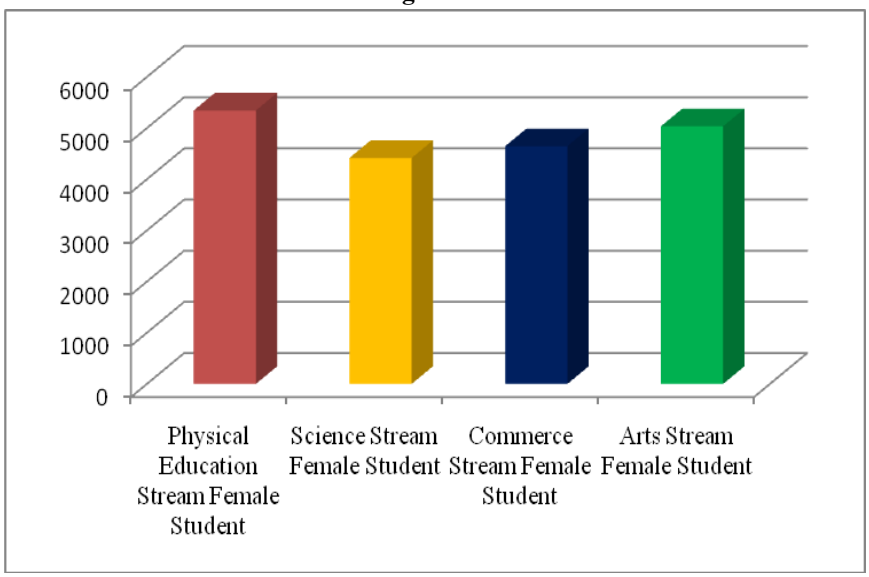
*Significant at .05 level

F-Value required to be significant at .05 level (3, 196) = 2.68

The post hock test is to compare the vital capacity among Physical Education, Science, Commerce and Arts stream female students. It has clearly revealed the significant difference between the female student of Physical Education, Science, Commerce and Arts stream. The required value was much lower than the calculated value at .05 level of significant.

The scores are also illustrated in the figure-VI

Figure-VI



IV. DISCUSSION OF THE RESULT

The present investigation was designed to know the lung capacity and vital capacity among different streams student in Chaudhary Charan Singh, University, Meerut. The purpose of this study was revealed some specific differences for lung capacity and vital capacity among different streams male and female student in Chaudhary Charan Singh, University, Meerut. The research scholars did not intend to explore personal life of different streams students. Various tools have been used to find out the important differences in aspects of lung capacity and vital capacity of different streams students to achieve the purpose of this research.

The result of the study revealed significant difference among the mean scores of students of different streams in relation to lung capacity and vital capacity. The This fact can be attributed to the different streams conditions, as all the students studying in different streams (Physical Education, Science, Commerce and Arts), due to which differences have been found in the lung capacity and vital capacity of all these students. Sharma A. S. (2017), the conduct of the study on the topic "A comparative study of selected physiological variables between active and sedentary college students. Kumar M. (2018) the conduct of the study on the topic "Comparative study of some physiological variables of professional students". Shah Shabir Ahmad & Shah Mohammad Muzamil (2016), conduct a study on topic "Difference in psychological variables among various categories of school employees: a comparative study", which appears in the current study.

V. CONCLUSION

The comparative study of lung capacity and vital capacity among students from different academic streams at Chaudhary Charan Singh University, Meerut, reveals notable differences influenced by lifestyle, physical activity, and academic demands. Students from physical education and sports science streams demonstrated significantly higher lung and vital capacities compared to those from arts, commerce, and science backgrounds. This disparity can be attributed to their regular engagement in physical activities, which enhances respiratory efficiency.

The findings underscore the impact of physical fitness on respiratory health and suggest that incorporating regular physical exercise into the routine of students from all streams could contribute to improved lung function. Moreover, the study highlights the need for awareness programs within the university to promote physical well-being alongside academic development.

Overall, this research emphasizes the importance of maintaining a balanced lifestyle and recommends

integrating structured physical activity into university curricula across all disciplines to foster better respiratory and overall health among students.

REFERENCES

[1]. Angela Lumpkin. (1986), "*Physical Education: A Contemporary Introduction*", Saint Louis: Times Mirror /Mosby College Publishing.

[2]. Baliyan J.K. (2017), "*A comparative study of vital capacity of sport man and non sportsman*" VSRD International Journal of Technical & Non-Technical Research, Vol. VIII Special Issue November, pp. 43-44.

[3]. Gema T. L., Raquel H.G., Raquel E. M. and at all (2016), "*Physical and Physiological Characteristics of Judo Athletes: An Update*", Sports – Open Access Journal, vol. 4 No. 20.

[4]. Gil, S. M., Gil, J., Ruiz, F., Irazusta, A. & Irazusta, J. (2007), "*Physiological and anthropometric characteristics of young soccer players according to their playing position: relevance for the selection process*", Journal of strength and conditioning research, 21 (2), 438- 45.

[5]. Kumar M. (2018), "*Comparative study of some physiological variables of professional students*" International Journal of physiological nutrition and physical education, Vol. 3 Issue 1, pp. 1909-1911.

[6]. Sadri R.N. (1993), "Promotion of Sports: A Special Necessity", Competition Success Review, p. 24 - 27.www.answer.com/topic/locus-of-control.

[7]. Shah Shabir Ahmad & Shah Mohammad Muzamil (2016), "*Difference in psychological variables among various categories of school employees: a comparative study*", International Research Journal of Commerce Arts and Science, Vol. 7 No. 1, pp. 109-114.

[8]. Sharma A.S. (2017), "*A comparative study of selected physiological variables between active and sedentary college students"* International Journal of physical education, sports and health, Vol. 4 Issue 2, pp. 100-102.

[9]. Singh Agyajit (1992), "*Sports Psychology: A Study of Indian Sportsmen",* Friends Publications, Delhi.

[10]. Singh C., Rana V., Singh V. (2017) "*Effect of Aerobic exercises on selected physical and physiological variables of school children*" VSRD International Journal of Technical & Non-Technical Research, Vol. VIII Special Issue November, pp. 192-195.

[11]. Wessel J. A. & Wayne V. H. (1974), "*Therapeutic Aspects of Exercise in Medicine Science and Medicine of Exercise and Sports*", Ha pan and Raw Publishers, New York.