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Effect of Complex Training and Combined Complex Training with Yogic Practices on Physical Variables among Women Sports Participants

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Abstract

The purpose of the study was to find out the effect of complex training and combined complex training with yogic practices on physical variables among women sports participants. To achieve the purpose of this study, forty five women sports participants of Idhaya Engineering College for Women, Chinnasalem, Tamil Nadu were randomly selected from population of 250 sports participants. Their age ranged from 18 to 24 years. The study was formulated as a random group design, consisting of a pre-test and post-test. The subject selected (N=45) were randomly assigned into three equal groups. This experimental group-I (N=15) undergo complex training, Experimental group-II (N=15) undergo complex training with yoga and control group (N=15) was not practiced any specific training method. The experimental groups practiced a period of twelve weeks training program in an alternative days. The selected physical variables were speed, agility and explosive strength. Analysis of covariance (ANCOVA) was applied to test the comparative effects as the groups used in the study 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.

Keywords: Complex Training, Yogic Practices, Speed, Agility, Explosive Strength.

Introduction

In this modern era, sports training methods have undergone a rapid development in the last few decades; developing countries like India could only challenge the international sports on a lower scale due to the traditional and stereotype approaches in training methods. In addition, the existing training methods do not concentrate on wholesome and long lasting performance but perceives training as a eleventh hour preparation and formality to appear in the international competitions. Complex training is a new concept combining the resistance training followed by plyometrics. The investigator was very keen to observe the changes due to complex training and yogic practices on various physical and physiological parameters among women sports participants. Complex training is one of the most advanced forms of sports training, integrates resistance training, plyometrics, and sport-specific movement. It consists of an intense resistance exercise followed by a plyometric exercise. Complex training activates and works the nervous system and fast twitch muscle fibers simultaneously. The resistance exercise activates the fast twitch muscle fibers. The plyometric movement stresses those muscle fibers that have been activated by the resistance training movement. During this activated state, the muscles have a tremendous ability to adapt. This form of intense training can teach slow twitch muscle fibers to perform like fast twitch fibers (Ebben, 2002).

Physical fitness is a must for any good performance in sports. Different sports require different types of fitness emphasizing on a particular fitness factor. However, general level of physical fitness is necessary for every sports man. The law of use and disuse suggest that if you want to be fit you must exercise. The routine of exercise differs from individual to individual according to purpose. Sportsmen also select different routines of participation. This can be attained excellently by indulging in Yogic routine. Yogic exercises deal with the vital organs of the body on which health depends. The precursor of physical fitness lies in the efficient working of the vital organs of the body and yoga aims at it. The various selected Asanas giving different movements to the spine, controlled respiration, relaxation technique and concentration practice as a whole form of an excellent routine to take care of the health of vital organs of the body. Yogasanas have a

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greater impact on the mind and the senses than the other physical exercises with the result that yogasanas help to develop one's physical and mental powers to calm the mind and control the senses. Yogasanas make possible not only physical and mental development but also intellectual and spiritual development. Asanas require the least possible use of physical energy. Yogasanas are called a 'non-violent activity' (Ananda, 1982).

Methodology

The purpose of the study was to find out the effect of complex training and combined complex training with yogic practices on physical variables among women sports participants. To achieve the purpose of this study, forty five women sports participants of Idhaya Engineering College for Women, Chinnasalem, Tamil Nadu were randomly selected from population of 250 sports participants. Their age ranged from 18 to 24 years. The study was formulated as a random group design, consisting of a pre-test and post-test. The subject selected (N=45) were randomly assigned into three equal groups. This experimental group-I (N=15) undergo complex training, Experimental group-II (N=15) undergo complex training with yoga and control group (N=15) was not practiced any specific training method. The experimental groups practiced a period of twelve weeks training program in an alternative days. The selected physical variables were speed, agility and explosive strength. Analysis of covariance (ANCOVA) was applied to test the comparative effects as the groups used in the study 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 I. Computation of analysis of covariance of complex training, complex training with yogic practices and control groups on speed

	CTG	CTWYPG	CG	Source of Variance	Sum of Squares	df	Means Squares	F-ratio
Pre-Test Means	6.54	6.51	6.55	BG	0.01	2	0.006	0.05
				WG	4.70	42	0.11	
Post-Test Means	5.95	5.83	6.54	BG	4.33	2	2.16	27.52*
				WG	3.30	42	0.07	
Adjusted Post-Test Means	5.95	5.84	6.54	BG	4.29	2	2.14	26.97*
				WG	3.26	41	0.08	

Table – I indicated that the scores of pre-test means of the complex training, complex training with yogic practices and control groups were 6.54, 6.51 and 6.55 respectively. The obtained F-ratio for the pre-test was 0.05. The obtained F-ratio (pre-test mean) was found as not significant at 0.05 level, since the F-ratio was failed to reach the significant level (3.21). The pos-test means of the complex training, complex training with yogic practices and control groups were 5.95, 5.83 and 6.54 respectively. The obtained F-ratio for the post-test was 27.52. The F-ratio for the post-test was significant at 0.05 level of confidence for the degree of freedom 2 and 42. The adjusted post-test means of complex training, complex training with yogic practices and control groups were 5.95, 5.84 and 6.54 respectively. The obtained F-ratio for the adjusted post-test means was 26.97. Hence the F-ratio for adjusted post-test mean (26.97) was significant at 0.05 level of confidence for the degree of freedom 2 and 41.

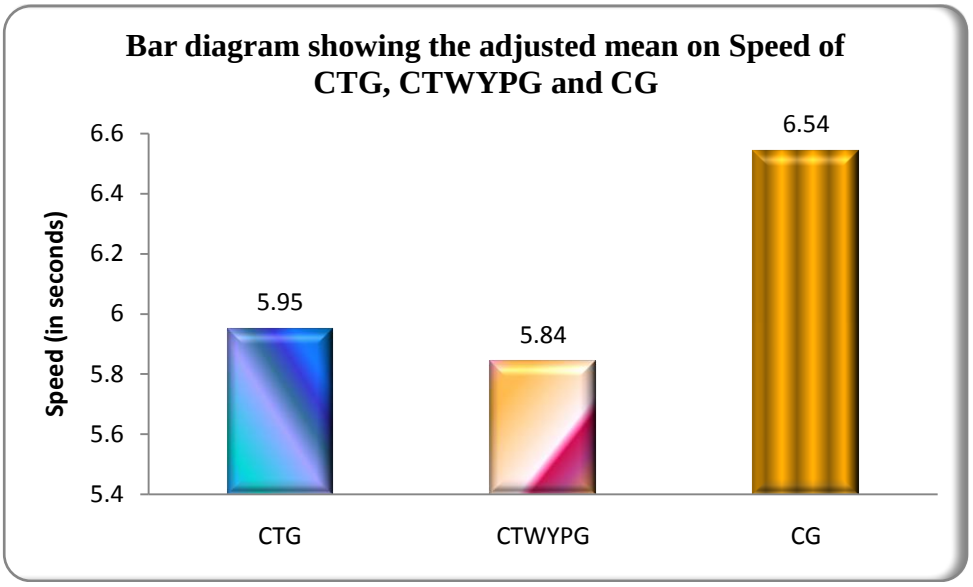

Figure I. Mean difference of the complex training, complex training with yogic practices and control groups on speed

Table II. Scheffe's post hoc test of complex training, complex training with yogic practices and control groups on speed

CTG	CTWYPG	CG	Mean Difference	CI Value
5.95	5.84	----	0.11	0.26
5.95	----	6.54	0.59*	0.26
----	5.84	6.54	0.70*	0.26

***** Significant at 0.05 level

Table – II shows the results in testing the mean difference exist between treatment groups namely complex training, complex training with yogic practices and control group on selected physical and physiological variables are 0.26 (CTG vs CTWYPG and CTWYPG vs CG). In testing the mean difference between the pairs of above, it was observed that the mean difference between CTG vs CTWYPG and CTWYPG vs CG was found as statically significant, since the mean difference was higher than the F-ratio.

Table III. Computation of analysis of covariance of complex training, complex training with yogic practices and control groups on agility

	CTG	CTWYPG	CG	Source of Variance	Sum of Squares	df	Means Squares	F-ratio
Pre-Test Means	11.25	11.25	11.19	BG	0.03	2	0.01	0.06
				WG	10.52	42	0.25	
Post-Test Means	10.35	10.08	11.12	BG	8.70	2	4.35	12.53*
				WG	14.58	42	0.34	
Adjusted Post-Test Means	10.35	10.08	11.13	BG	8.85	2	4.42	12.70*
				WG	14.28	41	0.34	

Table – III indicated that the scores of pre-test means of the complex training, complex training with yogic practices and control groups were 11.25, 11.25 and 11.19 respectively. The obtained F-ratio for the pre-test was 0.06. The obtained F-ratio (pre-test mean) was found as not significant at 0.05 level, since the F-ratio was failed to reach the significant level (3.21). The pos-test means of the complex training, complex training with yogic practices and control groups were 10.35, 10.08 and 11.12 respectively. The obtained F-ratio for the post-test was 12.53 The F-ratio for the post-test was significant at 0.05 level of confidence for the degree of freedom 2 and 42. The adjusted post-test means of complex training, complex training with yogic practices and control groups were 10.35, 10.08 and 11.13 respectively. The obtained F-ratio for the adjusted post-test means was 12.70. Hence

the F-ratio for adjusted post-test mean (12.70) was significant at 0.05 level of confidence for the degree of freedom 2 and 41.

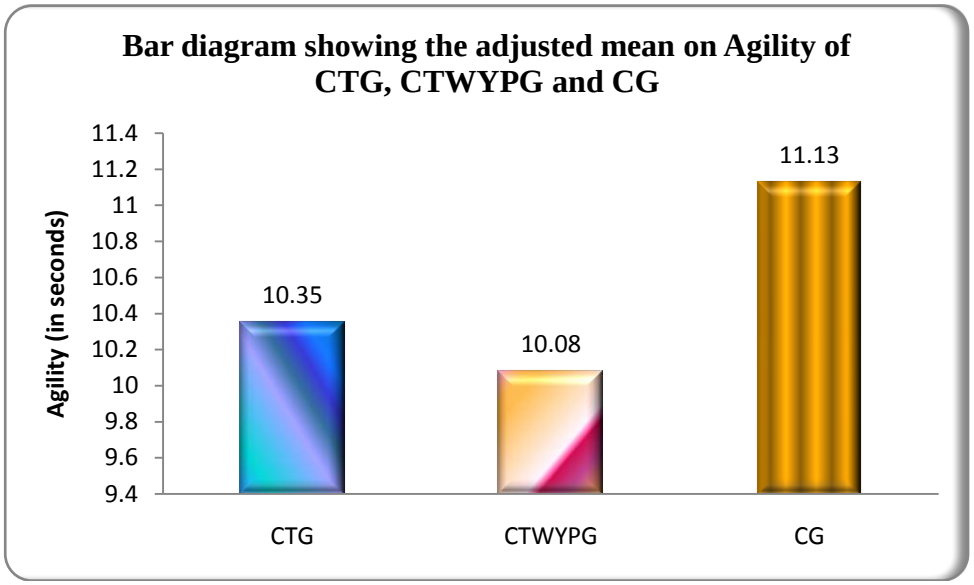

Figure II. Shows the mean values of complex training, complex training with yogic practices and control groups on agility

Table IV. Scheffe's post hoc test of complex training, complex training with yogic practices and control groups on agility

CTG	CTWYPG	CG	Mean Difference	CI Value
10.35	10.08	----	0.27	0.53
10.35	----	11.13	0.78*	0.53
----	10.08	11.13	1.05*	0.53

***** Significant at 0.05 level

Table – IV shows the results in testing the mean difference exist between treatment groups namely complex training, complex training with yogic practices and control group on selected physical and physiological variables are 0.53 (CTG vs CTWYPG and CTWYPG vs CG). In testing the mean difference between the pairs of above, it was observed that the mean difference between CTG vs CTWYPG and CTWYPG vs CG was found as statically significant, since the mean difference was higher than the F-ratio.

Table V. Computation of analysis of covariance of complex training, complex training with yogic practices and control groups on explosive strength

	CTG	CTWYPG	CG	Source of Variance	Sum of Squares	df	Means Squares	F-ratio
Pre-Test Means	1.67	1.66	1.64	BG	0.006	2	0.003	0.22
				WG	0.57	42	0.01	
Post-Test Means	1.77	1.80	1.65	BG	0.20	2	0.10	19.50*
				WG	0.22	42	0.005	
Adjusted Post-Test Means	1.77	1.80	1.65	BG	0.19	2	0.09	20.35*
				WG	0.19	41	0.005	

Table – V indicated that the scores of pre-test means of the complex training, complex training with yogic practices and control groups were 1.67, 1.66 and 1.64 respectively. The obtained F-ratio for the pre-test was 0.22 . The obtained F-ratio (pre-test mean) was found as not significant at 0.05 levels, since the F-ratio

was failed to reach the significant level (3.21). The post-test means of the complex training, complex training with yogic practices and control groups were 1.77, 1.80 and 1.65 respectively. The obtained F-ratio for the post-test was 19.50. The F-ratio for the post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 42. The adjusted post-test means of complex training, complex training with yogic practices and control groups were 1.77, 1.80 and 1.65 respectively. The obtained F-ratio for the adjusted post-test means was 20.35. Hence the F-ratio for the adjusted post-test mean (19.50) was significant at 0.05 level of confidence for the degree of freedom 2 and 41.

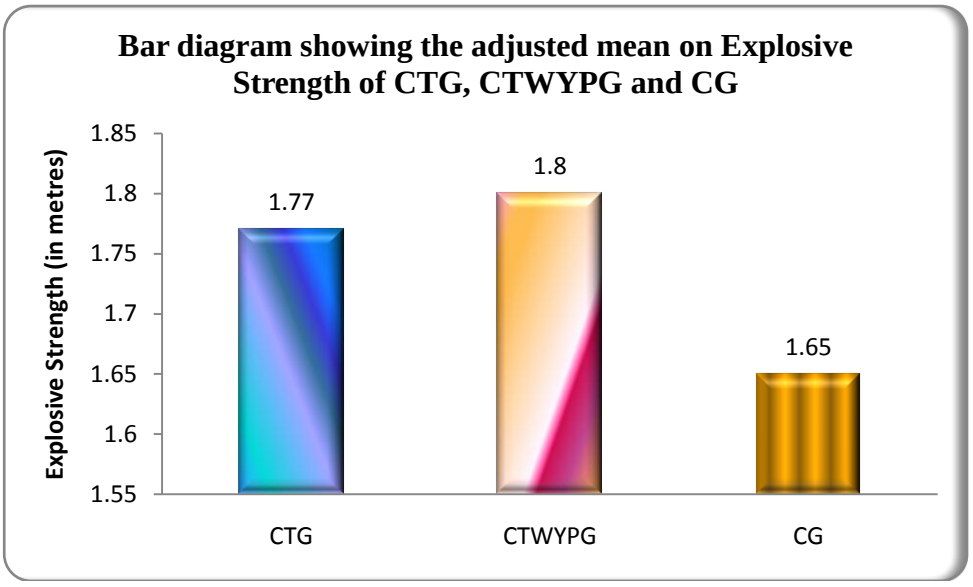

Figure III. Shows the mean values of complex training, complex training with yogic practices and control groups on explosive strength

Table VI. Scheffe's post hoc test of complex training, complex training with yogic practices and control groups on explosive strength

CTG	CTWYPG	CG	Mean Difference	CI Value
1.77	1.80	----	0.03	0.06
1.77	----	1.65	0.12*	0.06
----	1.80	1.65	0.15*	0.06

***** Significant at 0.05 level

Table VI shows the adjusted means on explosive strength and difference between the means of the complex training, complex training with yogic practices and control groups. The mean differences of CTG and CG, CTWYPG and CG were 0.12 and 0.15 respectively was greater than the CI value 0.06.

Conclusion

1. The complex training group improved the selected physical variables on speed, agility and explosive strength of women sports participants.
2. The combinations of complex training with yogic practices and complex training group selected improved the physical variables on speed, agility and explosive strength of women sports participants.
3. The experimental groups improved the selected physical variables on speed, agility and explosive strength of women sports participants than the control group.

References

1. Alves, J,M,V,M., Rebelo, A,N., Abrantes, C., and Sampaio, J. (2010). Short term effects of complex and contrast training in soccer players' vertical jump, sprint, and agility abilities. J Strength Cond Res;24(4): 936–941.
2. Ananda (1982). The Complete Book of Yoga Harmony of Body & Mind. Delhi: Orient Books Pvt. Ltd.
3. Bevan HR, Owen NJ, Cunnigham DJ, Kingsley MI, Kilduff LP. Complex Training in Professional Rugby Players: Influence of Recovery Time on

Upper-body Power Output. J Strength Cond Res 2003;23(6):1780-1785.
4. Ebben WP, Complex Training: a brief review, J Sports Sci & Med 1: 42-46, 2002.
5. Ebben, W.P. and Watts, P.B. (1998) A review of combined weight training and plyometric training modes: complex training. Strength and Conditioning Journal 20 (5) p18-27.
6. Fleck, S. & Kontor, K. (1986). Complex Training. Nat'l Strength Cond. Assoc. J., 8(5), 66-69.
7. Jensen, R, L.; Ebben, W, P. (2003). Kinetic Analysis of Complex Training Rest Interval Effect on Vertical Jump Performance. Journal of Strength & Conditioning Research. 17(2):345-349.
8. Santos EJ, Janeria MA. Effects of Complex Training on Explosive Strength in Adolescent Male Basketball Players. J Strength Cond Res 2008;22(3):903-909.
9. Daniel, J., Jose, M., Gonzalez, R., & Fernando, N. (2009). Effects of complex vs non complex training programs on lower body maximum strength and power. Isokinetics and Exercise Science. 17-4. 233-241.
10. Comyns TM, Harrison AJ, Hennessy LK, Jensen RJ. The Optimal Complex Training Rest Interval For Athletes From Anaerobic Sports. J Strength Cond 2006;20(3):471-476.
11. Bevan, HR, Owen, NJ, Cunningham, DJ, Kingsley, MIC, and Kilduff, LP. Complex training in professional rugby players: influence of recovery time on upper-body power output. J Strength Cond Res. 23(6): 1780-1785, 2009.