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Effects of battalion training and circuit training on speed among college level women hockey players

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Abstract
The aim of the study was to find out the effects of Battalion training and Circuit training on Speed among college-level women hockey Players. The investigator randomly selected 90 women hockey Players (n = 90), who competed at inter-collegiate level sports meets. They were divided into three groups with thirty subjects each (n = 30) at random again consisting of thirty subjects in each group and they were randomly assigned as experimental group I (BTG) and Experimental Group II (CTG) and control group (CG) and Speed has selected as criterion variable of this study. The experimental group underwent Battalion training and circuit training for eight weeks three days per week and a session on each day. The difference between the pre-test and post-test means were subjected to statistical treatment using ANCOVA, In all cases 0.05 level was fixed to test the hypothesis of the study, which was considered as an appropriate. It was concluded from the result of the study that there was a significant improvement ($p \leq 0.05$) due to Battalion training and circuit training on Speed as compared to control group.

Keywords: Battalion training, circuit training and speed

Introduction
Sports is a unique activity that infuses the best qualities in our human being. A sports field is considered a laboratory where sports activities groom the individuals physically, mentally and morally with the important values of life to face the world confidently. The values imbibed elicit the best Character, behavior and action of an individual which bring happiness to the individual, the family, the organization and the society. The ability to generate maximal power is influenced by the type of muscle action involved and, in particular, the time available to develop force, storage and utilization of elastic energy, interactions of contractile and elastic elements, potentiation of contractile and elastic filaments as well as stretch reflexes. Furthermore, maximal power production is influenced by morphological factors including fibre type contribution to whole muscle area, muscle architectural features and tendon properties as well as neural factors including motor unit recruitment, firing frequency, synchronization and inter-muscular coordination (64. Storey A and Smith HK 2012) [21].

Speed is a prerequisite to perform motor actions under given conditions such as movement task, and external factors and is an individual prerequisite for sports, specifically sports and games that required movements in minimum time. Speed is a determining factor in explosive activities such as sprints, jumps, and most field sports.

Speed is one of the most important physical fitness components, which is highly essential for many sport activities and explosive strength is highly related to speed. Generally in team events the team with higher speed and strength wins because they are the faster team. Speed of muscle contraction is an innate quality. Speed is an important factor for success in games like football, basketball, hockey, soccer and track and field events.

The ability to generate maximal power during complex motor skills is of paramount importance to successful athletic performance across many sports. A crucial issue faced by scientists and coaches is the development of effective and efficient training programmes that improve maximal power production in dynamic, multi-joint movements. Such training is referred to as 'power training' for the purposes of sports training (Cormie 2011) [22].

Materials and Methods

The aim of the study was to find out the effects of Battalion training and Circuit training on Speed among college-level women Hockey Players the investigator randomly selected 90 Hockey Players (*n*= 90), who competed at inter-collegiate level sports meets representing different colleges in Tirupati District Andhra Pradesh. Were selected as subjects and the age of players were between 17 and 21 years. The selected subjects were randomly divided into three equal groups of thirty subjects each (*n* = 30). Experimental Group I was assigned as a Battalion training (*BTG*) and Experimental Group II was assigned as a circuit training Exercises (*CTG*) and control group. During the training period, the experimental groups underwent their respective training program for eight weeks 3 days per week. Control group (*CG*), who did not participate in any specific training. Speed was selected as dependent variable for this study. It was measured by 50mt Dash and sits and reach test. These are the exercises used as Battalion training 1. The Side Bridge, 2. The Back Bridge, 3. The Quadraplex, 4. The Lateral Leg Raise, 5. The Medial Leg Raise 6. The Lateral Bent–leg Raise 7. The Single–leg Tuck 8. The Single–leg Over For Circuit training; 1. Jumping jacks, 2. Burpees, 3. Crunches 4. High knee, 5. Half squat, 6. Triceps dips, 7. Butt kicks, 8. Push-ups. The collected data were statistically examined by analysis of covariance (*ANCOVA*). The confidence level was fixed at 0.05 levels, which is appropriate to the present study. Whenever the F ratio is found be significant, Sheffee's test was applied as post hoc test to find out the paired mean differences.

Results on speed

Table 1: Computation of analysis of covariance of speed

	Battalion Training	Circuit Training	Control Group	Source of Variance	Sum of Squares	DF	Mean Squares	Obtained F ratio
Pre-Test Mean	9.16	9.13	9.02	Between	0.32	2	0.16	0.79
				Within	17.62	87	0.20	
Post Test Mean	8.41	8.46	9.05	Between	7.61	2	3.8046	22.45*
				Within	14.74	87	0.17	
Adjusted Post Test Mean	8.38	8.45	9.10	Between	9.34	2	4.67	45.73*
				Within	8.79	86	0.10	

Table F-ratio at 0.05 level of confidence for 2 and 87 (df) = 3.10, 2 and 86 (df) 3.10.
*Significant

As shown in Table 1, the obtained pre-test means on Speed on the Battalion training group was 9.16, the circuit Training group was 9.13, and control group was 9.02. The obtained pre-test F value was 0.79 and the required table F value was 3.16, which proved that there was no significant difference among initial scores of the subjects. The obtained post-test means on Speed on Battalion training group was 8.14, the circuit Training group was 8.46 and the control group was 9.05. The obtained post-test F value was 22.45* and the required table F value was 3.10, which proved that there was a significant difference among the post-test scores of the subjects. Taking into consideration of the pre-test means and post-test means adjusted post-test means were determined and an analysis of covariance was done and the obtained F value 45.73* was greater than the required value of 3.10 and hence it was accepted that there was significant differences among the treated groups.

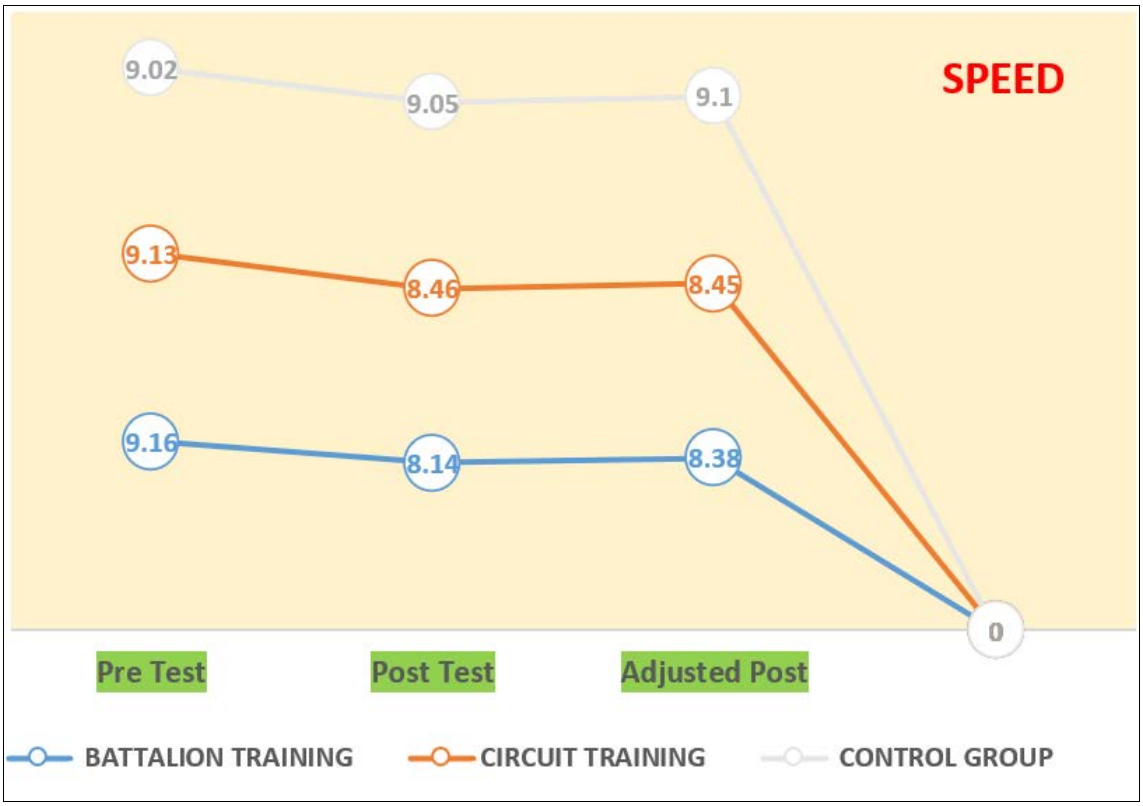
Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table 2.

Table 2: Scheffe's Confidence Interval Test Scores on Speed

Means				Required C I
Battalion training Group	Circuit Training Group	Control Group	Mean Difference	
8.38	8.45		0.07	0.21
8.38		9.10	0.72*	0.21
	8.45	9.10	0.65*	0.21

***** Significant

The post hoc analysis of obtained ordered adjusted means proved that there was significant differences existed between the Battalion training group and control group (MD: 0.72*). There was a significant difference between Circuit training group and control group (MD: 0.65*). There was no significant difference between treatment groups, namely, Battalion training group and Circuit training group. (MD: 0.07).



Graph 1: Presents the results of the experimental groups and the control group with regard to the variable speed.

Conclusions

Based on the limitations and delimitations of the study, the following conclusions were drawn. According to the study, Battalion training and Circuit training significantly improved the speed of college-level women hockey players. When comparing the two treatment groups, Battalion training was found to be superior to Circuit training.

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