



**A COMPARATIVE STUDY OF SELECTED PHYSIOLOGICAL AND PSYCHOMOTOR VARIABLES BETWEEN PLAYERS OF ACADEMIC COLLEGES AND PHYSICAL EDUCATION COLLEGES OF NAGPUR DISTRICT**

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**Abstract:** The psychomotor domain is mainly concerned with bodily movements and their control. Psychomotor learning is the relationship between cognitive functions and physical movement. Psychomotor learning is demonstrated by physical skills such as movement, coordination, manipulation, dexterity, grace, strength, speed; actions which demonstrate the fine motor skills such as use of precision instruments or tools, or actions which evidence gross motor skills such as the use of the body in dance, musical or athletic performance. Physiology is the science of the function of living systems. Human physiology is the science of the mechanical, physical and biochemical functions of humans in good health, their organs, and the cells of which they are composed. The main objective of the study was to compare selected physiological and psychomotor variables between players of academic colleges and physical education colleges of Nagpur district. The subjects selected for the study were inter-collegiate male players between the age group of 18 to 25 years only. For the requirement of the study thirty (30) players from Academic College and thirty (30) players from Physical Education College were selected from Nagpur district. Random and purposive sampling method was used for selection of samples. Different criterion measures were used for different test i.e. for Physiological test i) Pulse rate and ii) Blood Pressure and for Psycho-motor i) Kinesthetic perception ii) Speed of movement. t-test was used as statistical technique and the level of significance was set at 0.05. From the analysis of the data it was evident that there was no significant difference found in the performance of the pulse rate, blood pressure, Distance Perception Jump and Nelson Speed of Movement among Academic College and Physical Education College Players of Nagpur District.

**Introduction:**

Sport is conceived as a psycho-physical phenomenon in the modern times. When one analyses the sports-skills, almost all motor movements are found to be backed by one or the other psychological factor. Since sport is so visible and influential, psychomotor abilities are receiving considerable attention with an increasing number of individuals wishing to be involved in their explorations. Noble (1968) argued that motor skills can be defined as merely muscular actions modified by learning variables. Singer (1979) reported that activities which are primarily movement oriented and emphasis overt physical responses bear the label 'psychomotor'. They encompass controlling, manipulating and/or moving an object; controlling the body of the object such as balancing, moving and/or controlling the body or the part of the body in space with timing in a brief or long act or sequence under predictable and unpredictable situation. Human physiology is the science

of the mechanical, physical and biochemical functions of humans in good health, their organs, and the cells of which they are composed. The principal level of focus of physiology is at the level of organs and systems within systems. Much of the foundation of knowledge in human physiology was provided by animal experimentation.

Praveen kumar Mishra and Prabhash Puri(2015) conducted a comparative study of Psycho-Motor Abilities of Sports Girls and Non-Sports Girls of Track and Field. To determine hand-eye coordination of the selected subjects, Mirror Drawing Test was used. Simple reaction time of the selected girl's Track and Field was assessed by Nelson Test. The results reveal no significant difference in selected psychomotor abilities of Track and Field with Sports Girls and Non-Sports Girls origin.

Sanjiv Dutta(2015) conducted a Comparative Study of Psychomotor Abilities of Athletes in Relation to Sex and Area. The

t-ratio technique was applied to study the difference among different groups. Male and female players differed significantly on various parameters. The players from rural and urban areas also differ in their psychomotor abilities.

Beena Negi and Amrita Pritam(2012) conducted a Comparative Study of Physiological Variables of Female Cricket Players at Different Levels of Participation. The findings shows that players of Group-I (Interuniversity and national level) are better in blood pressure diastolic, pulse rate, respiratory rate and breath holding from the Group-II (inter-college and state level) women cricket players.

#### **Methodology:**

The subjects selected for the study were inter-collegiate male players between the age group of 18 to 25 years only. For the requirement of the study thirty (30) players from academic college and thirty (30) players from Physical Education College were selected from Nagpur district. Random and purposive sampling method was used for selection of samples. Different criterion measures were used for different test i.e. for Physiological test i) Pulse rate and ii) Blood Pressure and for Psycho-motor i) Kinesthetic perception ii) Speed of movement. t-test was used as statistical technique and the level of significance was set at 0.05.

#### **Criterion Measure**

The criterion to measure the physiological variables and psychomotor variables adopted for this study is as follows:

##### **Physiology**

Pulse Rate (Heart Rate): Score was recorded to the BPMs (beats per minute).

Blood Pressure: Score was recorded expressed as systolic and diastolic pressure (mm Hg- millimetres of mercury).

##### **Psychomotor**

Kinesthetic perception: This variable was measure by “Distance Perception Jump” and was recorded to the nearest inch.

Speed of Movement: This variable was measure by using “Nelson Speed of Movement Test” and was recorded in centimetres.

#### **Administration of Test**

##### **Physiological**

Name of the test: pulse rate

PORPUSE: To measure Pulse Rate.

EQUIPMENTS: Digital meter, pencil, score sheet and pad.

PROCEDURE: The automatic (Digital) was measured.

SCORING: The score was recorded to the bpms (beats per minute).

NAME OF THE TEST: BLOOD PRESSURE

PORPUSE: To measure blood pressure.

EQUIPMENTS: Sphygmomanometer, pencil, score sheet and pad.

PROCEDURE: The automatic (Digital) sphygmomanometer was measured.

SCORING: The score was expressed as systolic and diastolic pressure (mm Hg- millimetres of mercury).

PSYCHO-MOTOR TEST

KINESTHETIC PERCEPTION

NAME OF THE TEST: DISTANCE PERCEPTION JUMP

OBJECTIVE: To measure ability to perceive distance by concentrating on the effort involved in a jump.

##### **Equipments And Materials:**

Yardstick or tape measure, Blindfolds, chalk, pencil, score sheet, pad.

DIRECTIONS: The performer was instructed to sense the distance between two lines without the practice trail. The blindfold was then put on and the subject jumps from behind the starting line trying to land with the heels as close the target line as possible. He was allowed to saw where he land on each trail. Ten trails was given.

SCORING: For each jump the distance of the nearest ¼ inch from the target line to the farthest heel was measured and recorded. The score was the total for ten jumps.

SPEED OF MOVEMENT

NAME OF THE TEST: NELSON SPEED OF MOVEMENT TEST

OBJECTIVE: To measure combined reaction and speed of movement of the hands.

**Test Equipments and Materials:** Nelson Reaction timer, table and chair, chalk or tape, ruler, score sheet and pad

**DIRECTIONS:** The subject sits at a table with his hands resting on the edge of the table. The palms was facing one another with the inside border of the little fingers along two lines, which were marked on the edge of the table 12 inches apart. The tester was hold the wooden meter scale its top so that it hangs midway between the subject's palms. The base line should be positioned so it was level with the upper edges of the subject's index finger.

After the preparatory command "ready" was gave, the meter scale was released and the subject attempt to stop it as quickly as possible by clapping the hands together. The subjects must be careful not to allow his hands to move up or down when he was claped the hands together. Twenty trails were given to every subject.

**SCORING:** The score for the combined response-movement was read from the timer at the point jump above the upper edge of the hand after the catch the average of the middle ten trails, after the slowest and fastest five trails had been discarded, was recorded.

#### **Statistical Analysis:**

Comparison of the means of selected Physiological and Psychomotor variables of Academic college players and Physical Education college players:

Variables	Means of Academic college players	Means of Physical Education College players	DM	t-ratio
Pulse Rate	81.83	80.27	1.56	0.62
Systolic Blood Pressure	123.03	121.83	1.20	0.40
Diastolic Blood Pressure	78.03	79.00	0.97	0.43
Distance Perception Jump	21.13	20.97	0.16	0.09
Nelson Speed of Movement test	120.93	118.17	2.76	0.45

From the above table it reveals that there was no significant difference found in the performance of pulse rate, blood pressure, Distance Perception Jump and Nelson Speed of Movement among Academic

College and Physical Education College's Players of Nagpur District

#### **Discussion of Findings:**

The purpose of the investigation was to see that there was significant difference between the Pulse rate, Blood pressure, Kinesthetic perception, speed of movement among Academic College and Physical Education College's Players of Nagpur District.

From the analysis of the data it was evident that there is no significant difference found in the performance of the pulse rate, blood pressure, Distance Perception Jump and Nelson Speed of Movement among Academic College and Physical Education College's Players of Nagpur District. This may be because of the following reasons:

Players related for this study were inter-collegiate players of Rashtrasant Tukadoji Maharaj University, Nagpur. These players might have played all the games in the same sports calendar.

All the players were ranged between the ages of 18 to 25 years.

Players related to academic colleges may get training in different clubs during the session; it improves their Physiological and Psychomotor capacity.

#### **Conclusion:**

Within the limitation of the present study and on the basis of the finding, the following conclusions were drawn:

There is no significant difference in Pulse rate between Academic College and Physical Education College's Players of Nagpur District.

There is no significant difference in Systolic pressure (blood pressure) between Academic College and Physical Education College's Players of Nagpur District.

There is no significant difference in Diastolic pressure (blood pressure) between Academic College and Physical Education College's Players of Nagpur District.

There is no significant difference in Kinesthetic perception between Academic College and Physical Education College's Players of Nagpur District.

There is no significant difference in Speed of movement between Academic

College and Physical Education College's Players of Nagpur District.

**References:**

- 1) (n.d.). Retrieved from [www.everythingbio.com /glos/physiology](http://www.everythingbio.com/glos/physiology).
- 2) (n.d.). Retrieved from <http://dictionary.reference.com/browse/breath-holding+test>
- 3) **A. K. Uppal**. Physical Fitness: How to Develop. Friend Publication.
- 4) **Ajmer Singh, J. B. (2003)**. Essentials of Physical Education. kalyani Publication, New Delhi.
- 5) **B. C. Kapri, B. M. A to Z Soccer**. Friends Publication.
- 6) **Beena Negi, A. P. (2012)**. Comparative Study of Physiological Variables Of Female Cricket Players At Different Levels Of Participation. International Journal of Research Review in Engineering Science and Technology, 1.
- 7) **S. Vijay and V. Gopinath (2010)**. Analysis of psychomotor quality between high and low achievers of south zone Inter University men Tennis players”, International Journal of Physical Education, Vol.3, No.1&2, pp.41-43.
- 8) **K. Kansal, D.** Textbook of applied of Applied Measurement Evaluation & Sports Selection. D.A.V. Publication, New Dehli.
- 9) **Klangovan, M. K. (2006)**. The Effect Of Yoga On The Selected Motor Ability Components Physiological And Psychological Variables Of Deaf And Dumb Students. Indian Journal Of Sports Studies , 87.
- 10) **Kumari, M. S. (2011)**. A Comparative Study of Cardio-vascular Endurance of various post Graduate Department of Sant Gadge Baba Amravati University of Maharashtra State. Journal of Health And Sports Science , 6 (1), 38.
- 11) **Munish Agnihotri, A. P. (2005)**. The Effect Of Dynamic Intervention Program On Physical And Physiological Fitness Variables. Indian Journal Of Sports Studies , 5, 41-46.
- 12) **Rather, R. A. (2013)**. The comparative study of physical and physiological variables with short and medium distances runners. International Journal of Health, Physical Education and Computer Science in Sports , 10, 37-39.
- 13) **Sharon, W. W. (1997)**. Principles and Lab for Physical Fitness. Colorado: Morton Publication Company.
- 14) Srivastava, A. How to Coach Football. Sports Publication, New Delhi.
- 15) **Barry L. Johanson & Jack K. Nelson, (1988)** Practical Measurements for Evaluation in Physical Education. 3rd Ed; Surjeet Publications, Kamal Nagar, New Delhi, ,pp.340-341.

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