International Journal of Physical Education & Sports Sciences
Vol. 15, Issue No. 2, October-2020, ISSN 2231-3745

DOI: https://doi.org/10.29070/6cxgjy81

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# Comparative Study of Physical and Physiological Variables between High and Low Performance of Men Table Tennis Players

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**Abstract:** The Purpose of the study was to compare the selected Physical and Physiological variables of High and Low Performance of Men Table Tennis Players. For the purpose of the study fifteen university (15) and fifteen non-university (15), male table tennis players were selected. Their age was ranged between 18-25 years. The selected physical and physiological variables were BMI (body mass index), flexibility, and Vital Capacity. Flexibility was measured through Sit and Reach Test, BMI was measured through a Bioelectrical Impedance analyzer and vital capacity was measured through Spirometer. The flexibility of the subjects was measured in centimeters. Body Mass Index of subjects was measured latent scores. Vital capacity of the subjects was measured in liters. Mean and standard deviation was used as descriptive statistics and an independent t-test was as a statistical technique in the study. The level of significance was set at 0.05. The result showed no significant difference in Body Mass Index and Flexibility between the university and non-university players but showed a significant difference in Vital Capacity.

**Keywords:** comparative study, physical variables, physiological variables, high performance, low performance, men table tennis players, university players, non-university players, BMI, flexibility, vital capacity, Sit and Reach Test, Bioelectrical Impedance analyzer, Spirometer, mean, standard deviation, independent t-test, level of significance

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## INTRODUCTION

Sport is one of the avenues of man's never ceasing strive for excellence. Its uniqueness lies in the intimacy between the physical happenings of human bodies and their repercussions on their minds as well as in the general reconcilability of the social and aesthetic values which sport engenders. Sport evokes experiences that are exclusively human and independent of the changing forms, patterns and customs of a civilization which involves profoundly modifying concepts of our environment.

According to Clarke, H. Harrison (1976) in a society where materials values predominates, participation solely for pleasure, recreation and allied benefits in any activity such as sports, that demands much time, energy and self-discipline is not likely to be very popular or widely practiced doctrine, especially when the nations of the world are openly using sports as an approach to national fitness and International prestige.

'Fitness' and 'training' are the most misused and over-used words in English language. Sir roger Bannister defined "Physical fitness" as a state of mental and physical harmony which enables someone to carry on his occupation to the best of his ability with the greatest happiness. Bemergee A. Richard (1982)

mentioned that fitness for sports and work has an absolute and a relative meaning in absolute terms, the man that can run the fastest, Jump the highest output during a working day, must be the fit for the particular activity.

Modern Table Tennis at national and international level is a rigorous as any sport in its demands for the highest degree of physical fitness and mental concentration, attained only by arduous training to develop natural skill. Fred Perry, World Men's Singles Table Tennis Champion in 1928-29, later achieved even greater fame at Wimbledon; perhaps it would not be quite true to say that he moved to the larger court when his play became too slow for the table, but it is certainly true that no sport requires faster reactions and more delicate muscular co-ordination than Table Tennis.

Table tennis is a sport which is played over the table. If you have to perform at the highest level you should have excellent physical and physiological ability. As this game demands quick reaction time to perform skills we should have quick visual skills as well as flexibility and endurance to perform at the same level. The present study was used for testing the comparison between physical and physiological variables of the university and non-university players.

## MATERIAL AND METHODS

For the purpose of the study a total 30 participant were selected, in which fifteen (15) university player and fifteen (15) non-university players were selected from Lakshmibai National institute of Physical Education, Gwalior (M.P.). The age of the subjects was ranged between 18-25 years. Purposive sampling technique was used as a sampling technique.

**Criterion Measure:**

Flexibility was measured through Sit and Reach Test in centimeters. Body Mass Index of subjects was measured through Bioelectrical Impedance analyzer in latent scores. Vital capacity was measured through Spirometer in liters.

**Administration of the Tests:**

***Sit and Reach Test*** measures the flexibility of the subjects. For this purpose flexometer was used. The subject had to remove their shoes and sits on the floor and then perform the movement with joint hands without any jerk. The score is recorded to the nearest half-centimeter as the distance before (negative) or beyond (positive) the baseline.

***The Body Mass Index*** of the subjects was measured through a bioelectrical impedance machine. The subject will lie on the bed and the wire of the machine will be attached to the foot of the subject. The output generated by the bioelectrical impedance machine will be taken as a score.

***Vital Capacity was*** measured through dryspirometer. The subject has to exhale the air in the pipe of the spirometer in an attempt. The scores will be given according to performance.

**Collection of Data**

The data was collected during the off season in the premises of Lakshmibai National Institute of Physical

Education Gwalior (M.P.).

**Statistical Technique**

With regard to purpose of the study, descriptive statistics mean and standard deviation was used. Independent t-test was used as a statistical technique for the study. The level of significance was set at 0.05.

## ANALYSIS OF DATA

For each of the variables in the study first descriptive analysis was done and for comparison independent t-test was applied for university and non-university players.

**Table 1: Descriptive statistics of BMI, Flexibility and Vital Capacity**

| S. No. | Selected Variables | University Players | | Non University Players | |
|---|---|---|---|---|---|
| | | Mean | Standard Deviation | Mean | Standard Deviation |
| 1 | BMI | 23.01 | 2.569 | 23.82 | 3.350 |
| 2 | Flexibility | 11.940 | 3.249 | 11.620 | 1.709 |
| 3 | Vital Capacity | 2.909 | .1291 | 2.480 | .0447 |

Table-1 showed the descriptive statistics mean and standard deviation for both university and non-university players on selected physical, and physiological variables i.e. BMI, Flexibility and Vital Capacity.

**Table 2: Results of independent t-test on selected physical and physiological variables**

| S. No. | Variables | Groups | T-Value | P-Value |
|---|---|---|---|---|
| 1 | BMI | University players | .429 | .680 |
| | | Non-University Players | | |
| 2 | Flexibility | University players | .195 | .850 |
| | | Non-University Players | | |
| 3 | vital Capacity | University players | 3.286 | .011* |
| | | Non-University Players | | |

***significant at .05 level of significance***

Table-2 showed the results of independent sample t-test. The results of the study showed no significant difference in BMI and Flexibility of the university and non-university players as an obtained p-value of BMI (p-0.680), Flexibility (p-0.850) is more than the 0.05 level of significance. In Vital Capacity, results showed a significant difference as the obtained p-value (0.011) is lesser than the 0.05 level of significance value.

## DISCUSSION

The comparative study was conducted between the university and non-university players on grounds of BMI, flexibility, and vital capacity. From the result it was found that there exists no significant difference

in Body Mass Index between the university and non-university players, hence the BMI of both the groups in the study contains no remarkable difference. Findings of Flexibility to reveal no mark of difference between the mean and comparative figures between the university and non-university table tennis players. Further, the variable Vital Capacity displays some noticeable difference between the two, there exists a significant difference in Vital Capacity between the university and non-university players.

## CONCLUSION

Performance delivery by athletes depends on various factors, in the game of table tennis various physical, physiological and psychological factors are responsible for high end performance. This comparative study worked to find out the determinantal variables which may differ in high performance players and low performance players. The study concluded the physical variables such as BMI and flexibility carry no difference between the university and non-university players but, they differ significantly on their vital capacity which is an important indicator of high performance athletes.

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