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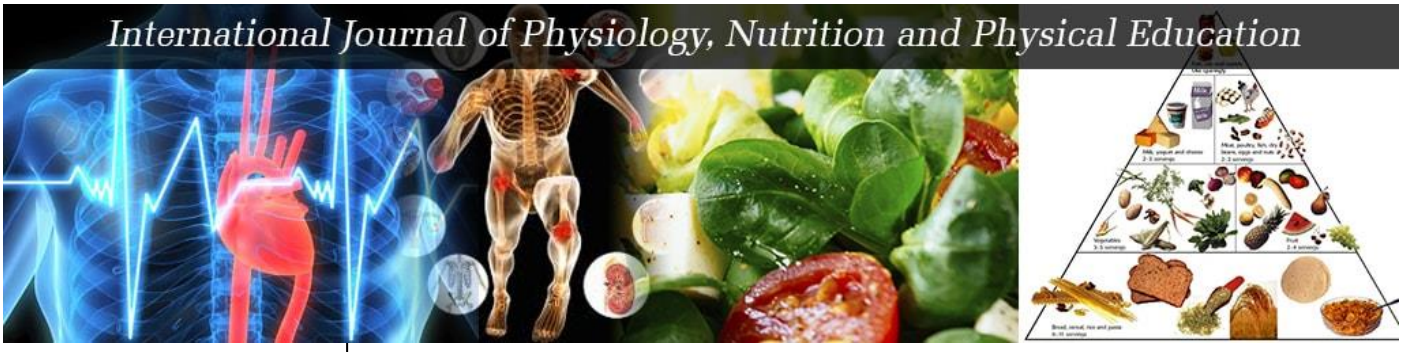

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Efficacy of specific skill and neuromuscular training on speed and explosive power among badminton players

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Abstract
The purpose of the study was to find out the efficacy of specific skill and neuromuscular training on speed and explosive power among badminton players. To achieve the purpose of this study forty-five (N= 45) school level badminton players were selected as subjects, who were members of badminton clubs, in Chennai. The age group of the subjects were between 15 to 17 years. The subjects were randomly divided into three groups consists of fifteen subjects. Group I underwent neuromuscular training and Group II underwent specific skill training and group III acted as control group. The investigator selected speed and leg explosive power as variables for this study. Pre and post test random group design was followed in this study. The data obtained from initial and final scores were statistically analysed for test of significance using Analysis of Covariance (ANCOVA).In all cases the significance level fixed was 0.05 levels, which was considered as appropriate. The results existing proved that there was a significant influence due to the neuromuscular training and specific skill training on speed and leg explosive power among school level badminton players.

Keywords: Badminton, neuromuscular training, specific skill training, speed and leg explosive power

Introduction
Badminton is a highly complex sport and this presents great challenges for players and coaches of all levels. An individual rally is a series of demanding movements performed using a movement pattern which is unique compared with any other sport. Rally length is often short (average for elite players is around 6-8 seconds) and, consequently, performed at very high intensity. However, players must also be prepared for long rallies. Rallies are interspersed with short rest

Periods (typical duration around 15 seconds) which allow partial recovery from the previous rally, however, competitive matches may last at least 45 minutes. So, badminton is a combination of speed (anaerobic fitness) in rallies and endurance (aerobic fitness) to allow sustained efforts and to promote recovery between rallies. Great strength, power, agility and flexibility are also required. All of these fitness components should form part of a player's fitness training. Additionally, the development of tactical and technical elements is, of course, also vital.

Training needs to be varied in order to enhance Leg power is an important component in badminton in that it results in the player being able to move quickly and explosively to the shuttle in various directions and to jump high to play overhead strokes. Greater leg power results in a greater acceleration and faster speed when lifting off the floor when moving, or jumping to the shuttle. According to Omosegaard (1996) [2], an explosive player will typically be able to jump high, change direction quickly and will generally appear to be swift and mobile on the badminton court. Leg power is therefore a combination of co-ordination and muscular properties.

Speed is needed in badminton for moving to and from the shuttle, and the ability to cover short distances quickly would be a great advantage for the badminton player (Todd and Mahoney, 1995) [5]. If a player needs to increase movement speed, then that needs to be achieved in many varied circumstances on and off the court. Neuromuscular training has been defined as multi-intervention programs that combine balance, strength, plyometric, agility, and sport-specific exercises (Coughlan and Caulfield, 2007) [1].

The physical fitness of a badminton player can be the decisive determinant of success during a tournament, and if a player wishes to achieve success in competition, an improvement in physical fitness needs to be emphasis. At this perspective, the aim of our study was to investigate the efficacy of specific skill and neuromuscular training on speed and explosive power among badminton players.

Methodology

To achieve the purpose of this study forty-five (N=45) school level badminton players were selected as subjects, who were members of badminton clubs, in Chennai. The age group of the subjects were between 15 to 17 years. The subjects were randomly divided into three groups consists of fifteen subjects. Group I underwent neuromuscular training and Group II underwent specific skill training and group III acted as control group for the period of ten weeks. The investigator selected speed and leg explosive power as variables and tested with 50 meter dash and vertical jump test respectively for this study. Pre-test and post-test random group design was followed in this study. The data obtained from initial and final scores were statistically analysed for test of significance using Analysis of Covariance (ANCOVA). In all cases the significance level fixed was 0.05 levels, which was considered as appropriate.

Result and discussion

The statistical analysis of comparing the initial and final score of speed among experimental and control group.

Table 1: Analysis of co-variance of speeds among experimental and control groups (Scores in seconds)

	Exe Group-I	Exe Group-II	Control Group	Source of variance	Sum of variance	DF	Mean squares	Obtained F-ratio
Pre Test Mean	7.30	7.32	7.33	Between	0.00	2	0.00	0.24
				within	0.37	42	0.01	
Post Test Mean	7.21	7.23	7.30	Between	0.06	2	0.03	5.11*
				Within	0.25	42	0.01	
Adjusted Post Test Mean	7.22	7.23	7.29	Between	0.04	2	0.02	16.14*
				within	0.05	41	0.00	
Mean Diff	-0.10	-0.09	-0.03					

*Significant (table F ratio at 0.05 level of confidence for 2 and 42(DF) =3.22, 2 and 41(DF) =3.23)

As shown in table 1, the obtained F value on the scores of pre-test means 0.24, which was lesser than the required table value. Hence, it was insignificant at 0.05 levels. The obtained F value on post-test means was 5.11, which was greater than required table value of 3.22 and was significant at 0.05 levels. Taking into consideration of the pre and post-test means adjusted post-test means were determined and analysis of covariance was done and the obtained F value 16.14 was greater than the required value of 3.23 and hence it was accepted that there was significant difference among the treated groups. Since significant difference was recorded, the results were subjected to post hoc analysis using Scheffe's Confidence interval test. The result was presented in the table-2.

Table 2: Scheffe's Confidence Interval test scores on speed

Exp. Group-I	Exp. Group-II	Control group	Mean difference	Required CI
7.22	7.23		0.02	0.03
7.22		7.29	0.07*	
	7.23	7.29	0.05*	

*Significant

The post hoc analysis of obtained ordered adjusted means proved that there was significant difference existed between neuromuscular and specific skill training and control group and there was no significant difference between treatment groups.

Table 3: Analysis of covariance of leg explosive power among experimental and Control group (Scores in Numbers)

	Exp. Group-I	Exp. Group-II	Control group	Source of variance	Sum of squares	DF	Mean squares	Obtained F-ratio
Pre Test Mean	16.53	19.80	19.40	Between	95.24	2	47.62	1.51
				within	173.73	42	4.14	
Post Test Mean	19.87	22.93	18.87	Between	134.71	2	67.36	14.26*
				within	198.40	42	4.72	
Adjusted Post Test Mean	21.64	21.87	18.15	Between	124.65	2	62.32	37.72*
				within	67.74	41	1.65	
Mean Differ	3.33	3.13	-0.53					

*significant table F-ratio at 0.05 level of confidence for 2 and 42 (DF) =3.22, 2 and 41(DF) =3.23

As shown in table-2, the obtained F value on the scores of pretest means 1.51, which was lesser than the required table value, hence, it was insignificant at 0.05 levels. The obtained F value on posttest means was 14.26, which was greater than the required table value of 3.22 and was significant at 0.05 levels. Taking into consideration of the pre and posttest means adjusted means were determined and analysis of covariance was done and the obtained F value 37.72 was greater than the required value of 3.23 and hence it was accepted that there was significant differences among the treated groups. Since significant difference was recorded, the results were subjected to post hoc analysis using scheffe's confidence interval test. The results were presented in table -2.

Table 4: Scheffe's Confidence Interval Test Scores on leg explosive power

				Required CI
Strength training	**Court drills training**	**Control group**	**Mean difference**	
21.64	21.87		0.23	1.18
21.64		18.15	3.49*	
	21.87	18.15	3.72*	

*Significant

The post hoc analysis of obtained ordered adjusted means proved that there was significant difference existed between neuromuscular and specific skill training and control group and there was no significant difference between treatment groups.

Conclusion

The results of this study provide evidence that ten weeks of specific skill and neuromuscular training on Speed and leg explosive power was significantly improved due to neuromuscular and specific skill training among badminton players. The effects of training programs specifically targeted on speed and leg explosive power for the enhancement of the badminton playing ability. Badminton at the highest level puts a great demand on leg strength (Omosegaard, 1996) [2]. Speed is needed in badminton in moving to and from the shuttle. Speed on a badminton court is not only a question of being in good physical condition (Omosegaard, 1996) [2]. According to Roetert et al. (1996) [4], a vital aspect of sports such as badminton is the ability of the player to exert muscular force at high speed. Many sports require a generation of high forces and power outputs (Reilly et al., 1990) [3].

References

1. Coughlan G, Caulfield B, A 4-week neuromuscular training program and gait patterns at the ankle joint. J Athl Train. 2007; 42(1):51-59.
2. Omosegaard B. Physical Training for Badminton. Denmark: Malling Beck, 1996.
3. Reilly T, Secher N, Snell P, Williams C. Physiology of Sports. London: E. & F.N. Spon, 1990.
4. Roetert EP, McCormick TJ, Brown SW, Ellenbecker TS. Relationship between isokinetic and functional trunk strength in elite junior tennis players. Iso kinetics and Exercise Science. 1996; 6:15-20.
5. Todd MK, Mahoney CA. Determination of pre-season physiological characteristics of elite male squash players. In: T Reilly M, Hughes and A Lees (Eds.), Science and Racket Sports. London: E and FN Spon, 1995.