

## Isolated and Combined Effect of Aquatic Activities and Yogic Practices on Selected Physiological Variables among Physically Challenged Children

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### Abstract

A research study conducted on isolated and combined effect of aquatic activities and yogic practices on selected physiological variables among physically challenged children. Eighty (80) students studying at Amar Jyoti school and rehabilitation centre, Gwalior, were taken randomly as subjects of the study their age ranged between 10 to 15 years and divided into four equal groups namely control group, aquatic training group, yogic practice group, and combined training group. The pre-test and post-test were taken before and after the completion of six weeks of training in aquatic activities, yogic practice and combined training. The significance difference between the experimental groups I, II, III and control group the pre-test and post-test were determined through analysis of covariance (ANCOVA). The adjusted post-test means were computed by ANCOVA and the significant analysis were compared by applying post-hoc test. The level of significance of the study was set at 0.05%.

The mean difference between said dependent and independent variables (Aquatic training, Yogic Practices, Combined training in relation to resting heart rate) were 7.26, 6.80, 8.12, 0.46, 0.86, and 1.31 respectively and the mean difference between dependent and independent variables (Aquatic training, Yogic Practices, Combined training in relation to vital capacity) were 0.30, 0.43, 0.28, 0.13, 0.02, and 0.15 respectively. Hence significant difference was found with the comparison of various CI and other statistical values on resting heart rate and vital capacity of physically challenged children.

**KEYWORDS:** Physiological Variables: Resting Heart Rate & Vital Capacity and Physically Challenged Children

### INTRODUCTION

There are tremendous changes in physical education and sports science and assumption about now physically challenged children are to be physically educated now changing day by day. When the education for all physically challenged children's, act of 1975 was enacted physical education was the only educational curriculum specifically named. This singular identification has placed unique opportunities and responsibilities on physical education profession to serve physically challenged population.

Aquatic activities provide a mean for training and conditioning individuals of all ages, and all particularly well suited for developmental and physically challenged children. It should be pointed out that if a specific aquatic activity is not actually planned and conducted often very little physical activity takes place. Aquatic activities such as water skiing, scuba diving, and boating avenues are for increasing independence and

normalization. Today, aquatic activities are used as part of sports medicine and physical therapy programmed and often in rehabilitation of sports injuries. Recent development in rehabilitation and sports medicine include deep water running and adaptive activities. Aquatic activities, as a therapeutic medium, are also used by people with physical, mental, emotional disabilities.

Physically and mental therapy is one of yoga's most important achievement. What make it so powerful effective are the facts that are works on the holistic principles of harmony and unification. Yoga has succeeded as an alternative form of therapy in disease as asthma, diabetes, blood pressure, and constitutional nature where modern science has not. Yoga provides a means for people to find their own way of connecting with their true selves. Through this connection with their real selves, it is possible for people to manifest harmony in the current age and for compassion to emerge where hitherto there has been none.

### MEANS AND METHODOLOGY

To facilitate this study and reached up to the valid conclusion 80 (Eighty) students studying at Amar Jyoti school and rehabilitation centre, Gwalior, were taken randomly as subjects of the study their age ranged between 10 to 15 years and divided into four equal groups namely control group, aquatic training group, yogic practice group, and combined training group. The pre-test and post-test were taken before and after the completion of six weeks of training in aquatic activities, yogic practice and combined training. The significance difference between the experimental groups I, II, III and control group the pre-test and post-test were determined through analysis of covariance (ANCOVA). The adjusted post-test means were computed by ANCOVA and the significant analysis were compared by applying post-hoc test. The level of significance of the study was set at 0.05%.

**TABLE – I**

**Analysis of Covariance of the Means of Three Experimental Groups and the Control Group in Resting Heart Rate**

| Mean               | Control Group | EXP. I | EXP. II | EXP. III | SV  | df | SS     | MS     | Obt. "F" |
|--------------------|---------------|--------|---------|----------|-----|----|--------|--------|----------|
| Pre Test           | 84.15         | 84.45  | 84.3    | 84.7     | B/W | 3  | 3.3    | 1.1    | 2.60     |
|                    |               |        |         |          | W/N | 76 | 217.9  | 2.86   |          |
| Post Test          | 84.4          | 77.15  | 77.6    | 76.3     | B/W | 3  | 835.13 | 278.38 | 95.15    |
|                    |               |        |         |          | W/N | 76 | 222.35 | 2.92   |          |
| Adjusted Post Mean | 84.41         | 77.14  | 77.60   | 77.29    | B/W | 3  | 831.14 | 277.04 | 93.66    |
|                    |               |        |         |          | W/N | 75 | 221.82 | 2.95   |          |

\*Significant, table F ratio at 0.05 level of significance for 3, 76 (df) = 2.72, 2 and 75 (df) = 2.73, SV = source of variance, SS – Sum of Variance, MS = Means of Square.

**TABLE – II**  
**Scheffe Post Hoc Comparison of Experimental Groups and Control Group in Resting Heart Rate**

| Control Group | Exp. I | Exp. II | Exp. III | Mean Difference | C.I. |
|---------------|--------|---------|----------|-----------------|------|
| 84.41         | 77.15  |         |          | 7.26            | 1.55 |
| 84.41         |        | 77.60   |          | 6.80            |      |
| 84.41         |        |         | 76.28    | 8.12            |      |
|               | 77.15  | 77.60   |          | -0.45           |      |
|               | 77.15  |         | 76.28    | 0.86            |      |
|               |        | 77.60   | 76.28    | 1.31            |      |

**Results of Resting Heart Rate**

Table shows that the pre-test means of control, aquatic training, yogic practice and combination training were 84.15, 84.45, 84.3 and 84.7 respectively. The F ratio value was 2.72. When compare to table F value and the obtained F value of 2.60 was lower and not significant at 0.05 level of significance.

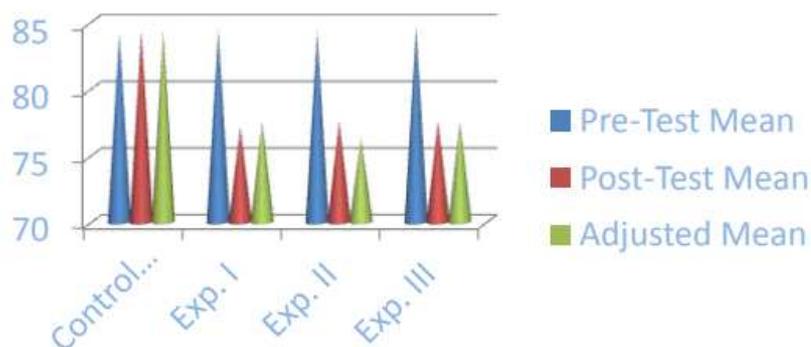
Table shows that the post-test means of control, aquatic training, yogic practice and combination training were 84.4, 77.15, 77.6 and 76.3 respectively. The F ratio value was 2.72. When compare to table F value and the obtained F value of 95.15 was higher and significant at 0.05 level of significance.

Table shows that the adjusted post-test means of control, aquatic training, yogic practice and combination training were 84.41, 77.14, 77.60 and 77.29 respectively. The F ratio value was 2.73. When compare to table F value and the obtained F value of 93.66 was higher and significant at 0.05 level of significance.

Table shows that the adjusted post-test means of control, aquatic training, yogic practice and combination training were 84.41, 77.14, 77.60 and 77.29 respectively.

The mean difference between control and aquatic training, control and yogic practice, control and combined training, aquatic and yogic practice, aquatic and combination and yogic practice and combined training were 7.26, 6.80, 8.12, 0.46, 0.86, and 1.31 respectively. The Scheffe’s Post hoc test confidence interval value was 2.23. Hence there was significant difference between control and aquatic training groups and control and yogic training group and control and combined training group. Other groups do not have any significant difference.

**Figure – I**  
**Cone Graph of Ordered Adjusted Mean of Resting Heart Rate**



**TABLE – III**

**Analysis of Covariance of the Means of Three Experimental Groups and the Control Group in Vital Capacity**

| Mean               | Control Group | EXP. I | EXP. II | EXP. III | SV  | df | SS     | MS     | Obt. "F" |
|--------------------|---------------|--------|---------|----------|-----|----|--------|--------|----------|
| Pre Test           | 2.01          | 2.009  | 2.004   | 2.01     | B/W | 3  | 0.0008 | 0.0003 | 301.04*  |
|                    |               |        |         |          | W/N | 76 | 6.64   | 0.09   |          |
| Post Test          | 2.02          | 2.325  | 2.46    | 2.30     | B/W | 3  | 2.05   | 0.69   | 13.03*   |
|                    |               |        |         |          | W/N | 76 | 3.99   | 0.05   |          |
| Adjusted Post Mean | 2.02          | 2.325  | 2.46    | 2.30     | B/W | 3  | 2.05   | 0.69   | 12.88*   |
|                    |               |        |         |          | W/N | 75 | 3.99   | 0.05   |          |

\*Significant, table F ratio at 0.05 level of significance for 3, 76 (df) = 2.72, 2 and 75 (df) = 2.73, SV = source of variance, SS – Sum of Variance, MS = Means of Square.

**TABLE – II**

**Scheffe Post Hoc Comparison of Experimental Groups and Control Group in Vital Capacity**

| Control Group | Exp. I | Exp. II | Exp. III | Mean Difference | C.I. |
|---------------|--------|---------|----------|-----------------|------|
| 2.02          | 2.32   |         |          | -0.31           | 0.21 |
| 2.02          |        | 2.45    |          | -0.44           |      |
| 2.02          |        |         | 2.30     | -0.29           |      |
|               | 2.32   | 2.45    |          | -0.13           |      |
|               | 2.32   |         | 2.30     | 0.02            |      |
|               |        | 2.45    | 2.30     | 0.15            |      |

**Results of Vital Capacity**

Table shows that the pre-test means of control, aquatic training, yogic practice and combination training were 2.01, 2.009, 2.004 and 2.01 respectively. The F ratio value was 2.72. When compare to table F value and the obtained F value of 301.04 was higher and significant at 0.05 level of significance.

Table shows that the post-test means of control, aquatic training, yogic practice and combination training were 2.02, 2.325, 2.46, and 2.30 respectively. The F ratio value was 2.72. When compare to table F value and the obtained F value of 13.03 was higher and significant at 0.05 level of significance.

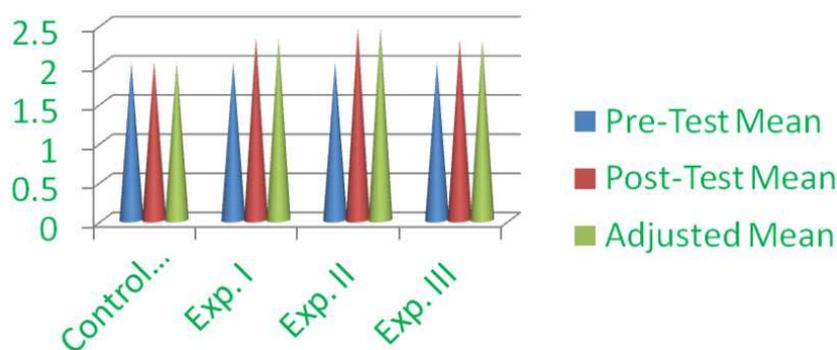
Table shows that the adjusted post-test means of control, aquatic training, yogic practice and combination training were 2.02, 2.33, 2.46, and 2.30 respectively. The F ratio value was 2.73. When compare to table F value and the obtained F value of 12.88 was higher and significant at 0.05 level of significance.

Table shows that the adjusted post-test means of control, aquatic training, yogic practice and combination training were 2.02, 2.33, 2.46, and 2.30 respectively. The

mean difference between control and aquatic training, control and yogic practice, control and combined training, aquatic and yogic practice, aquatic and combination and yogic practice and combined training were 0.30, 0.43, 0.28, 0.13, 0.02, and 0.15 respectively. The scheffe,s Post hoc test confidence interval value was 0.21. Hence there was significant difference between control and aquatic training groups and control and yogic training group and control and combined training group. Other groups do not have any significant difference

**Figure – II**

**Cone Graph of Ordered Adjusted Mean of Resting Heart Rate**



## DISCUSSION ON FINDINGS

Findings of the study shows that there was a significant improvement in resting heart rate of physically challenged children. This may be attributed to the fact due to influence of isolated training of aquatic training, yogic practices and combination of both the training.

Findings of the study also shows that there was a significant improvement in vital capacity of physically challenged children. This may be attributed to the fact due to influence of isolated training of aquatic training, yogic practices and combination of both the training.

## CONCLUSION

After drawn the results of the study is concluded that resting heart rate was significantly decreased due to six weeks of aquatic activities and yogic practice and combined training among physically challenged children. This is also concluded that the vital capacity was increased due to six weeks of aquatic activities and yogic practice and combined training among physically challenged children. Combined training of aquatic training and yogic practice also plays a significant role in the performance of resting heart rate and vital capacity.

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