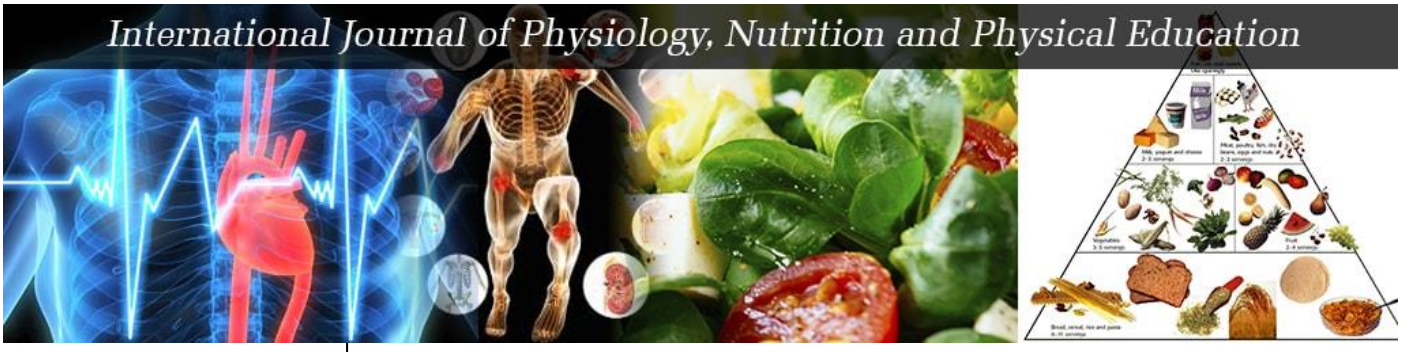

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Influence of walking cycling and swimming on physical fitness among overweight men

S Rajarajan and Dr. P Anandhan

Abstract
The purpose of the study was to find out the effect of walking cycling and swimming on selected physical fitness variables among overweight men. To achieve this purpose, forty eight overweight men (BMI=from 25 to 29.9kg/m^2) were randomly selected subject from various faculty of Vel Tech University, Chennai, Tamil Nadu, India as subjects. The selected subjects age, height and weight range were 34 ± 4 years, 167 ± 8 cm and 77 ± 14 kg respectively. They were randomly split into four equal groups, and all groups contains of twelve (n=12) subjects in each, in which they known as group I walking group, group II cycling group and group III swimming group. The group IV would be considered as control group, which did not undergo any specific training programme except their regular activities. The physical fitness variables such as body mass index, cardio respiratory endurance and muscular strength were selected as criterion variables and tested. The walking, cycling and swimming training protocols administered for six days per week for twelve weeks in forty-five minutes and an hour, which included warning up and relaxation. The date on selected variables on prior and after the training programme were statistically analyzed by using ANCOVA and scheffe's post hoc test to find the significance and paired mean differences. The magnitude of improvement also be observed that the percentage of improvement due to training. The result shows that there was a significant improvement among experimental groups on selected physical fitness variables due to respective training protocol.

Keywords: Walking, cycling, swimming, cardio respiratory endurance and muscular strength

Introduction
Physical fitness is defined as any activity requiring physical effort, carried out especially to sustain or improve health and fitness, a task or activity done to practice or test a skill. Caspersen, Powell and Christenson (1985) [3] also described exercise as a subset of physical activity that is planned, structured, and repetitive and has as a final or an intermediate objective the improvement or maintenance of physical fitness. Exercise is further defined as any bodily activity that enhances or maintains physical fitness and overall health and wellness. It is performed for various reasons including strengthening muscles and the cardiovascular system, honing athletic skills, weight loss or maintenance, as well as for the purpose of enjoyment. Frequent and regular physical exercise boosts the immune system, and helps prevent the "diseases of affluence" such as heart disease, cardiovascular disease (Hall, John, 2011) [5].

Aerobic exercise which is any physical activity that uses large muscle groups and causes body to use more oxygen than it would while resting. The goal of aerobic exercise is to increase cardiovascular endurance (Alberts, 2005) [1]. Examples of aerobic exercise include cycling, swimming, brisk walking, skipping rope, rowing, hiking, playing tennis, continuous training, and long slow distance training. Anaerobic exercise also called strength or Resistance training can firm, strengthen, and tone muscles, as well as improve bone strength, balance, and coordination (Prosser, 1991) [12]. Examples of strength moves are pushups, lunges, and bicep curls using dumbbells.

Anaerobic exercise also include weight training, functional training, eccentric training, interval training, Sprinting and high-intensity interval training increase short-term muscle strength. Flexibility exercises stretch and lengthen muscles. Activities such as stretching help to improve joint flexibility and keep muscles subtle. The goal is to improve the range of motion which can reduce the chance of injury (Langhammer, 2001) [9].

Jogging and walking belong to the aerobic exercise type but both differ in the level of intensity and time spent. Jogging is a form of trotting or running at a slow or leisurely pace and falls into the category of vigorous intensity exercise while walking falls into the light intensity exercise with longer duration of time than jogging (Colbert, 2004) [4]. Many people walk or jog almost every day as a form of exercise and relaxation. Some people feel it's better to jog, since the heart rate is elevated and you can potentially cover more ground in less time due to the faster pace.

Swimming is beneficial because you are burning calories and working your muscles but it's at a much lower impact, making it easier on the joints, muscles, and bones. Swimming may also be used as a warm up or cool down for runners, preceding or following a workout or race. It is often used by serious runners as a means of active recovery during interval training (Henry Gray. 2007) [6]. Swimming can be used as a method to increase endurance or to provide a means of cardiovascular exercise but with less stress on joints or demand on the circulatory system.

Methodology

Selection of Subjects

To achieve the purpose of the study, forty eight overweight men (BMI=from 25 to 29.9kg/m^2) were randomly selected subject from various faculty of Vel Tech University, Chennai, Tamil Nadu, India as subjects. The selected subjects age, height and weight range were 34 ± 4 years, 167 ± 8 cm and 77 ± 14 kg respectively. They were randomly split into four equal groups, and all groups contains of twelve (n=12) subjects in each, in which they known as group I walking group, group II cycling group and group III swimming group. The group IV would be considered as control group, which did not undergo any specific training programme except their regular activities.

Selection of Variables

The physical fitness variables such as body mass index (Ht& wt Ratio), cardio respiratory endurance (6 min run or walk) and muscular strength (grip dynamometer) were selected as criterion variables and tested. The walking, cycling and swimming training protocols are selected as Independent variables for present study.

Training Programme

During the training period, group I underwent walking training, group II underwent cycling training and Group III underwent swimming training. The whole experimental programme was implemented for six days per week you twelve weeks. In every day training session, the practice lasted approximately between forty-five minutes and an hour, which included warning up and relaxation. The Experimental groups underwent their respective training programme under the supervision of the researcher.

Statistical Procedure

The analysis of variance (ANOVA) was used to find the difference among the group if the difference on initial and final mean. After eliminating the influence of pre-test, the adjusted post-test means of experimental groups were tested for significance by using ANCOVA. In addition to this, Scheffe's post-hoc test will be employed, when the F-ratio of the adjusted post-test means is significant, to find out the paired mean difference if any among the groups for each variable, separately. Further the magnitude of improvement between pre and post data of experimental groups and control group assess by using percentage calculation on selected criterion variables. The level of confidence is fixed at 0.05, for significance.

Table 1: Ancova of walking group cycling group swimming group and control group on selected physical fitness variable

Test / Variables	Walking Group	Cycling Group	Swimming Group	Control Group	SOV	SS	df	MS	F
BMI	27.05	26.64	*26.25*	27.77	B	15.017	3	5.006	84.57*
					W	2.545	43	0.059	
Muscular Strength	51.75	51.69	54.53	47.09	B	338.38	3	112.794	180.09*
					W	26.931	43	0.626	
Cardio Respiratory Endurance	1008.84	1045.61	1132.36	870.67	B	402169.05	3	134056.34	327.12*
					W	17621.63	43	409.80	

*Significant at 0.05 level.

Table II: Scheffe's Post Hoc Test on Paired Mean Differences on Selected Physical Fitness Variables

Test / Variables	Walking Group Vs Cycling Group	Walking Group Vs Swimming Group	Walking Group Vs Control Group	Cycling Group Vs Swimming Group	Cycling Group Vs Control Group	Swimming Group Vs Control Group
BMI	0.405*	0.798*	0.716*	0.393*	1.122*	1.515*
Muscular Strength	0.052	2.786*	4.651*	2.838*	4.599*	7.437*
Cardio Respiratory Endurance	36.77*	123.52*	138.17*	86.75*	174.94*	261.69*

*Significant at 0.05 level.

There was a significant difference among walking group, cycling group and swimming group and control group on body mass index, muscular strength and cardio respiratory endurance among overweight men. The result shows that there was no significant differences between walking group and cycling group on muscular strength. Further, the table also shows that there was a significant difference on rest of the paired group mean on body mass index, muscular strength and cardio respiratory endurance among overweight men.

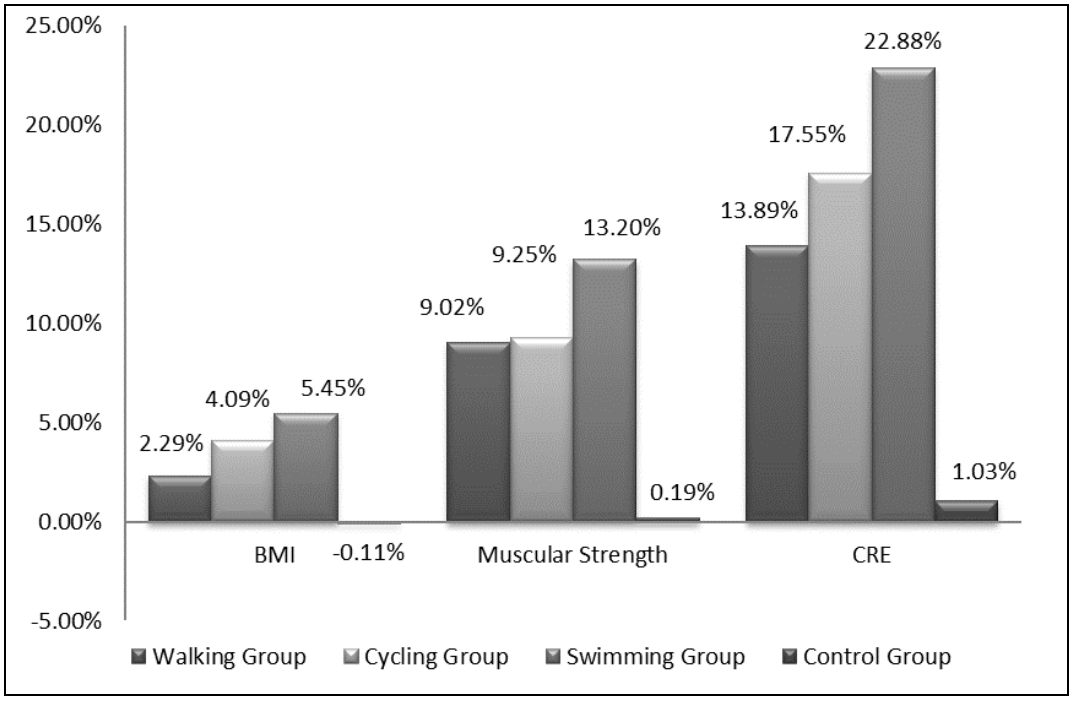

Fig 1: The Bar Diagram of Magnitude of Improvement Among Walking Group Cycling Group Swimming Group and Control Group on Selected Physical Fitness Variable

Discussion on Results

The results on BMI, muscular strength and cardio respiratory endurance shows that there was a significant difference among walking group, cycling group, swimming group and control group. Therefore, the paired mean difference on selected variables shows significant on body mass index, muscular strength and cardio respiratory endurance. Further, the muscular strength shows insignificant difference between walking group and cycling group. The result on muscular strength also shown that there was a significant difference between rests of the paired means. The control group has in-significance on selected physical fitness variables**.** Paul A. Ford, Gill Perkins & Ian Swaine, *et al.* (2012) [11] show that regular accumulated bouts of brisk walking during the school day can positively affect body composition in primary school children. Kaukab Azeem (2011) [8] it was concluded that twelve observations brisk walking is beneficial for lowering of blood pressure, body mass index, and anthropometric circumference of obese males.

Lundy, 2015 [10] Thirty minutes of brisk walking daily is beneficial. Benefits are not limited to blood pressure. Physical activity provides cardiovascular protection by reducing risk factors such as overweight and Byron's (2008) [2]. "Accumulating brisk, 10-minute walks appear to be very effective for lowering blood pressure. Huei-Ching Yang, 2014 [7] investigated the effectiveness of biofeedback cycling training on lower limb functional recovery, walking endurance, and walking speed for patients with chronic stroke. The results showed that improvements in the period with cycling training were significantly better than the non-cycling period. Cycling training has gained significant improvements in their muscle strength, aerobic capacity, and balance ability. Cycling training, the improvements for stroke participants were still lower than those of healthy elders (Tang A, 2009) [13].

Conclusion

Based on the result of the study, there was a significant improvement observed on BMI, muscular strength and cardio respiratory endurance due to walking, cycling and swimming training. Whereas, the walking and cycling showing similar improvement on muscular strength. The swimming training improves better on BMI, muscular strength and cardio respiratory endurance when compare with walking and cycling training.

References

1. Alberts, David S, Hess, Lisa M. Fundamentals of Cancer Prevention. Berlin: Springer, 2005. ISBN 364238983X.
2. Byron's-Brisk Walking Lowers Blood Pressure, Increases Fitness In Obese‖ Annual Meeting of the American College of Sports Medicine, 2008.
3. Casperson CJ, Powell KE, Christenson GM. Physical Activity Exercise and Physical Fitness. Definitions and Distinctions for Health-Related Research. Public Health Rep. 1985; 100:126-131.
4. Colbert LH, Visser M, Simonsick EM, Tracy RP, Newman AB, Kritchevsky SB *et al*. Physical activity, exercise, and inflammatory markers in older adults: findings from the Health, Aging and Body Composition Study. Journal of the American Geriatrics Society. 2004; 52(7):1098-104.
5. Hall, John. Guyton and Hall textbook of medical physiology (12th ed.). Philadelphia, Pa.: Saunders/Elsevier. 2011, 3. ISBN 978-1-4160-4574-8.
6. Henry Gray. Introduction page, Anatomy of the Human Body. 20th edition. 2007, 1918. Retrieved 27 March 2007.
7. Huei-Ching Yang, Chia-Ling Lee, Roxane Lin, Miao-Ju Hsu, Chia-Hsin Chen, Jau-Hong Lin *et al*. Effect of biofeedback cycling training on functional recovery and walking ability of lower extremity in patients with stroke. Kaohsiung Journal of Medical Sciences. 2014; 30:35e42.
8. Kaukab Azeem. Effect of Twelve Weeks Brisk Walking on Blood Pressure, Body Mass Index, and Anthropometric Circumference of Obese Males‖ world academy of science, Engineering and Technology. 2011; 59:400.

9. Langhammer R, Johnsen A, Gulsvik TL, Holmen L Bjermer. Forced spirometry reference values for Norwegian adults: the Bronchial Obstruction in North Trøndelag study. Eur. Respir. J. 2001; 18:1-10.
10. Lundym. Race, ethnicity and lung function: A brief history. Canadian Journal of Respiratory Therapy. 2015; 51(4):99-101.
11. PaulA Ford, Perkins Gill, Ian Swaine *et al*. Effects of a 15-week accumulated brisk walking programme on the body composition of primary school children" Journal of Sports Sciences. 2012; 18:1-9.
12. Prosser C Ladd. Comparative Animal Physiology, Environmental and Metabolic Animal Physiology (4th ed.). Hoboken, NJ: Wiley-Liss. 1991, 1-12. ISBN 978-0-471-85767-9.
13. Tang A, Sibley KM, Thomas SG, Bayley MT, Richardson D, McIlroy WE *et al*. Effects of an aerobic exercise program on aerobic capacity, spatiotemporal gait parameters, and functional capacity in subacute stroke. Neurorehabil Neural Repair. 2009; 23:398e406.