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Consequences of Pilates Training with and Without Yogic Practice on Body Composition Balance of Male Youth

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Abstract
The purpose of the present study was to find out the Consequences of Pilates Training with and without Yogic Practice on Body Composition Balance of Male youth. To achieve the purpose of this study, the researcher examined body mass index of 750 students studying in various schools of Virajpet, kodoga, Karnataka and found out 200 obese students. Out of these 200 obese students, 80 obese students were selected at random; their age ranged from 15 to 17 years as per the school records. The selected subjects were divided into three experimental groups and a control group with twenty subjects in (n=20) each. Experimental Group I (PTG-20) underwent Pilates training, Experimental Group II (YTG-20) underwent yoga training, Experimental Group III (PTYTG-20) underwent combination of Pilates and yoga training and Group IV served as control group (CG) for the training period of 12 weeks. All the subjects were informed about the nature of the study and their consent was obtained to co-operate till the end of the experiment and testing period. Pilot study groups and experimental groups (namely PTG, YTG and PTYTG) were given training independently with separate subjects in each group. A qualified physician examined the subjects medically and declared them fit for the study. The subjects were free to withdraw their consent in case they felt any discomfort during the period of their participation, but there were no dropouts. The body composition was measured by anthropometric measures and balance is measured by physical performance test, as a result of two training programmes, the following improvements occurred on body composition and balance among the obese students. It was concluded from the results of the study that the Pilates, yoga training and combined training showed significant improvement in balance, when compared with control group as well as pre-test. Due to the influence of Pilates, yoga training and combined training significantly reduced the body fat percentage, when compared with control group as well as pre-test. Combined training was identified as the best training and was a suitable training system to improve all the selected criterion variables when compared to the Pilates and yoga training. Pilates training methods were identified as one of the methods to improve all the selected dependent variables.

Keywords: Pilates Training, Aerobic Training, Body Composition, Balance,

1. **PTG – Pilates training Group**
2. **YTG – Yoga training Group**
3. **PTYTG - Pilates training and Yoga training Group**

4. CG - Control Group

Introduction

The overall average prevalence of obesity in adults for the year 2000 was 8.2% of the global population. The prevalence of obesity progressively increases with the degree of development of countries, as seen in the data for undeveloped countries (1.8%), developing countries (4.8%), countries in transition (17.1%), and developed countries (20.4%) (WHO 2001). Excess body weight and fatness pose a threat to both the quality and quantity of one's life. Obese individuals have shorter life expectancy and greater risks of CHD, hypercholesterolemia, hypertension, diabetes mellitus, certain cancers and osteoarthritis. So, a comprehensive report and roundtable discussion of the role of physical activity in the prevention and treatment of obesity and its co-morbidities are necessary. Obesity may be caused by genetic and environmental factors. As an exercise specialist, one plays an important role in combating this major health problem by encouraging a physically active lifestyle and by planning exercise programs and scientifically sound diets for one's clients, in consultation with trained nutrition professionals. Restricting caloric intake and increasing caloric expenditure through physical activity and exercise are effective ways of reducing body weight and fatness while normalizing blood pressure and blood lipid profiles (Morrow, et al., 2005). Exercise is a key component in the prevention of obesity. This is a condition in which energy intake, in the form of food, exceeds the energy expenditure of daily living and the excess energy is stored in the form of adipose tissue made up of fat cells. Two factors facilitate the onset and progressive nature of obesity. The first is the age-related reduction in the energy expended to maintain waking bodily functions-the basal metabolic rate of about 2% every 10 years. The second is the lowered metabolic rate of obese individuals. Combine these two factors with reduced physical activity and the development of obesity is inevitable. Regular aerobic exercise not only increases energy expenditure during the exercise but for some time afterwards because the non-exercising metabolic rate remains elevated during the post-exercise recovery period. A combination of exercise with reduced dietary intake provides the best strategy for counteracting obesity and the associated CVD (Hale, 2003),

Methodology

The purpose of the present study was to find out the Consequences of Pilates Training with and without Yogic Practice on Body Composition and Balance of Male youth. To achieve the purpose of this study, the researcher examined body mass index of 750 students studying in various schools of virajpet, kodoga, Karnataka and found out 200 obese students. Out of these 200 obese students, 80 obese students were selected at random; their age ranged from 15 to 17 years as per the school records. The selected subjects were divided into three experimental groups and a control group with twenty subjects in (n=20) each. Experimental Group I (PTG-20) underwent palates training, Experimental Group II (YTG-20) underwent yoga training, Experimental Group III (PTYTG-20) underwent combination of palates and yoga training and Group IV served as control group (CG) for the training period of 12 weeks. All the subjects were informed about the nature of the study and their consent was obtained to co-operate till the end of the experiment and testing period. Pilot study groups and experimental groups (namely PTG, YTG and PTYTG) were given training independently with separate subjects in each group. A qualified physician examined the subjects medically and declared them fit for the study. The subjects were free to withdraw their consent in case they felt any discomfort during the period of their participation, but there were no

dropouts. The body composition was measured by anthropometric measures and balance is measured by physical performance test.

Analysis of Data

The data collected from the experimental group prior and after experimentation on selected variables were statistically examined by using analysis of covariance (ANCOVA) was used as statistical technique. Whenever the 'F' ratio was found to be significant the Scheffe's test was used as post-hoc test to determine which of the paired means differed significantly. In all the cases to test the significance, 0.05 level of confidence was used.

Computation of Analysis of Covariance and scheffe's post Hoc test on body composition.

The analysis of covariance on the data obtained for body fat of pre and post-test PTG, YPG, PTYPG and CG have been presented in Table 1

Table-1 Analysis of covariance of data on body composition among PTG, YPG, PTYPG and CG

Test Groups		PTG	YPG	PTYPG	CG	SOV	SS	df	MS	F Ratio
Pre test	X	25.81	25.21	26.44	24.77	B	31.6373	3	10.5458	3.33*
	S	1.01	2.55	0.98	2.04	W	240.654	76	3.1665	
Post test	X	23.40	22.97	22.47	24.53	B	46.31955	3	15.4398	5.51*
	S	1.1	2.22	1.16	1.92	W	213.151	76		
Adjusted post test	X	23.8	23.27	21.7	25.21	B	111.439	3	37.1465	84.01*
						W	33.1621	75	0.44216	

Results of Body Composition

Table I shows that the pre-test means in body fat of the PTG, YPG, COM and CG were 25.81, 25.21, 26.44, and 24.77 respectively, resulted in an "F" ratio of 3.33, which indicates statistically significant difference between the pre-test means at 0.05 level of confidence. The post test means of PTG, YPG, COM and CG were 23.4, 22.97, 22.47 and 24.53 respectively, resulted in an "F" ratio of 5.51, which indicates statistically significant difference between the post test means at 0.05 level of confidence. The adjusted post-test means of PTG, YPG, COM and CG were 23.18, 23.27, 21.7, and 25.21 respectively. The obtained F-ratio value was 84.01, which was higher than the table value of 2.73 for df 3 and 75 required for significance at 0.05 level. It indicates that there was a significant difference among the adjusted posttest means of body fat of the PTG, YPG, COM and CG.

Results of Scheffe's Test on Body Composition

Table 1 shows that the adjusted post-test mean difference in body fat between PTG and PTYPG, PTG and CG, YPG and PTYPG, YPG and CG and between COM and CG are 0.78, 1.28, 2.31, 1.53 and 1.03 respectively, which were statistically significant at 0.05 level of confidence. At the same time that there was no significant difference on body fat between the PTG and YPG. However, PTYPG was to be found better in reduce the body fat than the PTG and YPG.

Discussion on Findings on Body Composition

The findings of the study on body fat reveal that the experimental group namely PTG, YPG and PTYPG

had significantly improved after the training. Besides, the results of the study indicated that there was a significant difference between the PTG and PTYPG and YPG and PTYPG. At the same time there was no significant difference PTG and YPG.

Jago, at al., (2006) found that palates holds promise as a means of reducing obesity. Body composition improved significantly compared to other Pilates studies, and level comparable to other forms of training (Aladro-Gonzalvo, et al., 2012, Sekendiz, et al., 2007 and Rogers and Gibson, 2009). The body composition may depend upon the following concepts: both in gain of lean muscle and actual energy expenditureduring the pilates exercise session. There may have been short-term elevation of REE fora period after exercise that could be partially responsible for weight loss andbody composition improvement Melb, et al., 1993.A systematic yoga training reduces the body fat.In a study Jimenez, 2010 and Ruhal, et al., 2010, concluded that yogic practices reduce the body fat percentage. The present research findings also suggested that pilates training, yogic practices and combined trainingreduce the body fat percentage among the obese male students.

Computation of Analysis of Covariance and Scheffe's Post Hoctest on Balance

The analysis of covariance on the data obtained for balance of pre and post-test of PTG, YPG, PTYPG and CG have been presented in table 2.

Test Groups		PTG	YPG	PTYPG	CG	SOV	SS	df	MS	F Ratio
Pre test	X	18.1	18.6	19.3	18.2	B	17.8	3	5..93333	0.97
	S	2.61	2.37	2.56	2.35	W	466	76	6.131579	
Post test	X	19.65	20.25	21.8	18.4	B	119.65	3	39.88333	8.60*
	S	2.56	2.29	1.93	1.73	W	352.3	76	4.635526	
Adjusted post test	X	20.2	20.21	21.18	18.69	B	61.64447	3	20.54816	43.56*
						W	35.3762	75	0.471683	

Results of Balance

Table 2 shows that the pre-test means in balance of the PTG, YPG, PTYPG and CG were 18.1, 18.6, 19.3, and 18.2 respectively, resulted in an "F" ratio of 0.97, which indicates statistically no significant difference between the pre-test means at 0.05 level of confidence. The post-test means of PTG, YPG, PTYPG and CG were 19.65, 20.25, 21.8 and 18.4 respectively, resulted in an "F" ratio of 8.60, which indicates statistically significant difference between the post-test means at 0.05 level of confidence. The adjusted post-test means of PTG, YPG, PTYPG and CG were 20.02, 20.21, 21.18, and 18.69 respectively. The obtained F-ratio value was 43.56, which was higher than the table value of 2.73 for df 3 and 75 required for significance at 0.05 level. It indicates that there was a significant difference among the adjusted post-test means of balance of the PTG, YPG, PTYPG and CG.

Results of Scheffe's Test on Balance

Table 2 shows that the adjusted post-test mean difference in balance between PTG and PTYPG, PTG and CG, YPG and PTYPG, YPG and CG and between PTYPG and CG are 1.16, 1.330.97, 1.52 and 2.49 respectively, which were statistically significant at 0.05 level of confidence. At the same time that there was no significant difference on balance between the PTG and YPG. However, PTYPG was to be found better in reduce the balance than the PTG and YPG.

Discussion on Findings on Balance

The findings of the study on balance reveal that the experimental group namely PTri, YPG The findings of significantly improved after the training. Brand PTYP Oils of the study indicated that there was a significant difference between the PTG and PTYPG and YPG and PTYPG. At the same time there was no significant difference PTG and YPG.

Balance improved without performing formal pilates training Bird, et al., (2012) Cruz-Ferreira, et al., (2011), concluded that the Pilates method of exercise (PME) improve the dynamic balance in healthy people. This may also be due to the footwork PTYPG ponent, enabling the subjects to "tune in kinaesthetically" while in either a stable or unstable situation. The balance gains were more significant than previously reported (Brena G., et al., 2009 and Kloubec, 2010). Fillmore, et al., (2010), stated that the yoga training 2 times per week and a walking program 3 times per week, for 7 weeks improve the balance ability. Neil Wolkodoff, et. al. (Sep, 2012), PTYPG bind Pilates and aerobic program improve the balance ability. The present research findings also suggested that pilates, yogic practices and PTYPG combined training improves the balance among the obese male students. Similar to yoga, the Pilates method incorporates both physical and mental elements. The technique focuses on the "power house" or what is known today as the core; in Pilates. This includes the abdominal, gluteal, and paraspinal muscles in particular. Pilates exercises involve progressive multiplanar excursion of the trunk and limbs. Each starts by stabilizing the core musculature and then proceeds through a controlled range of motion. The goals are to increase muscle strength and endurance as well as flexibility and to improve posture and balance.

Conclusions

In the present investigation, as a result of two training programmes, the following improvements occurred on body composition and balance among the obese students:

1. It was concluded from the results of the study that the pilates, yoga training and combined training showed significant improvement in balance, when compared with control group as well as pre-test.
2. Due to the influence of pilates, yoga training and combined training significantly reduced the body fat percentage, when compared with control group as well as pre-test.
3. Combined training was identified as the best training and was a suitable training system to improve all the selected criterion variables when compared to the pilates and yoga training.
4. Pilates training methods were identified as one of the methods to improve all the selected dependent variables.

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