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EFFECT OF CONCURRENT STRENGTH AEROBIC ENDURANCE TRAINING ON STRENGTH AMONG HOCKEY PLAYERS

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Abstract:

The purpose of the study was to find out the effect of concurrent strength aerobic endurance training on the development of maximum strength among hockey players. The study was formulated as a pre and post test random group design, in which forty five men students were randomly assigned into three equal groups and each group consisting of 15 subjects. Group I acted as aerobic endurance training group (AETG, n = 15), Group II acted as concurrent strength aerobic endurance training group (CSAETG, n = 15) and Group III acted as control group (CG, n = 15). Analysis of covariance (ANCOVA) was computed and whenever the adjusted post-test means were found significant, the Scheffe's post-hoc test was administer to find out the paired means difference. The concurrent strength aerobic endurance training improved strength better than aerobic endurance training and control groups on maximum strength among hockey players.

Key Words: Concurrent Strength Aerobic Endurance Training, Hockey Players.

Introduction:

The phenomenon of concurrent training, or simultaneously training for strength and endurance, was first described in the scientific literature 1980. Concurrent strength and endurance training is more effective in improving athletic performance than are either endurance or strength training separate. This is contrary to previous studies, which found combined training inhibits muscle and power improvements. Strength, endurance, and power are the key factors in athletic performance. Aerobic endurance exercises are an effective and efficient method of reducing body fat. Another possible benefit of aerobic training for strength/power athletes is the tolerance for exercise in the heat and during hyperthermia in aerobically toned individuals. In extreme heat, 15 to 20% of the cardiac output may be distributed to the skin for heat dissipation. This limits the blood flow to the working muscles. Aerobically-trained individuals have an increased sensitivity and capacity of the sweating response so that they are better able to regulate their body temperature.

Methodology:

The purpose of the study was to find out the effect of concurrent strength aerobic endurance training on the development of maximum strength among hockey players. The study was formulated as a pre and post test random group design, in which forty five men students were randomly assigned into three equal groups and each group consisting of 15 subjects. Group I acted as aerobic endurance training group (AETG, n = 15), Group II acted as concurrent strength aerobic endurance training group (CSAETG, n = 15) and Group III acted as control group (CG, n = 15). Analysis of covariance (ANCOVA) was computed because the subjects were selected random, but the groups were not equated in relation to the factors to be examined. Hence the difference between means of the three groups in the pre-test had to be taken into account during the analysis of the post-test differences between the means. This was achieved by the application of the analysis of covariance, where the final means were adjusted for differences in the initial means, and the adjusted means were tested for significance. Whenever the adjusted post-test means were found significant, the Scheffe's post-hoc test was administer to find out the paired means difference. To test the obtained results on variables, level of significance 0.05 was chosen and considered as sufficient for the study.

Results:

Table 1: Computation of Analysis of Covariance of Mean of Aerobic Endurance Training, Concurrent Strength Aerobic Endurance Training and Control Group on Maximum Strength

	AETG	CSAETG	CG	Source of Variance	Sum of Squares	df	Means Squares	F-ratio
Pre-Test Means	76.80	76.46	75.53	BG	12.93	2	6.46	0.37
				WG	717.86	42	17.09	
Post-Test Means	85.20	89.53	75.73	BG	1494.17	2	747.08	82.77*
				WG	379.06	42	9.02	
Adjusted Post-Test Means	85.14	89.51	75.81	BG	1451.18	2	725.59	80.18*
				WG	371.02	41	9.04	

An examination of table 1 indicated that the pre-test means of aerobic endurance training, concurrent strength aerobic endurance training and control group were 76.80, 76.46 and 75.53 respectively. The obtained F-ratio for the pre-test was 0.37 and the table F-ratio was 3.22. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 2 and 42. This proved that there were no significant

difference between the experimental and control group indicating that the process of randomization of the groups was perfect while assigning the subjects to groups. The post-test means of the aerobic endurance training, concurrent strength aerobic endurance training and control group were 85.20, 89.53 and 75.73 respectively. The obtained F-ratio for the post-test was 82.77 and the table F-ratio was 3.22. Hence the post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 42. This proved that the differences between the post-test means of the subjects were significant. The adjusted post-test means of the aerobic endurance training, concurrent strength aerobic endurance training and control group were 85.14, 89.51 and 75.81 respectively. The obtained F-ratio for the adjusted post-test means was 80.18 and the table F-ratio was 3.23. Hence the adjusted post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 41. This proved that there was a significant difference among the means due to the experimental trainings on maximum strength. Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe's post hoc test. The results were presented in Table 2.

Table 2: The Scheffe's Test for the Differences between the Adjusted Post Test Paired Means on Maximum Strength

Adjusted Post-Test Means			**Mean Difference**	**Required CI**
AETG	**CSAETG**	**CG**		
85.14	89.51	---	4.37*	2.78
85.14	---	75.81	9.33*	
---	89.51	75.81	13.70*	

* Significant at 0.05 level of confidence

The multiple comparisons showed in Table 2 proved that there existed significant differences between the adjusted means of concurrent strength aerobic endurance training with aerobic endurance training (4.37), concurrent strength aerobic endurance training with control group (9.33), aerobic endurance training with control group (13.70) at 0.05 level of confidence with the confidence interval value of 2.78. The pre, post and adjusted means on maximum strength were presented through bar diagram for better understanding of the results of this study in Figure 1.

Conclusion:

The concurrent strength aerobic endurance training improved strength better than aerobic endurance training and control groups on maximum strength among hockey players.

References:

1. Eswara Moorthy, A. & Angamuthu, K. (2013). Effect of Swissball Training on Selected Motor Fitness Variables among Football Players. Star Research Journal. 01.
2. Ferrauti, A., Bergermann, M. & Fernandez-Fernandez, J. (2010). Effects of a concurrent strength and endurance training on running performance and running economy in recreational marathon runners. J Strength Cond Res. 24(10):2770-8.
3. Greig, M. (2009). The influence of soccer-specific activity on the kinematics of an agility sprint. European Journal of Sport Science, 9,1.
4. Helgerud, J., Engen, L.C., Wisloff, U. & Hoff, J. (2001). Aerobic endurance training improves soccer performance. Med Sci Sports Exerc. 33(11):1925-31.
5. Ivin Jabakumar K., Suresh Kumar, M. & Kalidasan. R. (2011). Influence of e-content based coaching on selected Fundamental skills in field hockey. Recent Research in Science and Technology, 3,1(59-62).
6. Lakhera, S.C., Mathew, L., Rastogi, S.K. & Sen, Gupta. J. (1984). Pulmonary function of Indian athletes and sportsmen: comparison with American athletes. Indian J Physiol Pharmacol. 28(3):187-94.
7. Leveritt, M., Abernethy, P.J., Barry, B. & Logan, P.A. (2003). Concurrent strength and endurance training: the influence of dependent variable selection. J Strength Cond Res. 17(3):503-8.
8. Levin, G.T., Mcguigan, M.R. & Laursen, P.B. (2009). Effect of concurrent resistance and endurance training on physiologic and performance parameters of well-trained endurance cyclists. J Strength Cond Res. 23(8):2280-6.
9. Sujitha Paulose & Dr. M. Suresh Kumar (2020). Effect of Progressive Muscular Relaxation Training on Selected Psychomotor Variables among Hockey Players. Alochana Chakra Journal, 9,5, 2439-2443.
10. Suresh, Kumar M. (2014). Impact of Conventional Training on Dribbling Ability of Novice Hockey Players. Star International Research Journal, 2,1(07).
11. Suresh, Kumar M. (2014). Skill Tests in Field Hockey - Past, Present & Future. International Journal of Recent Research and Applied Studies, 1,2(34-36).
12. Suresh, Kumar M. (2017). Skill Tests in Field Hockey - Past, Present & Future. International Journal of Recent Research and Applied Studies, 1,2(34-36).