



The Effect of Rope Jump and Resistive Running Conditioning Programme on Speed and Leg Strength Performance

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Abstract:

The Purpose of the study was to find out the The Effect of Rope Jump and Resistive Running Conditioning Programmed on Speed and Leg Strength Performance.

Subject: 75 male students belonging to Sadhna Vidhyalaya Dhrangadhra to District Surendranagar were chosen as subjects for this study. All the subject had participated in the school game competitions in various games and sports held and organized by Surendranagar district sport offices. The average age of the subjects from 13 to 17 years as ascertained from the school records.

Variable: The variable selected for the present study were speed and Leg Strength

Methodology: Random group design was adopted for the present experimental study. Twenty-five subjects were assigned equally to three groups randomly. Out of the two experimental groups the first group was trained with resistive running exercise programme (Group A), the second group was given training in Rope Jumping exercise programme (Group B), and (Group C). With utmost care the training sessions were conducted thrice a week, i.e., on Monday, Wednesday and Friday. The initial and final tests for 50-yard dash run and standing broad jump performance were taken before and after an experimental period of ten weeks.

Statistical Technique: Analysis of Co-Variance (ANCOV) statistical technique used. The level of significance chosen to study the significance of 'F' ratio was set at 0.05 level

Result: Speed: The pre-test means for the two experimental groups (A and B) and the control group (C) are 7.42, 7.436 and 7.444 respectively and 'F' ratio is 0.021 was not found to be not significant, indicating that there was no initial difference among the groups. The post-test means of the two experimental group (A and B) and control group (C) are 7.072, 7.18 and 7.288 respectively and 'F' ratio 1.981 which was found to be not significant at .05 level of significance.

Leg Strength: The pre-test means for the two experimental groups (A and B) and the control group (C) are 5.844, 5.973 and 5.700 respectively. and 'F' ratio is 1.120 was not found to be not significant, indicating that there was no initial difference among the groups. The post-test means of the two experimental group (A and B) and control group (C) are 6.284, 6.681 and 6.064 respectively and 'F' ratio 6.731 which was found to be significant at .05 level of significant.

Conclusion: The data was analyzed using 'f' test and analysis of variance and covariance. The level of significance was set at .05 level of confidence. The statistical analysis of data revealed that all the two experimental groups improved in Speed and Leg Strength Performance.

Keywords: Running, Strength, Rope jump, performance

1. Introduction

From mother's lap to Olympics is a theme of history of sports and it is the cherished ideal of each and every sportsman on this fabulous globe to participate perpetually in one or the other discipline in the microcosm of sports in Olympics. Sport does not breathe in isolation; it is a direct resultant of education and culture. Sport qua sport is an essence of life; it is a way of idle life wherein hedonism of efforts, an element of model behavior and respect benign for universal ethics which auspiciously aspire for summer Bynum.

Sprinting is one of the popular events in Track and Field. 100m and 400m etc. are some of the events which demands supreme efforts, excellent physical fitness, sufficient strength and speed. The sprinters of these events use blocks to start because of its mechanical advantages. Proper starting is one of the most important fundamentals of good sprinting and often races are decided by inches made or lost on at the start. Strength is a conditional ability i.e. it depends largely on the energy liberation processes in the muscles. Strength is also perhaps the most important motor ability in sports as it is a direct product of muscle contractions. It is the key element because it is more improved than other elements. It is interesting the only element that can only be improved with one hundred percent success.

2. Materials and methods

Subjects: 75 male students belonging to Sadhna Vidhyalaya Dhrangadhra to District Surendranagar were chosen as subjects for this study. All the subject had participated in the school game competitions in various games and sports held and organized by Surendranagar district sport offices. The average age of the subjects from 13 to 17 years as ascertained from the school records. Random sampling technique was adopted for assigning the subjects to two experimental groups and one control group.

3. Tester Competency and Reliability of the Test

The tester competency was evaluated together with the reliability of the tests. To determine the reliability of tests, data on 50-yard dash performance and standing broad jump performance were recorded twice with a gap of one day in between under identical condition on twenty-five subjects selected at random from the entire group. The scores thus obtained on two occasions were correlated using Pearson Product Moment Correlation Method. The correlation of coefficient of 0.96 and 0.97 thus obtained shows that data were reliable.

4. Design of the Study

Random group design was adopted for the present experimental study. Twenty-five subjects were assigned equally to three groups randomly. The two experimental groups namely A, B, were assigned experimental treatments randomly, where as no special training was administered to the control group. Out of the two experimental groups the first group was trained with resistive running exercise programme (Group A), the second group was given training in Rope Jumping exercise programme (Group B), and (Group C). With utmost care the training sessions were conducted thrice a week, i.e., on Monday, Wednesday and Friday. The initial and final tests for 50-yard dash run and standing broad jump performance were taken before and after an experimental period of ten weeks. A detailed procedure adopted in this regard is described under the heading "Administration of Training".

5. Statistical Analysis

To find out the effect of training the following statistical techniques were employed:

1. To find out the significance of difference between pre and post-test means ANCOVA test was employed.
2. To find out the significance of mean difference among pre-test, post-test and adjusted means, analysis of variance and co-variance was done.

6. Speed

The significance of difference between the pre-test and post-test means for two experimental groups (A, B,) and the control group (c) in Speed have been presented in Table 1.

Table-1: Analysis of variance and covariance of the means of speed for two experimental groups and control group

Test	Group			Ancova Table			
	A	B	C	SS	df	MSS	'F'
Pre-Test Mean	7.42	7.436	7.444	(T) 0.007	2	0.003	0.021
				(E)12.559	72	0.174	
Post Test Mean	7.072	7.18	7.288	(T) 0.583	2	0.291	1.981
				(E)10.596	72	0.147	
Adjusted Mean	7.083	7.177	7.278	(T) 0.476	2	0.238	14.984*
				(E)1.127	71	0.015	

*Significant at .05 level of Significance.

E = Error $F_{.05}(2, 72) = 3.13$ T = Treatment $F_{.05}(2, 71) = 3.13$

The pre-test means for the two experimental groups (A and B) and the control group (c) are 7.42, 7.436 and 7.444 respectively and 'F' ratio is 0.021 was not found to be not significant, indicating that there was no initial difference among the groups. The post-test means of the two experimental group (A and B) and control group (C) are 7.072, 7.18 and 7.288 respectively and 'F' ratio 1.981 which was found to be not significant at .05 level of significance. The difference between the adjusted means 7.083, 7.177 and 7.278 for two experimental groups (A and B) and control group (c) respectively is found to be significant, as the obtained 'F' ratio is 14.984. The 'F' ratio needed to be significant at .05 level of significance at 2,72 df and 2,71 df is 3.11.

Since the 'F' ratio for the adjusted final means is found to be significant. The LSD Post hoc Test was applied to find out of the difference between the paired adjusted final means. The Difference between the paired adjusted final means has been presented in Table 2.

Table 2: Paired adjusted final means and difference between means for the two experimental groups and the control group in speed

Adjusted Means			MD	CD
A	B	C		
7.083	7.177		0.094*	0.071
7.083		7.278	0.195*	0.071
	7.177	7.278	0.101*	0.071

* Significant at .05 level of Significance.

From Table 2, it is clear that there is significant greater improvement in the case of group A (resistive running conditioning group) than that of group B (explosive rope jumping group) (MD=0.094). At the same time both the experimental groups showed significant improvement over group C (control group) as the paired mean differences between groups B-C, A-C are 0.101, 0.195 respectively. Since are the value of MD is higher than that of critical difference 0.071. The comparison of means has been graphically represented in Figure 1.

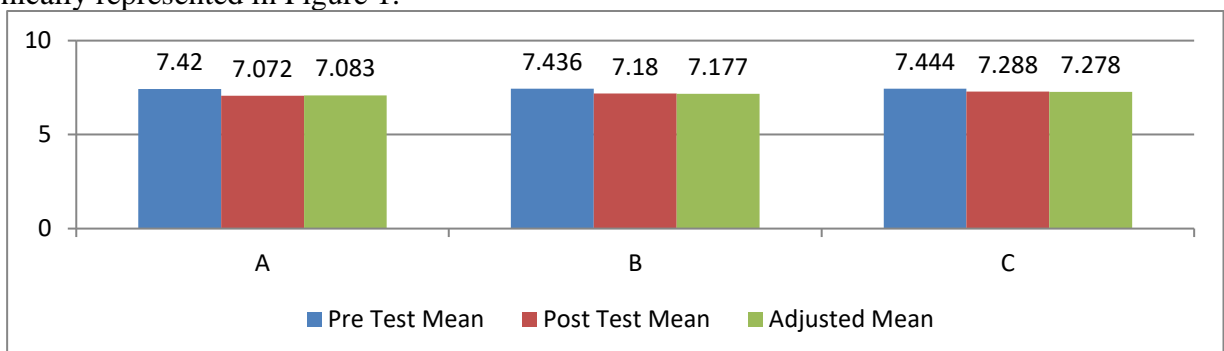


Figure 1: Comparison of the means for the two experimental and the control group in speed

7. Leg Strength

To find out the significance of differences between the pre-test and post-test means for the two experimental groups (A, B) and the control group (C) on Leg Strength performance ‘f’ test was employed. The data pertaining to this has been presented in Table 3 - 3.

Table 3: Analysis of variance and covariance of the means of leg strength for two experimental groups and control group

Test	Group			ANCOVA TABLE			
	A	B	C	SS	df	MSS	‘F’
Pre Test Mean	5.844	5.973	5.700	(T) 0.928	2	0.464	1.120
				(E) 29.826	72	0.414	
Post Test Mean	6.284	6.681	6.064	(T) 4.891	2	2.445	6.731*
				(E) 26.158	72	0.363	
Adjusted Mean	6.281	6.606	6.142	(T) 2.750	2	1.375	5.853*
				(E) 16.679	71	0.234	

*Significant at .05 level of Significance.

$$E = \text{Error} F .05 (2, 72) = 3.13 \quad T = \text{Treatment} \quad F .05 (2, 71) = 3.13$$

The pre-test means for the two experimental groups (A and B) and the control group (c) are 5.844, 5.973 and 5.700 respectively. and ‘F’ ratio is 1.120 was not found to be not significant, indicating that there was no initial difference among the groups. The post-test means of the two experimental group (A and B) and control group (C) are 6.284, 6.681 and 6.064 respectively and ‘F’ ratio 6.731 which was found to be significant at .05 level of significant. The difference between the adjusted means 6.281, 6.606 and 6.142 for two experimental groups (A and B) and control group (c) respectively is found to be significant, as the obtained ‘F’ ratio is 5.853. The ‘F’ ratio needed to be significant at .05 level of significance at 2,72 df and 2,71 df is 3.11.

Since the ‘F’ ratio for the adjusted final means is found to be significant. The LSD Post hoc Test was applied to find out of the difference between the paired adjusted final means. The Difference between the paired adjusted final means has been presented in Table 4.

Table 4: Paired adjusted final means and difference between means for the two experimental groups and the control group inleg strength

Mean			MD	CD
A	B	C		
6.281	6.606		0.324*	0.274
6.281		6.142	0.139	0.274
	6.606	6.142	0.463*	0.274

* Significance at .05 level of Significance.

From Table 4, it is clear that there is significant greater improvement in the case of group A (resistive running conditioning group) than that of group B (explosive rope jumping group) (MD=0.324). At the same time both the experimental groups showed significant improvement over group C (control group) as the paired mean differences between groups B-C, A-C are 0.463, 0.139 respectively. Since are the value of MD is higher than that of critical difference 0.274. The comparison of means has been graphically represented in Figure 2.

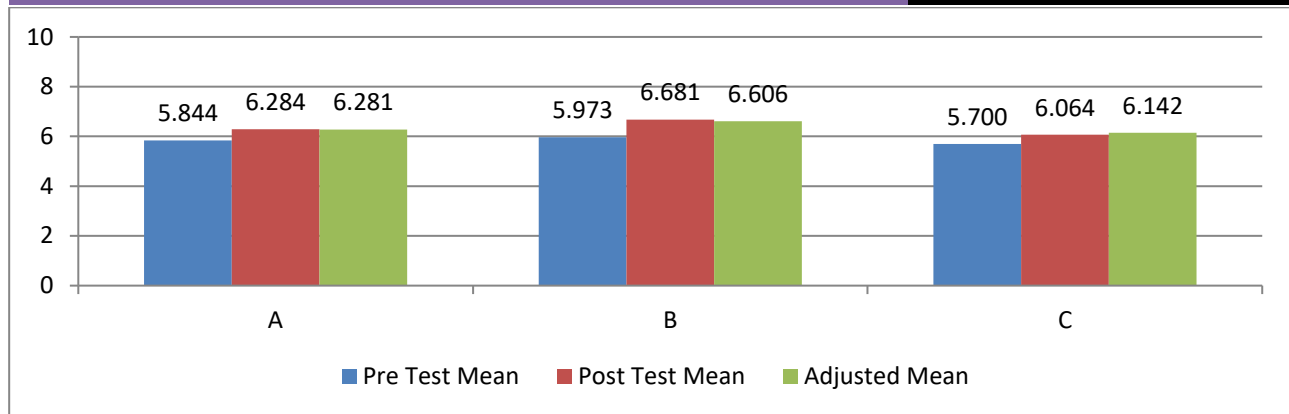


Figure 2: Comparison of the Means for the Three Experimental and the Control Group in Leg Strength Performance

8. Conclusion

Within the limitations of the present study, the following conclusions may be drawn All the two-training programme i.e., resistive running and rope jumping are effective in improving in speed and standing broad jump performance. Training programme dominated by speed-strength i.e., Resistive running programme proved to be most effective in developing speed performance. Training programme dominated by explosive strength i.e., rope jumping programme proved to be most beneficial in developing Leg Strength performance. Ten weeks of strength dominated training does not seem to be sufficient for significant improvement in speed and Leg Strength. Strength dominated training programmes are beneficial for the development of Leg Strength. Absence of improvement in the case of control group could be a reflection of inactivity.

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