

Influence of seasonal changes on performance of swimmers

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The purpose of the study was to investigate the effect of seasonal changes on performance of swimmers. For this study, 20 State level male swimmers specialized in 50 meter and 100 meter backstroke swimming from different clubs of West Bengal were considered as subjects. Subjects were selected purposively and the age of the subjects ranged from 15 to 17 years. To find out the differences in relation to the performance of swimmers between summer and winter season, t test was employed. To analysis the collected data, level of significance was set at 0.05 level. The result showed that there was significant difference of 50 meters and 100 meter backstroke Swimming Performance in winter as well as in summer.

Keywords: Performance, swimmer, seasonal changes.

I. INTRODUCTION

Life was first sustained in water and that it took millions of years before it was established on land. Millions more passed before man came into being. As a land animal and man learned to walk upright, taking the weight of his body on his feet, and he discovered that the water, where he could no longer walk upright and employ his muscles as on land, was a source of danger (N.W. Sarsfield, 1965). Man learned to swim long before it was possible for him to leave us any written record of his aquatic accomplishments (Robert Bartels, 1969). Most animal swim by instinct, even those who do not really like water, and can swim at their first attempt by performing their accustomed movements of running (Edna Simms, 1963). Man, on the other hand, has to be taught this art and he finds the process of learning to swim somewhat artificial inspite of the fact that water is the first natural element for man

Childhood is considered one of the most important stages in mans life. During this stage, a childs abilities develop and his talents mature and she/he gets manageable and docile. This makes the early years crucial for his/her future as they have a profound effect on his/her lifelong formation. This also makes the attention paid to childhood one of the most important criteria against which the progress of any society is measured (El-lababidy and khalaima, 1993). important determinant of success in many sports, and in top level sport there would appear to be a tendency for individuals to gravitate towards the event to which they are anthropometrically best suited. (Garay et. al, 1974) Swimming is one of the most exciting of Olympic sports as it offers many challenges and attractions for sport and recreation pur-

poses. Swimming is also an attractive pastime, its cardiovascular benefits being promoted for health and general fitness. Nowadays a considerable body of knowledge about swimming is available to sports scientists (Parminder pal singh, 2016). In order for successful performance, the athlete needs well-developed physical characteristics specific to the requirements of swimming and the particular events in which they compete.

Swimming includes events involving four different strokes (freestyle, breaststroke, butterfly and backstroke) and a medley, where the one swimmer undertakes all in a predetermined order. Competitive pool swimming events are contested over distances ranging from 50- to 1500-m. These events are typically divided into sprint (50- and 100-m), middle distance (200- and 400-m) and distance (800- and 1500-m) categories. In the shortest sprint events in swimming (50-m freestyle and form stroke), which last only 22 to 30 seconds. The sprint athletes have a program that is more speed orientated, while the middle distance/distance swimmers focus more on developing speed endurance qualities to a greater extent. The volume of training varies from one individual to another, particularly at the elite level. It also varies according to the swimmers current phase of training. While there are marked differences in training between different types of swimmers, there are several common elements. In a usual week, elite swimmers typically train for 8-10 sessions in the pool, and undertake several dry land and weight training sessions, and occasionally add cross-training activities such as running or cycling.

Swimming requires high muscle strength and technical ability in order to achieve a good performance. This sport involves four different swimming style including freestyle stroke, butterfly stroke, breaststroke and backstroke. In the swimming, performance depends on a number of factors including development of relevant muscle groups and anthropometry. Several researchers have indicated that development of relevant muscle strength is important to

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TABLE I: Data Analysis of Performance of 50mt. Back Stroke Swimmers in Respect to Seasonal Variations.

Variables	Mean	Standard Deviation	Standard Error (SE_M)	Mean Difference	't' Ratio
Performance in Summer (Sec.)	39.63	± 1.8	0.403	3.87	6.55**
Performance in Winter (Sec.)	43.5	± 1.91	0.427		

Significance at 0.05 level

Tabulated 't' value of $df(38) = 2.021$, ** - Significant

achieve a success (Gola et al., 2014).

II. METHODOLOGY

The Purpose of the study was to identify the influence of seasonal changes on swimming performance of 50meter and 100 meter backstroke swimmers. For this study 20 State level male swimmers, specialized in 50 meters and 100 meter backstroke swimming from different clubs of West Bengal were considered as subjects. Subjects were selected purposively and the age of the subjects were ranged from 15 to 17 years. Single group design was adopted for the better understanding of the findings. The performances of 50 meter and 100 meter backstroke swimmers were collected during the swimming competition held in the month of May for the summer season. The similar variables of the same selected sample groups were collected during the swimming competition held in the month of December for the winter season.

Criterion Measures: The swimming performance of 50 meter and 100 meter backstroke swimmers were collected during competition by using of stop watch (Casio) and data were recorded in seconds.

Statistical Procedure: To find out the differences between the performance in summer and winter season of 50meter and 100 meter backstroke swimmers, t test was adopted. To analysis the collected data, level of significance was set at 0.05 level. Mean, standard deviation and standard error were also calculated for descriptive analysis of collected data.

III. FINDINGS

The results of the present investigation reflect in the following tables and the interpretations of such results are as follows:

Table -1 reveals the descriptive statistics and t value regarding performance of 50mt. Back Stroke swimmers. The above table shows that mean and standard deviation of performances in summer season were 39.63 ± 1.8 with standard error (SE_M) 0.403. In winter season, mean and standard deviation of performances were 43.5 ± 1.91

with standard error (SE_M) 0.427. It also reflects that the calculated 't' value of 6.55 was higher than the tabulated value of 2.021 at 0.05 level of significance. Based on above evidence, researcher has drawn a conclusion that there was a significant difference between the performances of swimmers in summer and winter. It is also notified that swimmers are able to perform better in summer season rather than winter season.

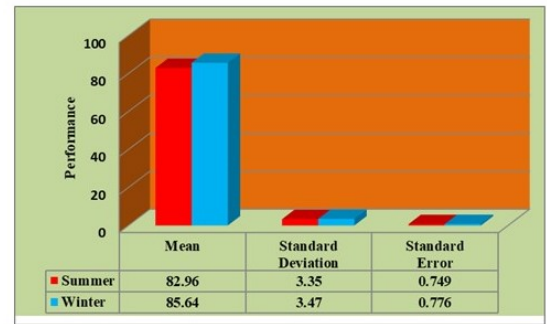


FIG. 1: Graphical Representation of Descriptive Analysis of 50mt. Back Stroke Swimmers on Performance in Respect to Seasonal Variations .

The above table reveals that the mean and standard deviation of performance of 100mt. Back Stroke swimmers in summer season were 82.96 ± 3.35 with standard error (SE_M) 0.749. In winter season, mean and standard deviation of performances were 85.64 ± 3.47 with standard error (SE_M) 0.776. It is also observed that the calculated t value of 2.46 was greater than the tabulated value of 2.021 at 0.05 level of significance which indicates that the performances of swimmers in summer and winter were significantly differ. Based on mean value of swimmers, researcher identified that performances in summer were excellent than the performances in winter.

IV. DISCUSSION OF FINDINGS

The selected respondents in our study were young and it was seen that swimmers of age group from 15 to 17 years had higher power values on the power testing. Young age and training load led to higher muscular

TABLE II: Data Analysis of Performance of 100mt. Back Stroke Swimmers in Respect to Seasonal Variations.

Variables	Mean	Standard Deviation	Standard Error (SE _M)	Mean Difference	't' Ratio
Performance in Summer (Sec.)	82.96	±3.35	0.749	2.68	2.46**
Performance in Winter (Sec.)	85.64	±3.47	0.776		

Significance at 0.05 level

Tabulated 't' value of $df(38) = 2.021$, ** - Significant

power production in swimmers. Results were seen in the studies which found that swimmers had been achieving peak performances in a very younger age. Swimmers of the present study performed high intensity short distance swimming sprints; therefore an increase in the value of girths and diameters resulted in increased power values. Cross sectional area of the muscle was presented with increased muscle strength generating characteristics. Since swimmers of our study demonstrated muscularity and increased cross-sectional area, it led to greater muscular power and thus decreased swimming time as it would improve the propulsive efficiency. On the other hand, a number of other studies had emphasized the important role of 'muscular power' as a determinant of athletic performance. They also showed high correlations between measures. The above discussion clearly indicates that a

similar group should not have a significant difference in their performance in respect to different season. Whereas the researcher observed a significant difference between the performances in summer and winter in present investigation and that also identified in both cases i.e. in 50 meter and as well as in 100 meter backstroke swimming performance. The temperature related changes in cardio-respiratory performance support the seasonal changes in maximum swimming performance (Claireaux, et al., 2006). As metabolic costs vary directly with temperature, oxygen consumption in the cold is depressed. As temperature rises, there is an increase of oxygen uptake (Taylor, et al., 1997). At low temperatures, the reduction in mechanical power output of the aerobic muscle forces may be the reason of lower performance of swimmers in winter than summer (Rome, et al., 1985).

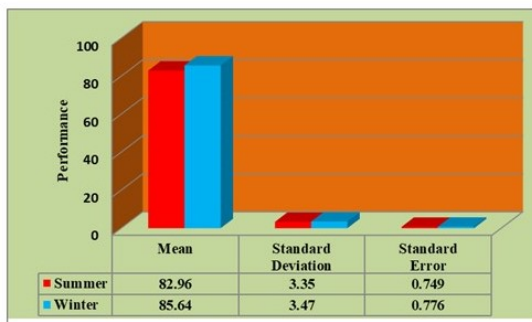


FIG. 2: Graphical Representation of Descriptive Analysis of 100mt. Back Stroke Swimmers on Performance in Respect to Seasonal Variations.

V. CONCLUSION

It was concluded that there was significant difference of 50 meter and 100 meter backstroke Swimming Performance in winter as well as in summer. A seasonal change was proved as signified factor in relation to the swimming performance.

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