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Effects of strength training on speed leg explosive power and muscular endurance of college men students

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ABSTRACT

The purpose of the present investigation was to find out the effects of strength training on speed leg explosive power and muscular endurance of college men students. To achieve the purpose, 30 men students were selected from Govt. Alagappa Arts College, Karaikudi, Tamil Nadu as subjects. Their age ranged from 17 to 20 years. They were divided into two equal groups of 15 subjects each and assigned to experimental group-I and control group. In a week the experimental group-I underwent strength training and the control group was not given any specific training. All the subjects underwent the test of speed, leg explosive power and muscular endurance. They assessed before and after the training period of 8 weeks. The analysis of covariance was used to analyze the data. The study revealed that t he speed, leg explosive power and muscular endurance were significantly improved due to the influence of strength training.

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Key words : Strength training, Speed, Leg explosive power, Muscular endurance

The event of sports is not limited. Each sport discipline requires different types of motor ability because of which a different type of training is required. Different training regiments carried out for a sufficiently longer duration, with different load dynamics, ensures enhancement and maintenance of performance. Improvement of one skill/ability has an impact on other abilities, as well. Mere possession of motor abilities does not have any significance unless there is training to improve and maintain it. Motor abilities are trained in isolation, and collectively. There are plenty of evidences that successful competitors in different sports, possess a good physique and compatible quantum of motor abilities; and reasonably distinct too.(Matveyen, 1981; Singh, 1991). In this study an attempt has been made to find out the effects of strength training on speed leg explosive power and muscular endurance of college men students.

METHODOLOGY

To achieve these purpose, 45 men students were selected from Alagappa Arts College, Karaikudi Tamil Nadu as subjects. Their age ranged from 17 to 20 years. They were divided into two equal groups of 15 subjects each and assigned to experimental group-I, and control group. In a week, the experimental group-I underwent strength training (Stair training and Sand Running) and the control group was not given any specific training. The entire subject underwent test of speed, leg explosive power and anaerobic power. The speed was measured by 50 yards dash (score in second), Leg explosive power was measured by Sergeant vertical jump test (score in meters) and muscular endurance was measured by Sit-up test (score in counts/minute) and they were assessed before and after the training period of 8 weeks. The analysis of covariance was used to analyze the data. The study revealed that the speed, leg explosive power and muscular training were significantly improved due to the influence of strength training.

OBSERVATIONS AND DISCUSSION

Table 1 shows the analyzed data on speed. The pre- test, post-test and adjusted post-test means of the speed were (6.8 and 6.8), (6.5 and 6.9) and (6.5 and 6.9) for the experimental group and control group, respectively. The obtained 'F' ratio for pre-test 0.04 post test 5.48 and adjusted post-test 96. The obtained 'F' ratio of post and adjusted post test were 5.48 and 96. The table value was 3.23 at 5% level of significance for the degree of freedom (1, 28 and 1, 27). Therefore, it is proved that experimental group has been better than the control group.

Table 2 indicates the analyzed data on leg explosive power. The pre-test, post-test and adjusted post-test means of the leg explosive power were (1.04 and 1.08) (1.15 and 1.04) and (1.16 and 1.04) for the experimental group and control group, respectively. The obtained 'F' ratio

Table 1: Computation of analysis of covariance of speed (Scores in seconds)

	Experimental group	Control group	SV	SS	d.f.	M.S.	OF
Pre-test means	6.8	6.8	B	0.005	1	0.0005	0.04
SD	0.35	0.34	W	0.4	28	0.14	
Post-test means	6.5	6.9	B	0.820	1	0.8	5.48*
SD	0.36	0.4	W	0.41	28	0.14	
Adjusted post-test means	6.5	6.9	B	0.960	1	0.96	96*
			W	0.273	27	0.01	

*indicates significance of value at P=0.05 (4.20)

Table 2: Computation of analysis of covariance of leg explosive power (Scores in meters)

	Experimental group	Control group	SV	SS	d.f.	Ms	OF
Pre-test means	1.04	1.08	B	0.007	1	0.0007	**0.7**
SD	0.13	0.09	W	0.36	28	0.01	
Post -test means	1.15	1.04	B	0.09	1	0.09	9.0*
SD	0.12	0.08	W	0.29	28	0.01	
Adjusted post-test means	1.16	1.04	B	0.15	1	0.15	75*
			W	0.007	27	0.02	

*indicates significance of value at P=0.05 (4.21)

for pre-test 0.07, post-test 9.0 and adjusted post- test 7.5. The obtained 'F' ratio of post and adjusted post- test were 9.0 and 7.5.

The table value was 4.21 at 5% level of significance for the degree of freedom (1.28 and 1.27). Therefore, it is proved that experimental group has been better than the control group.

Table 2 shows the analyzed data on muscular endurance. The pre-test, post-test and adjusted post-test means of the muscular endurance were (20.7 and 20.9) (29.9 and 19.4) and (29.9 and 19.47) for the experimental group and control group, respectively. The obtained 'F' ratio for pre-test 0.04 post-test 178.61 and adjusted post-test 584.02.

The obtained 'F' ratio of post and adjusted post-test were 178.61 and 584.02. The table value was 4.21 at 5% level of significance for the degree of freedom (1.28 and 1.27) Therefore, it is proved that experimental group has been better than the control group.

The three major systems for developing muscle strength are progressive resistance, weight training, isometrics and isokinetic-type training. Each system results in strength gains that are highly specific to the type of training. Isokinetic training, because of the possibility for generating maximum force throughout the full range of joint motion at different angular velocities of limb movement, offers a unique method of resistance training.

Based on the limited data, closely supervised resistance training programme using relatively moderate levels of concentric muscle action significantly improving the strength of children with no adverse effect on bone or muscle.

The magnitude of strength improvement is somewhat blunted if strength and aerobic training are performed concurrently.

Plyometric training drills attempt to utilize the inherent stretch-recoil characteristics of the neuromuscular system to facilitate the development of muscular power. A determination of both the risks and benefits of such training awaits further research.

The high degree of specifically of physiologic and

Table 3: Computation of analysis of covariance of muscular endurance (Scores in counts/minutes)

	Experimental group	Control group	SV	SS	df	Ms	OF
Pre-test means	20.7	20.9	B	0.300	1	0.300	
SD	3.08	2.05	W	191.86	28	6.85	**0.04**
Post -test means	29.9	19.4	B	821.63	1	821.6	178.61*
SD	2.08	2.19	W	128.66	28	4.6	
Adjusted post-test means	29.9	19.47	B	841.92	1	841.9	584.02*
			W	38.95	27	1.44	

*indicates significance of value at P=0.05 (4.21)

performance measures, as well as their responses to training, casts doubt on the wisdom of using general fitness measures to infer one's ability to perform specific tasks or occupations. The results of this training supported on above mentioned findings.

Conclusion:

Within the limitations of the present study, the following conclusions were drawn:

– The speed, leg explosive power and muscular endurance were significantly improved due to the influence of effects of strength training of college men students. Stair training significantly improved the speed, leg explosive power greater than that of control group of college men students. Muscular endurance would significantly improve due to the influence of sand training greater than that of control group of college men students.

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