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Comparison of selected physiological variables between normal and physically challenged children

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Abstract
The present study intended to find out the comparison between selected Physiological variables between normally and physically challenged children. Twenty twenty subjects of 10-15 years age were randomly selected from Delhi state. Only selected physiological variables i.e. the Resting Heart rate, Vital capacity and Blood Pressure (systolic and diastolic), breath holding capacity and fat percentage of the subjects were measured by using respective techniques and equipments. The between-group differences were assessed by using independent t-test. The level of $p \leq 0.05$ was considered significant. The results have shown a significant difference in the selected physiological variables (Vital capacity and Negative breath holding capacity) between normally and physically challenged children.

Keywords: physiological variables physically challenged, vital capacity, breath holding capacity etc.

Introduction
All the programmes of physical education are developed with the intent to help in individual to attain the fullest possible growth in every manner. Every disabled person, either physically or mentally, should have the right to live in a world that does not see him or her as handicapped, but as a person with a unique set of abilities and life potentials. For ex mental retardation, a condition characterized by some degree of intellectual impairment, has undoubtedly existed and has been recognized since the emergence of human race.

Approximately 6.5 million Americans meet the criteria of the mentally retarded population, 89% are mildly retarded (IQs of 53 to 70). The moderately retarded individuals, who have IQs within the range of 36 to 52, comprise about 6% of the mentally retarded population. Severely mentally retarded individuals who have IQs between 20 and 35 points comprise about 3.5% of the mentally retarded population and profoundly mentally retarded individuals who have IQs between 0 and 20 comprise about 1.5% of the population.

Some researchers have suggested that all learning, academic as well as motor depend upon the early locomotor and manipulated experiences. The mentally retarded children need physical education and a valuable service can be rendered by providing programmes for these students. Research reports indicate that they have been denied a planned programme in physical education, after they are placed in regular physical education classes without regard to their unique needs.

Methodology
For the purpose of the study 20-20 normal and physically challenged children form age

Selection of Variables
- Fat Percentage (Biceps Skinfold, Triceps Skinfold, Sub scapular region skinfold, Supra-iliac Region Skinfold)
- Vital Capacity
- Breathe Holding Capacity
  - Maximum Breath Holding capacity
  - Positive Breath Holding capacity
  - Negative Breath Holding capacity

- Resting Blood Pressure
- Resting Heart Rate

Tools used for Data Collection

The criterion measure was used to collect the data in a deal and systematic way to record in a correct unit and style for each test item.

For measuring the fat Percentage the sum of the skinfold thickness of all four sites of the body was converted into percentage body fat with the help of standard table suggested by Durnin and Rehman.

- **Fat percentage** of the subjects was measured with the help of The Lange's Skinfold Caliper which is used to assess the thickness of subcutaneous fat and the measurement was taken to the nearest millimeter from four different specific sites using the caliper.
- **Lean Body Mass:** The lean body weight was calculated by subtracting the weight of the body fat (kg.) from the total body weight. (Kg.)
- **Vital Capacity:** Vital capacity of the subjects was measured by the dry Spirometer which is made by M.S. Krausz Harari Ltd., England.
- **Breath Holding Capacity: (**Maximum Breath holding time, Positive and Negative Breath holding Time**)** The Breath holding time of the subjects is measured by stopwatch**.**
- **Resting Blood Pressure:** The resting Blood Pressure of the subjects is measured by the Sphygmomanometer and the unit was measured in mm of Hg.
- **Resting Heart Rate**: Heart rate of the subjects was measured with the help of stopwatch and measurement was in number of beats / minute. The basal pulse rate was measured for the study.

Statistical Technique

In order to compare the selected physiological variables between normal and physically challenged children, independent t-test was applied.

Data Analysis

The analysis of the data (Physiological variables) collected from two groups, 20 normal children and 20 physically challenged children, both from 10 – 15 years of age groups. Selected Physiological Variables served as a tool for collection of data. In order to determine the significance difference between means of score of normal and challenged children, independent t-test is used and the level of significance was set at 0.05.

Results & Discussion

Table 1: Significant Difference of Systolic Blood Pressure between the Normal and Physically Challenged Children

	Normal children	Physically challenged children	"t" ratio
Mean	119.5	120	
			.175
SD	2.57	2.215	

Significant t 0.05 (38) = 2.021.

Since the calculated t (.175) is less than tabulated t (2.021) at 0.05 level of significance, it may be concluded that systolic blood pressure of normal & physically challenged children is same.

In order to determine significance difference on diastolic pressure between normal and children, t – test were applied. The result pertaining to the presented in table – 2.

Table 2: Significant Difference of Diastolic Pressure between the Normal and Physically Challenged Children

	Normal children	Physically challenged children	"t" ratio
Mean	80.1	80.9	
			.371
SD	2.64	2.22	

Significant t 0.05 (38) = 2.021.

Since the calculated t (.371) is less than tabulated t (2.021) at 0.05 level of significance, it may be concluded that diastolic blood pressure of normal & physically challenged children is same.

In order to determine significance difference on vital capacity between normal and challenged children, independent t – test was applied and the result pertaining to the vital capacity have been presented in table – 3.

Table 3: Significant Difference of Vital Capacity between the Normal and Physically Challenged Children

	Normal children	Physically challenged children	"t" ratio
Mean	1.38	1.04	
			6.01*
SD	.142	.09	

*Significant t 0.05 (38) = 2.021.

Since the calculated t (6.01) is greater than tabulated t (2.021) at 0.05 level of significance, it may be concluded that there is significant difference on Vital Capacity between normal & physically challenged children.

Table – 3 reveals that the significant difference on Vital Capacity between normal and challenged children was 6.01, which is greater than the required value of (t=2.021) at 0.05 level of significance.

In order to determine significance difference on Resting heart rate between normal and physically challenged children, independent t – test was applied. The result pertaining to the Resting heart rate has been presented in table – 4.

Table 4: Significant Difference of Resting Heart Rate between the Normal and Physically Challenged Children

	Normal children	Physically challenged children	"t" ratio
Mean	71.8	74.05	
			.28
SD	1.82	1.173	

Significant t 0.05 (38) = 2.021.

Since the calculated t (.28) is less than tabulated t (2.021) at 0.05 level of significance, it may be concluded that Resting Heart Rate of normal & physically challenged children have no significant differences.

In order to determine significance difference on Positive Breath Holding Capacity between normal and physically challenged children, t – test was applied. The result pertaining to the Positive Breath Holding Capacity has been presented in table – 5.

Table 5: Significant Difference of Positive Breath Holding Capacity between the Normal and Physically Challenged Children

	Normal children	Physically challenged children	"t" ratio
Mean	27.6	21.75	
			.22
SD	6.66	2.575	

Significant t 0.05 (38) = 2.021.

Since the calculated t (.22) is less than tabulated t (2.021) at 0.05 level of significance, it may be concluded that the positive breath holding capacity of normal & physically challenged children have no significant differences.

In order to determine significance difference on Negative Breath holding capacity between normal and physically challenged children, independent t – test was applied. The result pertaining to the Negative Breath holding capacity has been presented in table – 6.

Table 6: Significant Difference of Negative Breath Holding Between the Normal and Physically Challenged Children

	Normal children	Physically challenged children	"t" ratio
Mean	17.6	11.6	
			7.20*
SD	4.19	1.69	

*Significant t 0.05 (38) = 2.021.

Since the calculated t (7.20) is greater than tabulated t (2.021) at 0.05 level of significance, it may be concluded that there is significant difference in negative breath holding capacity between normal and physically challenged children.

Table – 6 reveals that the significant difference on negative breath holding capacity between normal and challenged children was 7.20, which is higher than the required value of (t=2.021) at 0.05 level of significance.

Table 7: Significant Difference of Fat Percentage between the Normal and Physically Challenged Children

	Normal children	Physically challenged children	"t" ratio
Mean	18.01	15.65	
			1.85
SD	.98	.78	

Significant t 0.05 (38) = 2.021.

Since the calculated t (1.85) is less than tabulated t (2.021) at 0.05 level of significance, it may be concluded that the fat percentage of normal & physically challenged children not significantly different.

In order to determine significance difference on fat percentage between normal and physically challenged children, independent t – test was applied. The result has been presented in table – 7.

Discussion of Findings

The analysis of the data revealed that the significance difference between normal and physically challenged children of Systolic blood pressure (0.175), diastolic blood pressure (0.371), Resting Heart Rate (0.28), Positive Breath Holding capacity (0.22) and Fat percentage (1.85) which is much lower than the required value of (t=2.021) at 0.05 level of significance.

Whereas, the analysis of the data revealed that the significance difference exist between normal and physically challenged children of vital capacity (6.01) and Negative breath holding capacity (7.20) which is much higher than the required value of (t=2.021) at 0.05 level of significance.

The vital capacity of an individual reflects his lung capacity, which was found to be better in normal children. When one talks about the differences and their cause among both the groups it should be noted that exercise bring changes in the lung expansion, physically challenged children have limited body movements in comparison to normal children and it is justified that their lung volume of normal children improves with movement/running etc and hence the differences in vital capacity and negative breath holding capacity are justified.

Conclusions

Within the limitation of the study, following conclusions may be drawn:

1. The blood pressure has shown insignificant relationship between normal and physically challenged children.
2. The vital capacity of normal children in better than physically challenged children.
3. The Resting heart rate has show insignificant relationship

between both the groups.

4. The Fat percentage has shown insignificant relationship between both the groups.

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