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Analysis of the Changes in Speed and Physiological Parameters Subsequent to Eight Weeks of Assisted Sprint Training

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Abstract

To achieve this purpose of the study, thirty male students were selected randomly from Selvam Educational Institutions, Namakkal, Tamilnadu, India. The selected subjects were divided into two groups of fifteen each. Group-I underwent assisted sprint training programme for eight weeks and acted as experimental group. Group-II acted as control group to find out the influence of assisted sprint training programme. The data collected from two groups prior to and after experimentation on stride length, stride frequency, resting pulse rate and vital capacity were statistically examined for significant differences, if any, by applying the analysis of covariance (ANCOVA) with the help of SPSS package. In determining the significance of 'F' ratio the confidence interval was fixed at 0.05 level, which is considered appropriate enough for the study. It was concluded that the selected speed and physiological parameters namely stride length, stride frequency, resting pulse rate and vital capacity have altered significantly due to eight weeks of assisted sprint training.

Keywords: Speed, Sprint Training, Assisted, Stride, Resting Pulse Rate, Vital Capacity.

Introduction

Humans have consistently strived to run faster jump higher, throw farther and exhibit greater strength, endurance and skill. We are naturally competitive and ambitious for excellence in athletic performance. As a result of practical experience, observation, and much scientific experimentation, old methods of training through fascinating and rich is tradition have been discarded and replaced by new methods based on insight and understanding. For centuries this evaluation toward better methods of training was slow but in recent years the dramatic change that have taken place have bright about astounding results in performance.

Phenomenal progress registered in performance in different sports disciplines are attributable to several factors, the most important of which include better training methods, improved nutrition, and better equipments, play fields and better selection of athletes. Of these factors, training methods and procedures to select athletes to sports that are suitable to them have been markedly revolutionized. The rapid progress made in the understanding of the mechanism involved in the adaptation of athletes to different training procedures has significantly contributed to the development of interval training, circuit training, parcourse training and resistance training. Variations in these training methods have been introduced to make them appropriate and to achieve specific performance objectives. Therefore, training methods and techniques are generally used according to the degree of the involvement of different element of fitness in any sports performance.

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Methodology

To achieve this purpose of the study, thirty male students were selected randomly from selvam educational institution, Namakkal district. The selected subjects were divided into two groups of fifteen each. Group-I underwent assisted sprint training programme for eight weeks and acted as experimental group. Group-II acted as control group to find out the influence of assisted sprint training programme. After analyzing the various factors associated with the present study, stride length, stride frequency, resting pulse rate and vital capacity were selected as dependent variables.

The data collected from two groups prior to and after experimentation on stride length, stride frequency, resting pulse rate and vital capacity were statistically examined for significant differences, if any, by applying the analysis of covariance (ANCOVA) with the help of SPSS package. In determining the significance of 'F' ratio the confidence interval was fixed at 0.05 levels, which is considered as appropriate enough for the study.

Results

The analysis of covariance on stride length of assisted sprint training group and control group were statistically examined and presented in table – I.

Table I. Analysis of Covariance on Stride Length of Assisted Sprint Training and Control Groups

	Assisted Sprint Training Group	Control Group	**Source of variance**	**Sum of Squares**	**df**	**Mean squares**	'F' ratio
Pretest Mean SD	1.60	1.61	Between	0.0001	1	0.0001	0.003
	0.10	0.15	Within	0.480	28	0.0171	
Posttest Mean SD	1.68	1.62	Between	0.1975	1	0.1975	4.27*
	0.26	0.15	Within	1.2970	28	0.0463	
Adjusted Posttest Mean	1.67	1.61	Between	0.1030	1	0.1030	4.44*
			Within	0.6260	27	0.0232	

The required table value for significance at 0.05 level of confidence with degrees of freedom 1 &27 is 4.21 and 1 & 28 is 4.20.

Table-I shows that the pre test means of stride length of assisted sprint training and control group are 1.60 and 1.61 respectively. The obtained 'F' ratio value of 0.003 for pre test means on stride length is lesser than the required table value of 4.20 for significance at 0.05 level of confidence with degrees of freedom 1 and 28. The post-test means on stride length of assisted sprint training and control groups are 1.68 and 1.62 respectively. The obtained 'F' ratio value of 4.27 for post-test data on stride length is greater than the required table value of 4.20 for significance at 0.05 level of confidence with degrees of freedom 1 and 28. The adjusted post-test means on stride length of assisted sprint training and control groups are 1.67 and 1.61 respectively. The obtained 'F' ratio value of 4.44 of adjusted post-test data on stride length is greater than the table value of 4.21 required for significance at 0.05 level of confidence with degrees of freedom 1 and 27. The analysis of covariance on stride frequency of assisted sprint training group and control group were statistically examined and presented in table – II.

Table II. Analysis of Covariance on Stride Frequency of Assisted Sprint Training and Control Groups

	Assisted Sprint Training Group	Control Group	**Source of variance**	**Sum of Squares**	**df**	**Mean squares**	Obtained 'F' ratio
Pretest Mean SD	4.19	4.17	Between	0.0224	1	0.0224	0.19
	0.34	0.35	Within	3.3960	28	0.121	
Posttest Mean SD	4.27	4.19	Between	0.740	1	0.740	4.87*
	0.42	0.34	Within	4.246	28	0.152	
Adjusted Posttest Mean	4.25	4.18	Between	0.1452	1	0.1452	12.31*
			Within	0.319	27	0.0118	

The required table value for significance at 0.05 level of confidence with degrees of freedom 1 & 27 is 4.21 and 1 & 28 is 4.20.

Table II shows that the pre test means of stride frequency of assisted sprint training and control group are 4.19 and 4.17 respectively. The obtained 'F' ratio value of 0.19 for pre test means on stride frequency is lesser than the required table value of 4.20 for significance at 0.05 level of confidence with degrees of freedom 1 and 28. The post-test means on stride frequency of assisted sprint training and control groups are 4.27 and 4.19 respectively. The obtained 'F' ratio value of 4.87 for post-test data on stride frequency is greater than the required table value of 4.20 for significance at 0.05 level of confidence with degrees of freedom 1 and 28. The adjusted post-test means on stride frequency of assisted sprint training and control groups are 4.25 and 4.18 respectively. The obtained 'F' ratio value of 12.31 of adjusted post-test data on stride frequency is greater than the table value of 4.21 required for significance at 0.05 level of confidence with degrees of freedom 1 and 27. The resting pulse rate of assisted sprint training and control groups are statistically examined and presented in table-III.

Table III. Analysis of Covariance on Resting Pulse Rate of Assisted Sprint Training and Control Groups

	Assisted sprint training group	Control group	**Source of variance**	**Sum of squares**	**df**	**Mean squares**	Obtained 'F' ratio
Pretest Mean SD	72.94	73.02	Between	36.62	1	36.62	1.79
	4.26	4.31	Within	571.96	28	20.43	
Posttest Mean SD	70.78	72.83	Between	148.85	1	148.85	8.85*
	4.09	4.00	Within	470.96	28	16.82	
Adjusted Posttest Mean	69.53	72.91	Between	30.68	1	30.68	26.00*
			Within	31.93	27	1.18	

The required table value for significance at 0.05 level of confidence with degrees of freedom 1 and 27 is 4.21 and degree of freedom 1 and 28 is 4.20.

Table-III shows that the pre test means of resting pulse rate of assisted sprint training and control group are 72.94 and 73.02 respectively. The obtained 'F' ratio value of 1.79 for pre test means on resting pulse rate is lesser than the required table value of 4.20 for significance at 0.05 level of confidence with degrees of freedom 1 and 28. The post-test means on resting pulse rate of assisted sprint training and control groups are 70.78 and 72.83 respectively. The obtained 'F' ratio value of 8.85 for post-test data on resting pulse rate is greater than the required table value of 4.20 for significance at 0.05 level of confidence with degrees of freedom 1 and 28. The adjusted post-test means on resting pulse rate of assisted sprint training and control groups are 69.53 and 72.91 respectively. The obtained 'F' ratio value of 26.00 of adjusted post-test data on resting pulse rate is greater than the table value of 4.21 required for significance at 0.05 level of confidence with degrees of freedom 1 and 27. It may be concluded from the results of the study that significant differences were found on resting pulse rate between assisted sprint training and control group. This shows that assisted sprint training group had significant impact on resting pulse rate of the subjects. The analysis of covariance on vital capacity of assisted sprint training group and control group were statistically examined and presented in table–IV.

Table IV. Analysis of Covariance on Vital Capacity of Assisted Sprint Training and Control Groups

	Assisted sprint training group	Control group	**Source of variance**	**Sum of squares**	**df**	**Mean squares**	Obtained 'F' ratio
Pretest Mean SD	2409.64	2397.86	Between	28.37	1	28.37	0.69
	59.27	55.86	Within	1159.36	28	41.40	
Posttest Mean SD	2758.79	2469.71	Between	6084.72	1	6084.72	89.96*
	63.42	53.83	Within	1893.84	28	67.64	
Adjusted Posttest Mean	2691.74	2430.41	Between	7103.20	1	7103.20	147.76*
			Within	1297.86	27	48.07	

The required table value for significance at 0.05 level of confidence with degrees of freedom 1 and 27 is 4.21 and degree of freedom 1 and 28 is 4.20.

Table-IV shows that the pre test means of vital capacity of assisted sprint training and control group are 2409.64 and 2397.86 respectively. The obtained 'F' ratio value of 0.69 for pre test means on vital capacity is lesser than the required table value of 4.20 for significance at 0.05 level of confidence with degrees of freedom 1 and 28. The post-test means on vital capacity of assisted sprint training and control groups are 2758.79 and 2469.71 respectively. The obtained 'F' ratio value of 89.96 for post-test data on vital capacity is greater than the required table value of 4.20 for

significance at 0.05 level of confidence with degrees of freedom 1 and 28. The adjusted post-test means on vital capacity of resisted sprint training and control groups are 2691.74 and 2430.41 respectively. The obtained 'F' ratio value of 147.76 of adjusted post-test data on vital capacity is greater than the table value of 4.21 required for significance at 0.05 level of confidence with degrees of freedom 1 and 27. It may be concluded from the results of the study that significant differences were found on vital capacity between assisted sprint training and control group. This shows that assisted sprint training had significant impact on vital capacity of the subjects.

Conclusions

It was concluded that the selected speed and physiological parameters namely stride length, stride frequency, resting pulse rate and vital capacity have altered significantly due to eight weeks of assisted sprint training.

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