



EFFECT OF COMPLEX TRAINING AND RESISTANCE RUNNING PROGRAM ON ACCELERATION SPEED PERFORMANCE OF MEN SPRINTERS

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ABSTRACTS

The present study was undertaken to analyze the impact of complex training and resistance running program on acceleration speed performance of men sprinters. Total N=60 (sixty) male engineering students age ranging from 18-21 years selected from various branches of Indian Institute of Technology Kanpur, Uttar Pradesh, India. The chosen sprinters were assigned into four subgroups by the equated group design on the bases of 100 meters run result performance. The subgroups namely empirical group – I considered as complex training group [CTG = 15], empirical group –II considered as resistance running program group [RRG =15], empirical group – III combined complex training & resistance running program group [CCR=15] and control [CG=15] group – IV were restricted from taking part any specific coaching program (Under observation). The training period was for a twelve weeks. The data were collected before and after the training by conducting 30 meters test. The obtained data's were analyzed by Analysis of Covariance (ANCOVA). The level of significant was fixed at 0.05 levels. The results of the study showed that that complex training, resistance running program and combined complex training & resistance running program were effective to increase the acceleration speed performance of sprinters comparative to control group.



KEY WORDS : complex, resistance, running and speed.

INTRODUCTION

Statement of the Problem:

The purpose of the study was to analyze “effect of complex training and resistance running program on acceleration speed performance of men sprinters.”

Hypothesis:

- It was hypothesis that complex training, resistance running program and combined complex training & resistance running program would result in a bigger improvement on acceleration speed performance of sprinters.

- It is hypothesized that the combined complex training & resistance running program groups would be superior than isolated complex training & resistance running program groups sprinters on improving acceleration speed.

METHODOLOGY:

The purpose of this study was to analyze the impact of complex training and resistance running program on acceleration speed performance of men sprinters. Total N=60 (sixty) male engineering students age ranging from 18-21 years selected from various branches of Indian Institute of Technology Kanpur, Uttar Pradesh, India. The chosen sprinters were assigned into four subgroups by the equated group design on the bases of 100 meters run result performance. The subgroups namely empirical group - I considered as complex training group [CTG = 15], empirical group -II considered as resistance running program group [RRG =15], empirical group - III combined complex training & resistance running program group [CCR=15] and control [CG=15] group - IV were restricted from taking part any specific coaching program (Under observation). The training period was for a twelve weeks. The data were collected before and after the training by conducting 30 meter test. The obtained data's were analyzed by Analysis of Covariance (ANCOVA). The level of significant was fixed at 0.05 levels.

Table - I
ANALYSIS OF COVARIANCE FOR ACCELERATION SPEED PERFORMANCE ON PRE TEST AND POST TEST DATA OF EXPERIMENTAL GROUPS AND CONTROL GROUPS SPRINTERS (IN SECONDS)

Groups	CTG Mean±SD	RRG Mean±SD	CCR Mean±SD	CG Mean±SD	SOV &df	Sum of Squares	Mean Squares	Obtained 'F'
Pre Test	4.932 ±0.361	4.710 ±0.287	4.987 ±0.373	4.852 ±0.297	B 3	0.654	0.218	1.98
					W 56	6.165	0.110	
Post Test	4.328 ±0.289	4.00 ±0.299	3.883 ±0.191	4.870 ±0.282	B 3	10.634	3.545	47.013*
					W 56	4.222	0.075	
Adjusted Post	4.288	4.107	3.808	4.980	B 3	11.081	3.694	124.198*
					W 55	1.636	0.030	

Table F-ratio value at 0.05 level of confidence for 4 and 95 (df) =2.47, 4 and 94 (df) =2.47

*Significant

The above table-I shows that there is a significant difference on acceleration speed performance among the five groups such sand surface sprint training [SSTG], grass surface for sled sprint training [GSTG], mud surface for up & down hill sprint training [MHTG], combined sand sled and up & down hill sprint training [SGMG] and control [CG] group sprinters. Since the calculated 'F' value required being significant at 0.05 level for 4, 95 d/f and 4, 94 are 2.47 and 2.47, but the calculated values of 30 - meters acceleration speed performance post and adjusted posttest 'F' values are 47.013 and 124.198 respectively. Which are higher than the tabulated value. Since the obtained 'F' ratio is found significant.

Table - II
LSD POST HOC TEST FOR MEAN DIFFERENCES BETWEEN PAIRED MEAN OF GROUPS ON ACCELERATION SPEED PERFORMANCE

ctg	rrg	CCR	CG	MD	CI
4.288	4.107	-	-	0.181*	0.175
4.288	-	3.808	-	0.480*	
4.288	-	-	4.980	0.692*	
-	4.107	3.808	-	0.299*	
-	4.107	-	4.980	0.873*	
-	-	3.808	4.980	1.172*	

**Significant at 0.05 level of confidence*

The table II shows the adjusted final mean difference [MD] between complex training group sprinters and resistance running program group sprinters [MD = 0.181], complex training group sprinters and combined complex training and resistance running program group sprinters [MD = 0.480], complex training group sprinters and control group sprinters [MD = 0.692], resistance running program group sprinters and combined resistance running program and complex training group sprinters [MD = 0.299], resistance running program group sprinters and control group sprinters [MD = 0.873], combined complex training and resistance running program group sprinters and control group sprinters [MD = 1.172]. The study found that evident that calculated mean differences values were higher than CI value 0.175. Therefore significant differences found between training.

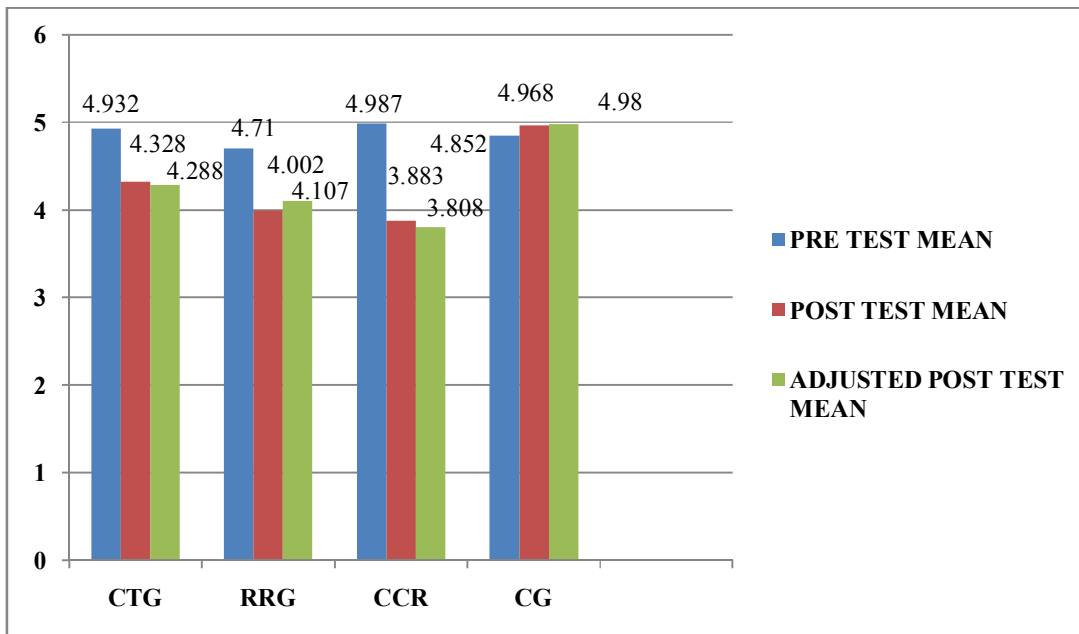


Figure 1: Graphical Illustration Showing the Pre-Test Post-Test and Adjusted Post-Test Mean Values on Acceleration Speed performance

DISCUSSION ON HYPOTHESIS:

- First hypothesized was that complex training, resistance running program and combined complex training & resistance running program would result in a bigger improvement in 30 meters acceleration speed performance of sprinters. The statistical analysis proved that isolated and

combined training significantly enhanced the 30 – meter acceleration speed performance of their respective empirical groups. Hence research hypothesis accepted.

- Second hypothesized was that the combined complex training & resistance running program groups would be superior than isolated complex training & resistance running program groups sprinters on improving 30 meters acceleration speed. Research hypothesized was accepted on the bases of result, it is proved that the combined complex training & resistance running program is superior to isolated complex training & resistance running program to improve the 30 – meters acceleration speed performance.

DISCUSSION AND FINDINGS:

The experimental treatment report shows that acceleration speed performance time found significantly decline due to increase in speed with the 12-weeks impact of isolated and combined treatment of complex training and resistance running program. The finding of studies related to acceleration speed performance were Rohit et al., (2021) suggested that supplementing the complex training with regular training sessions improves the physical fitness level i.e., sprinting performance of the athletes. West et al., (2013) suggested that combined weighted sled towing and sprint training had greater impact to improve 10 and 30 m sprinters than alone traditional resistance training. Anirudha et al., (2020) study result proved that acceleration, speed performance efficiently improved in sprinters by impact of different speed training protocol. Hasan (2016) proved that 6-weeks of combined Plyometric Resistance training and combined Plyometric-sprint training modes have remarkable influence to decline in time of 30 m, 40 m and a 50 m run.

CONCLUSIONS:

Combined complex training and resistance running program is more effective than isolated complex training and resistance running program to increase acceleration speed of the sprinters. Resistance running program is better than complex training to decrease the acceleration time of sprinters. Finally complex training, resistance running program and combined complex training and resistance running program group were effective to enhance acceleration speed than control group sprinters.

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