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## EFFECT OF ASANAS AND WEIGHT TRAINING EXERCISES ON PHYSICAL AND PHYSIOLOGICAL VARIABLES ON PERFORMANCE OF SWIMMERS



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**Introduction :** The strong emotion for new records is increasingly seen as a result every attempt is being made by the coaches and athletes to do their best during the competition. The performance of an athlete during the competition is affected by many factors, i.e. technical, social, psychological and his physical condition. Another important factor affecting the performance is considered to be the physical readiness of the performer just before the competition, which is obtained through proper toning up of the body muscles.

Every exercise involves the use of many muscles in a given exercise, however, will place a greater load on some of these muscles than on others. For example, the performance of the supine pullover exercise will contract many muscles, but will place the greatest overload on the arm depressor muscles. A given exercise consequently can be used to develop a specific muscle or muscle group. The physical conditioning required for good swimming performance is made up of three major components: (1) strength, (2) endurance, and (3) flexibility.

1. Strength can be defined as the ability of a muscle or a group of muscles to overcome resistance or create tension—push, pull, or lift. 2. Endurance is the ability of a muscle or the body as a whole to repeat an activity many times 3. Flexibility or mobility is the ability of the joints and the body as a whole to move easily through the normal range of movement. Yogic asanas is especially beneficial to sportsmen is a com-

paratively new discovery. This is because our sportsmen are being trained on the western lines by vigorous physical exercises to limber up toughen, the muscles and build up stamina. Perhaps the general tendency of belittling any thing ancient and Indian made Indian sportsmen and coaches to look at yoga as an oriental religious ritual, rather than a set of physical exercises.

Nowadays in international competitions or in major tournaments, teams have to play tough matches morning and evening of after a gap of only a few hours. In many countries, water-jet massage and Sauna bath are used to recoup the fatigued sportsmen for another immediate competition soon after a vigorous, physical activity. Instead, a few yoga stretching exercises coupled with a few full deep breathing exercises can relax the individual to the maximum and make him physically and mentally ready for another competition immediately. And this is a very natural way for sportsmen for getting into the relaxed condition.

**Selection of Subjects :** One hundred and fifty male swimmers (participated at District, College level and Above) were selected by random method as subjects of this study. All the subjects were aged 20 years and above. All the subjects belonged to varying socio-economic status. All the subjects had fairly well developed physique. The health examination of all the subjects by medical experts was conducted in order to ascertain the suitability subjects for the study. The requirements to test the subjects were explained to all

subjects in presence of in-charge Asanas and Weight-Training teachers. The procedure was also explained to them. All the subjects assured the co-operation with enthusiasm and were ready to go through the schedule tests etc. All subjects' were physically fit experienced swimmers and were the students of physical colleges.

**Collection of Data, Analysis of Data and Results of the Study :** The statistical analysis of the data gathered on 150 swimmers, who attended 6 months training. In the selected physical variables i.e. Height, Body Weight, Chest Girth, Arms Girth, Calf Girth, Thigh Girth, Waist Girth, Shoulder Girth, Roger's Strength Index, Pull ups, Push ups, Arms Strength Grip Strength, Back Strength, Legs Strength. Endurance and Reaction Time and in physiological variables i.e. Pulse Rate, Respiratory Rate, Breath Holding Time, Blood pressure and lungs capacity were carried out following standardized procedures.

Weight training group which was trained for six months by giving modern type of isotonic exercises like weight training i.e., Bench press. Backward arm press, Half squat, Jumping quarter squats, Supine arm pullover, elbow extension forward arm depressors etc. One way analysis of variance technique was used and post hoc test was applied to check the significant differences between the pair of groups. The endurance was measured by the distance run in 12 minutes Cooper run/walk test, after the completion of six months training, the score which was made by the subjects was computed to measure the reliability of the performance. All the physical and physiological variables like pulse rate, lungs capacity, legs strength, grip strength, back strength, breath holding time were measured before study and after the completion of training too. The level of significance was fixed at 0.05 which was considered to be the most appropriate. In fact the researcher tried his best to use' highly sophisticated equipments available in the country to find out the best results. The results obtained for each of the variables and the findings have been given below in the table. Physical & Physiological Variables of Control, Asanas and Weight Training Groups. After completing the administration of tests, it was found that there was no significant difference in the below mentioned variables between the various treatment groups.

Hence, no tables are shown for the below mentioned variables:- 1. Height 2. Body Weight 3. Chest Girth 4. Arms Girth 5. Thigh Girth 6. Calf Girth 7. Waist Girth 8. Shoulder Girth. 9. Breath Holding

**Discussion of Findings :** The results of the study have clearly indicated that there was no significant difference found in Height Weight Waist Girth shoulder Girth Leg Strength and Breath Holding Time. Adams<sup>1</sup> in studying age, height, weight and power has also concluded that in the individual performance age, height, weight alone was found to be of little value. In another longitudinal study<sup>2</sup> (5 years) in which height. Weight and skin fold measurements were taken on 10 girl's gymnastics (ages 12 .to 17 years) and seven untrained girls of similar age both groups achieved the same means for height and weight at the end of 5 year.

**Pull ups :** Results have indicated adequate and significant effects for the Improvements in pull ups by doing asanas as well as weight training exercise, but weight training exercises have shown better results than asanas exercises.

**Push ups :** The results have indicated the significant effects in Push-ups by doing asanas as well as weight 'training exercises, but weight training exercises have shown better results than asanas exercises. Jerry's<sup>3</sup> analysis of variance on posttest push-ups performance was found satisfactory at .10 level.

**Arms Strength :** The results have indicated adequate and significant results for the improvement of arms

strength by doing weight training exercises. Weight training exercises have proved better to produce significant improvement than asanas exercises, John<sup>4</sup> in his investigation could not find out any significant increase in strength, Waddle<sup>5</sup> programme produced significant increase in strength measurements.

**Roger's Strength Index :** Most significant effects have been noticed by doing asanas as well as weight training exercises. It is proved that weight training exercises are still better than asanas exercises to gain the strength for. Increasing Roger's Strength Index. Davidson Billys<sup>6</sup> has proved the gain in strength Cotton Ooyice Jennings<sup>7</sup>, in his study has proved increase in strength. Frank K. Robinson who in his study has found an Increase In strength Arnold S Nelson<sup>8</sup> study has also shown an Increase In muscular strength Harold Joe Fishcer's, study also indicated an increase in strength. Mall and Mall<sup>9</sup> also proved positive effect of isometric exercises.

**Lungs Capacity :** Significant effects have been noticed to improve the lungs capacity either by doing asanas or by doing weight training exercises.

**Grip Strength :** Results have indicated that there is no improvement in grip strength either by doing asanas or weight training exercises

**Back Strength :** Results have proved that there is no improvement in back strength by doing asanas as well as weight training exercises.

**Legs Strength :** Results have indicated that there is no improvement in legs strength either by doing asanas or weight training exercises LJ Silvester<sup>10</sup> has drawn the conclusion that all training systems caused big strength in all strength measurements.

**Pulse Rate :** It has been proved that weight training exercises are better than asanas for the improvement in pulse rate

**Respiratory Rate :** No significant difference is noticed either by doing asanas or by doing weight training exercises.

**Blood Pressure -Diastolic :** Results have indicated that there is no significant effect on blood pressure by doing asanas or weight training exercises. Martha Stepetus<sup>11</sup> has concluded that Isotonic exer-

cises increased systolic blood pressure.

**Reaction Time :** Significant effects have been noticed to improve the reaction time by doing asanas as well as weight training exercises.

Smith<sup>12</sup> found that reaction time and velocity of the arm when in a state of stretch was not significantly faster than the arm was relaxed or tensed, several studies Owens<sup>13</sup> Herry<sup>14</sup> and Clarke<sup>15</sup> have reported low correlations between reaction time and movement time.

**Endurance :** Results have proved that there is lot of improvement in endurance by doing weight training exercises. Mean difference has proved that weight training exercises are better than asanas exercises to gain improvement in endurance.

**Summary :** It is evident that swimmers mostly perform asanas, traditional exercises, weight training exercises, land exercises either with or without equipments. Now a days coaches started giving emphasis of scientific training (leg kick, breathing exercises, correct start, turns etc.) to improve the performance of swimmers Some of the coaches give more emphasis on asanas and on the other hand some others give emphasis on weight training exercises in our country. There is no positive type of plan to perfect economic and efficient type of plan of exercises to Improve the efficiency of swimmers. Most of the countries have progressed to the greater extent in general and games and sports in particular. Swimming is one of the most popular sport in Olympics Therefore the leading countries probably play much more attention to their swimmers The main cause of our poor performance In the international competitions is probably the lack of scientific training. Scientific training, endurance and strength plays a great role In the performance of swimming Thus there is a need to arrive at a conclusion by experimenting the various types of training methods which could be responsible to bring the desired results. The purpose of this study was to compare the effect of asanas, exercises and weight training exercises on physical and physiological variables on swimmers. The available literature indicated that weight training exercises have an effect on physical and physiological variables Shrl Kabalyananda and other experts have given more emphasis on asanas exercises. In order to study the effect, 150 swimmers were

chosen from physical colleges and were divided into three groups. Subjects of asanas groups were assigned to perform yogic exercises. The subjects of weight training groups were involved in doing weight training; weight lifting exercises etc. while subjects of control group did not perform any particular activity during the assigned time for practice. The practice sessions were held for 1 hour daily for six months under the trained leadership. The obtained data from pre and post tests were, analyzed by one way analysis of variance, which was further subjected to Scheffe's of Post Hoc test when 'F' values, of the groups was found significant. The measurements were taken by most sophisticated equipment available in the country.

**Conclusions :** The results of the study have indicated that

1. Asanas exercises have proved significantly effective in Improving pull ups, push ups, Roger's Strength Index, Lungs capacity, Reaction time. 2. Weight Training exercises have proved significantly effective in improving pull ups, push ups, arms strength, Roger's strength index, lungs capacity, grip strength, legs strength, pulse rate, reaction time, endurance. 3. Mean difference between asanas and weight training groups have proved that weight training exercises are better

than asanas exercises to gain improvement in Roger's strength index, grip strength and endurance. 4. Improvement in these variables without any change in physical variable height, weight, chest girth, arms girth, thigh girth, calf girth, waist girth, shoulder girth shows that the asanas as well as weight training exercises resulted in increasing the efficiency of the subjects.

**Recommendations :** In the light of the results of this study, It is recommended that:

1. Extensive and specific studies should be conducted on various training aspects on swimming. 2. Studies in greater details may be conducted on the effects of asanas and weight training exercises on various other variables and systems of the body. 3. Comparative studies may be conducted to make swimming more successful on scientific lines and firm footings. 4. Weight training exercises are advocated to train swimmers as well as other players to gain pull ups, push ups, arms strength, Roger's strength index, lungs capacity, grip strength, pulse rate, reaction time and endurance. 5. Asanas exercises are advocated to gain pull ups, push ups, Roger's strength index, lungs capacity and reaction time. 6. Seminars, workshops, clinics should be conducted from time to time to keep pace with the advancement of the world as well as to gain knowledge or research in swimming.

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