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ORIGINAL ARTICLE

RELATIONSHIP OF SELECTED PHYSIOLOGICAL AND PHYSICAL VARIABLES TO PERFOMANCE IN HIGH JUMP

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Abstract:

The study was conducted on selected Physiological Variables and physical variables with a purpose to find out the relationship of selected Physiological Variables and physical variables to the performance of high jump. The female high jumpers of Gujarat State were selected as subject for the study. The Physiological Variables selected for the study were Resting heart rate, Resting respiratory rate, Body composition ,Breath Holding Capacity and Physical Variables selected for the study were, Speed (50 yard dash), Agility (10 x 4 yards Shuttle run), Explosive Leg Strength (Standing Broad Jump) and flexibility (Sit and reach). Relationship of selected physiological and physical variables to performance in high jump was calculated by using Product Moment Method of Co-relation. Result of the study showed that the calculated value of "r" for Explosive Leg Strength (standing broad jump), Leg Length, Arm Length, Agility (shuttle run 4x10yard), flexibility (Sit and reach and Speed (50 Yard dash) was found to be significant at 0.05 level of confidence. Further it was evident from the table that variables resting heart rate and resting respiratory rate were found to be statistically insignificant to the performance in high jump.

KEY WORDS:

Physiological , Physical Variables , environment conditions .

INTRODUCTION

OBJECTIVE OF THE STUDY: -

The purpose of the study was to find out the relationship of selected Physiological and physical variables to the performance of high jump.

Subjects: -

Ten female High Jumpers of Gujarat State were selected as subject for the study. The age of the subjects was ranged from19 to 25 years. Only those subjects were selected who could jump 1.30 meters or above. The subjects were from different states and union territories of India. The factors such as diet, daily routine of works and environment conditions were identical for all the subjects.

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Variables: -

The following Physiological and Physical Variables were selected for the purpose of the study: -

1.Physiological Variables

(i)Resting heart rate
(ii) Resting respiratory rate
(iii)Body composition
(iv)Breath Holding Capacity

2.Physical Variables

(i)Speed (50 yard dash)
(ii)Agility (10 x 4 yards Shuttle run)
(iii)Explosive Leg Strength (Standing Broad Jump)
(iv)Flexibility (Sit and Reach)

Measures: -

Criterion measures for testing the hypothesis were following: -

(i)Speed was measured by 50-yard dash and was recorded in 1/10 of the second.
(ii)Agility was measured by 10 x 4 yards shuttle run and was recorded in 1/10 of the second.
(iii)Explosive Leg Strength was measured by Standing Broad Jump and was recorded in centimeters.
(iv)Flexibility was measured by Sit and reaches and was recorded in seconds.
(v)Pulpatory method (Pulse rate count) was used to measure the Resting Heart Rate. Score was recorded in numbers of pulse per minute.
(vi)Resting respiratory rate was measured by manual method over a period of one minute.
(vii)Breath holding was measured by manual method and the score was recorded in second.
(viii)Total Body fat percentage was measured by skin fold calipers and with help of Slown Weir Nomogram Technique score was recorded in percentage.

Analysis: -

The relationship of selected physiological and physical variables to performance in high jump was calculated by using Product Moment Method of Co-relation.

Findings: -

To determine the relationship between the independent variables namely selected physiological variable, i.e. Resting heart rate, Resting respiratory rate, Body composition, Breath Holding Capacity and selected physical variables, i.e. Explosive Leg Strength (standing broad jump), Speed (50 yard dash), Agility (4x10yards Shuttle run), flexibility (sit and reach) and dependent variables namely performance in high jump, the product moment method of correlation was applied. The frequencies of deviation for X and Y variables were recorded and their products were ordained and analyzed. The product moment of all the sequences were computed with due regard to plus and minus sings, and on the basis of plus and minus sing entries were also made carefully in the “X” and “Y” column. All the products moment were circled to facilitate addition. For obtaining the Correlation (“r”) between the independent variables the formula was used and the results relating to this are presented in Table-1.

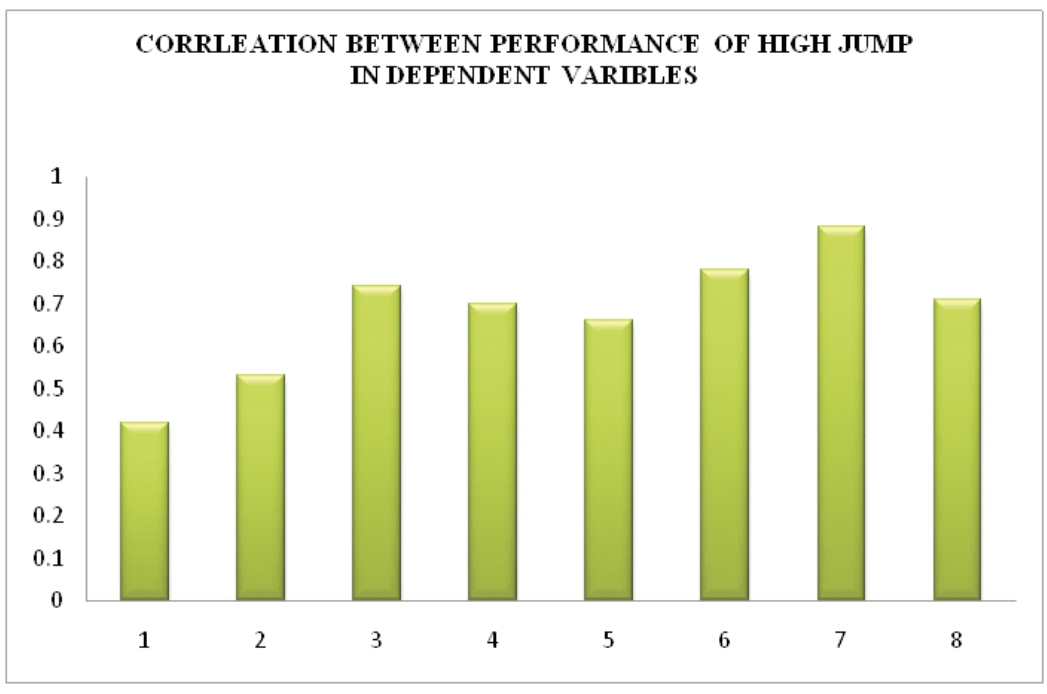
Table-1
COFFICIENT OF CORRELATION BETWEEN DEPENTEDENT AND INDEPENDENT VARIABLES

S.No.	Variables	Coefficient of Correlation
1	Performance in High Jump and Resting heart rate	0.42
2	Performance in High Jump and Resting respiratory rate	0.53
3	Performance in High Jump and Body composition	0.74*
4	Performance in High Jump and Breath Holding Capacity	0.70*
5	Performance in High Jump and Flexibility	0.66*
6	Performance in High Jump and Explosive Leg Strength	0.78*
7	Performance in High Jump and Speed	0.88*
8	Performance in High Jump and Agility	0.71*

Significant at 0.05 level of confidence.

The tabulated value of "r" required being significant at 0.05 level of confidence for degree of freedom = 0.632.

Table –1 shows that the calculated value of "r" for Explosive Leg Strength (standing broad jump), Body composition, Breath Holding Capacity, Agility (shuttle run 4x10yard) Flexibility (Sit and reach) and Speed (50 Yard dash) was found to be significant at 0.05 level of confidence. Further it was evident from the table that variables, Resting heart rate and Resting respiratory rate were found to be statistically insignificant to the performance in high jump.



RELATIONSHIP OF SELECTED PHYSIOLOGICAL AND PHYSICAL VARIABLES TO PERFOMANCE IN HIGH JUMP

1- Resting heart rate
2-Resting respiratory rate
3- Body composition
4- Breath Holding Capacity
5-Flexibility
6-Explosive Leg Length
7-Speed
8-Agility

CONCLUSION: -

With the limitation of the study, the following conclusions were drawn:

1.Significant: - There was significant correlation between Explosive Leg Strength (standing broad jump), Body composition, Breath Holding Capacity, Agility (shuttle run 4x10yard) Flexibility (Sit and reach) and Speed (50 Yard dash) and the performance of high jump.
2.Insignificant: - There was significant correlation between resting heart rate and resting respiratory rate to performance. Therefore, it crucial factors for a successive High Jump performance whereas height and weight were not important factors influencing performance in high jump.

DISCUSSION: -

In the light of the conclusion drawn, the following discussions were made the Physical Education Teacher, Coaches, Sports Scientists and High Jumpers:

1.In the training programme for high jumper considerable emphasis must be laid on improvement Explosive Leg Strength (standing broad jump), Body composition, Breath Holding Capacity, Agility (shuttle run 4x10yard) Flexibility (Sit and reach) and Speed (50 Yard dash) and the performance of high jump.
2. It is recommend designing an experimental study involving specialized conditioning programme with the specific aim of developing the performance and then finding the factors influencing level of performance.

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