Effect of Specific Training Programme on Speed of Sprinters of Azam College

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ABSTRACT

The purpose of this study was to investigate the Effect of specific training programme on Speed of 100 M. sprinters of college going students. The participants were selected from of Azam College, Pune (n = 30). The subjects were selected on the basis of purposive sampling technique.A specific training programme was designed following principles. It was a combination of resistance exercises, sand training, medicine ball, hill training & plyometric training. Researcher considered 100 M. sprint time, 30 M. fly test score for evaluation. Results revealed that there was no significant effect found on the speed of sprinters of college going students. It is therefore concluded that the training programme of exercise combination of resistance exercises, sand training, medicine ball, hill training & plyometric training was not found effective for improving speed of under 16-year-old boys sprinters.

Keywords : resistance exercises, sand training, medicine ball, hill training, plyometric training specific training, sprint

Introduction

Sports Training leads to better athletic performance, and persistent training will usually develop physical fitness followed by sports performance. Detailed analyses of the anatomic and physiological characteristics of famous athletes show that it is possible to make fairly reliable predictions of athletic performance. Scores obtained by various static and dynamic tests exhibit various degrees of correlation with the scores made in competition, and it has been easy to pick out the tests that give the highest coefficients of correlation. Dynamic tests thus are shown to have higher predictive value than static tests. Type of physique, strength and power, respiratory efficiency, and cardiovascular components are among the factors that determine performance, but no two, or three, or four factors, even when combined in an optimum manner, measure all aspects of fitness. Fitness tests applied to former champions gave the best results in those athletes who were in continued training. Endurance training makes marked improvements in cardiovascular function. Ability of the endurance athlete to use oxygen is related to circulatory and respiratory capacity, but in sprints, weight lifting, and swimming there are many other important specifics.

The change of speed in the sprint disciplines has the same repeating dynamics: acceleration, reaching maximum speed, maintenance, and deceleration. Depending on the race distance, however, these areas are different and are affected by the qualifications of the athlete. The priority of a highly skilled sprinter is maintaining maximum speed for as long a time as possible. While researching the dynamics of running speed in elite male and female sprinters in the 100m, we found that sprinters achieve maximum speed around the 60th meter. Many of the best sprinters in the 200m reach maximum speed in the second 50 meters of the distance, but there are quite a few cases where they reach maximum speed around 120-130 meters.

So, which plays a bigger role in reaching maximum speed stride length or (SF)stride frequency?

Biomechanical Parameters and Speed Development

Sprinters' Speed is a function of the frequency and the length of the stride. These parameters are interdependent and their optimal ratio allows for a maximum running speed. The increase in speed can be achieved by increasing the length or frequency of the stride. There are different viewpoints regarding the importance of stride length and stride frequency when acquiring maximum speed, as well as maintaining it. Some authors determined that stride length was the most important factors, while some had the opposite opinion, stating that stride frequency is the more important determinant. Later, Bezodis tested the speed of elite sprinters and concluded that speed can be individually dependent on either stride length or stride frequency, and the athlete's training program also plays an important role in determining stride length and stride frequency. On the one hand, this is connected to the implementation of various tactical tasks, and on the other, it is connected to the presence of certain neuromuscular disposition and power potential giving the athlete the opportunity to use their speed capabilities. There is an independent and fairly complex relationship between the indicators of frequency and length of the stride when the purpose is to maximize speed in both sprint events. The purpose of this research is to reveal the relationship between biomechanical parameters that create conditions for the acquisition of maximum running speed, as well as its reduction in peak performance in men and women in the 100m and 200m races.

Method

Experimental research designs are often considered to be the standard in research designs. Researcher has selected pre-test & post-test single group design. The experimental method was chosen for this study. In this research design, speed & 100 M. competition performance were considered as dependent variables & were randomly assigned to different exercises as treatments (i.e. independent variables manipulated by the researcher) and the results are observed to conclude. For this study the purposive sampling method was used & 30 male sprinters were selected purposely. All the subjects were boys under 16 years of age. Data was collected using 30 M. Fly test & 100 M. sprinting performance in competition condition. Also stride length was measured considering total number of strides taken for performing 100 M. sprint. (SL) Stride length was obtained by observation of Video clips. Researcher with the help of assistants counted total number of strides taken by an athlete & stride length was calculated by dividing 100 M. (sprinting distance) by total number of strides. Average stride length was considered for analysis.

Experimental programme was made by following sports training principles. Training programme of exercise for this study was a combination of resistance exercises, sand training, medicine ball, hill training & plyometric training. The programme design was as given in table 1.

Table 1 : *Experimental Programme Details*

Sn.	Description	Particulars
1	Duration of Programme	Eight weeks
2	Total Sessions	24 Session
3	Sessions per week	3 Days
4	Duration of each session	1 Hour
5	Main Exercises	Resistance Exercises, Sand Training, Medicine Ball, Hill Training & Plyometric

Results

After collecting data researcher analyzed it by applying descriptive statistics & compared pre-test & post test data by using paired sample 't' test. The out-put & interpretation of it is given as under.

Table 2 : *Summary of 't' test for the Comparison of 30 M. Fly test Performance of Under 16 years Old Boys Sprinters*

Test	Min	Max	Mean	SD	Df	Correlation	t' Value	Sig (two tailed)
Pre test	3.31	5.97	4.64	0.676	29	0.565	2.538	0.017
Post test	3.41	5.33	4.37	0.551				
(N=30)								

In TABLE 2, the statistical output about 30 M. Fly test is summarized. Concerning the variable speed, 30 M. Fly test scores were analyzed and the range of performing 30 M. Fly test was calculated. It is found that 30 subjects tested during pre-test finished30 M. distance in 3.31 sec. to 5.97. While performing the same test during post test subjects finished30 M. distance in 3.41 to 5.33 30 M. Average time clocked by the subjects 30 M Fly during pre-test and post-test were 4.64 sec. and 4.37 sec. respectively.

On the basis of standard deviations and means of pre-test it is inferred that middle 68.26% subjects could performed 3.96 to 5.31, while during post-test same number of subjects could performed 3.81 to 4.52 30 M.

From mean values and the ranges of both test scores it is very clear that there occurs difference between the mean of pre-test and post-test data sets. But to verify the significance of the same, researcher applied pair sample 't' test. Summary of pair sample 't' test is given in same TABLE.

Hypothesis testing

Null Hypothesis :

H0 : There is no significant difference occur between pre-test and post-test of 30 M. Fly test performance.

$$H_0 : M_1 = M_2$$

Alternative hypothesis

Ha : There is significant difference occur between pre-test and post-test of 30 M. Fly test performance.

$$H_1: M_1 \neq M2$$

From TABLE 2 it is found that the calculated 'p' value (0.017) is found greater than the 0.01 therefore researcher fails to rejected null hypothesis and hence it is retained.

Hence it is interpreted that there occurs no significant difference between pre-test and post-test.

Although the results presented in TABLE 2 tell us that the difference between mean scores obtained in the pre-test and post-test occurred by chance. In TABLE 2 ‘t’ test summary is given from which it is clear that ‘t’ value (2.538) is not found significant at 0.01 level of significance as ‘p’ value (0.017) is found greater than 0.01. It suggests that the mean difference found between the pre-test and post-test scores of 30 M. fly test Performance is not significant.

Also, the coefficient of correlation shows that the association (0.565) is poor. The correlation coefficient confirms that the difference is not big.

Table 3 : *Summary of ‘t’ test for the Comparison of 100 M. Run Performance of Under 16 years Old Boys Sprinters*

Test	Min.	Max.	Mean	SD	Df	Correlation	t' Value	Sig (two tailed)
Pre test	11.03	19.90	15.47	2.252	29	0.499	2.374	0.024
Post test	11.37	17.77	14.57	1.836				
(N=30)								

In TABLE 3, the statistical output about 100 M. Run Performance is summarized. Concerning the variable speed, 100 M. Run Performance scores were analyzed and the range of performing 100 M. Run Performance was calculated. It is found that subjects clocked 11.03 sec. to 19.90 sec. to complete 100 M. Run. during pre-test, while same subjects clocked 11.37 sec. to 17.77 sec. to finish100 M. Run during post-test. Selected subjects took average 15.47 sec. and 14.57 sec. to complete 100 M. Run during pre-test and post-test respectively.

On the basis of standard deviations and mean of pre-test it is inferred that middle 68.26% subjects could clock 13.21 sec. to 17.72 sec. time to complete 100 M. Run, while during post-test same number of subjects could clock 12.21 sec. to 16.30 sec. time to complete 100 M. Run.

From mean values and the ranges of both test scores it is very clear that there occurs difference between the mean of pre-test and post-test data sets. But to verify the significance of the same, researcher applied pair sample ‘t’ test. Summary of pair sample ‘t’ test is given in same TABLE.

Hypothesis testing

Null Hypothesis:

H_0 : There is no significant difference occur between pre-test and post-test of 100 M. Run Performance.

$$H_0 : M_1 = M_2$$

Alternative hypothesis

Ha : There is significant difference occur between pre-test and post-test of 100 M. Run Performance.

$$H_1 : M_1 \neq M_2$$

From TABLE 3 it is found that the calculated 'p' value (0.024) is found greater than the 0.01 therefore researcher fails to rejected null hypothesis and hence it is retained.

Hence it is interpreted that there occurs no significant difference between pre-test and post-test.

Although the results presented in TABLE 3 tell us that the difference between mean scores obtained in the pre-test and post-test occurred by chance. In TABLE 3 't' test summary is given from which it is clear that 't' value (2.374) is not found significant at 0.01 level of significance as 'p' value (0.024) is found greater than 0.01. It suggests that the mean difference found between the pre-test and post-test scores of 100 M. Run Performance is not significant.

Also, the coefficient of correlation shows that the association is poor as it is found 0.499. The correlation coefficient also confirm that the difference is not big.

Table 4 : *Summary of 't' test for the Comparison of (SL) Stride Length of Under 16 years Old Boys Sprinters*

Test	Min.	Max.	Mean (M.)	SD	Df	Correlation	t' Value	Sig (two tailed)
Pre test	1.20	2.10	1.68	0.265	29	0.217	-2.546	0.016
Post test	1.45	2.17	1.82	0.212				
(N=30)								

In TABLE 4, the statistical output about (SL) Stride Length is summarized. Concerning the variable speed, Stride Length scores were analyzed and the range of performing

Stride Length was calculated. It is found that 30 subjects tested had 1.20 M. to 2.10 M.(SL) Stride Length during pre-test, while same subjects had 1.45 M. to 2.17 M. Stride Length in during post-test. Selected subjects had average 1.68 M. and 1.82 M. Stride Length during pre-test and post-test respectively.

On the basis of standard deviations and means of pre-test it is inferred that middle 68.26% subjects had Stride Lengthbetween 1.41 M. to 1.94 M., while during post-test same subjects had stride length between 1.60 M. to 2.03 M.

From mean values and the ranges of both test scores it is very clear that there occurs difference between the mean of pre-test and post-test data sets. But to verify the significance of the same, researcher applied pair sample 't' test. Summary of pair sample 't' test is given in same TABLE.

Hypothesis testing

Null Hypothesis :

H_0 : There is no significant difference occur between pre-test and post-test of Stride Length.

$$H_0 : M_1 = M_2$$

Alternative hypothesis

Ha: There is significant difference occur between pre-test and post-test of Stride Length.

$$H_1 : M_1 \neq M_2$$

From TABLE 4 it is found that the calculated 'p' value (0.016) is found greater than the 0.01 therefore researcher fails to rejected null hypothesis and hence it is retained.

Hence it is interpreted that there occurs significant difference between pre-test and post-test.

Although the results presented in TABLE 4 tell us that the difference between mean scores obtained in the pre-test and post-test occurred by chance. In TABLE 4 't' test summary is given from which it is clear that 't' value (-2.546) is not found significant at 0.01 level of significance as 'p' value (0.024) is found greater than 0.01. It suggests that the mean difference found between the pre-test and post-test scores in stride length is not significant.

Also, the coefficient of correlation shows that the association is negligible as it is found 0.217. The correlation coefficient also confirm that the difference is not big.

Discussion

As per literature it is already stated that there is close relationship occurs between stride length, stride frequency & sprinting performance (Hay,). In this study the same results are found & it is again proved that a sprinter must concentrate on improving on stride frequency & stride length.

Marzena Paruzel-Dyja (2006) studied that stride length of sprinters, which develop the speed in the whole course of 100m dash, (SL) Stride Length is the main one. In this study researcher has observed the same results & found that speed is not increased as there was no improvement in stride length.

It is informally observed that the movements and the speed in fast striding after starting are affected, after discussing the same with experts they suggested that the excessively high SF in fast striding after starting mainly causes the combination of the stride states. As the result, that the movements and the speed in fast striding after starting are affected.

Conclusion

From the interpretation it is found that there is no significant difference occurs in 30 M. fly test performance, 100 M. Run performance and stride length of subjects; hence it is concluded that the specific exercise programme was not effective and could not improve speed as well as stride length of 16 years old boys from Azam College, Pune.

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