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INFLUENCE OF CYCLING TRAINING ON SELECTED PHYSICAL, PHYSIOLOGICAL, AND PSYCHOLOGICAL VARIABLES AMONG REGULAR WALKERS

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ABSTRACT

The present study aimed to examine the impact of Cycling training on physical, physiological, and psychological variables among regular walkers. Methodology: To achieve this purpose, forty (N = 40) men from Coimbatore District, Tamil Nadu, were selected as subjects for the study. The ages of the subjects ranged from 30 to 40 years. The forty subjects were divided into two groups, each consisting of twenty (n = 20) participants: Experimental Group I, which underwent Cycling Training (CT), and the Control Group, whose members did not participate in any training other than their routine activities. The experimental group participated in the Cycling Training (CT) five days per week for a period of twelve weeks. Results: The data collected from the two groups before and after the training period were statistically analyzed using a dependent t-test. The mean gains recorded by the groups in the pre-test and post-test were tested for significance using a paired t-test to determine whether the training program produced significant improvements in the selected variables after twelve weeks. The level of significance was set at 0.05. The results indicated that the experimental group showed significant improvement in all measured variables at the end of the twelve-week training period. Conclusion: The experimental group demonstrated a highly significant difference compared with the control group. It was concluded that the Cycling Training (CT) effectively enhances physical, physiological, and psychological variables among regular walkers.

KEYWORDS: ***Cycling*** *Training, Physical, Physiological, Psychology, Flexibility, Balance, Vo2 Max, Anxiety.*

INTRODUCTION

Physical activity plays an important role in maintaining health, improving physical fitness, and enhancing psychological well-being. Regular participation in physical exercise helps individuals maintain proper body functioning and prevents many lifestyle-related diseases. Among various forms of physical activities, cycling is considered one of the most effective aerobic exercises that contributes to overall physical and mental health. Cycling training is widely recommended because it improves cardiovascular fitness, muscular strength, endurance, and psychological well-being. According to the World Health Organisation, regular physical activity such as cycling helps reduce the risk of chronic diseases, improves heart health, and enhances quality of life. Cycling training is an aerobic activity that involves the coordinated movement of large muscle groups, particularly those in the lower limbs. Continuous cycling exercise increases muscular strength and endurance while improving cardiovascular efficiency. Regular cycling training improves oxygen utilisation and enhances the functioning of the heart and lungs. Astrand Per-Olof and Rodahl Kaare (1986) reported that aerobic exercises such as cycling significantly improve cardiovascular endurance and reduce resting heart rate. Similarly, Wilmore Jack H. and Costill David L. (2004) stated that regular aerobic training improves physical performance, muscular endurance, and overall physiological efficiency.

In addition to physical and physiological benefits, cycling training also has a positive influence on psychological health. Regular participation in aerobic exercise helps reduce stress, anxiety, and depression while improving mood and emotional stability. Exercise stimulates the release of endorphins, which contribute to improved mental well-being. Fox Kenneth R. (1999) emphasized that moderate physical activities such as cycling can enhance psychological well-being and self-esteem. Furthermore, Dishman Rod K. (2006) highlighted that regular exercise plays a significant role in reducing psychological stress and promoting mental health. Regular walkers often engage in walking as a basic form of physical activity for maintaining health and fitness. However, incorporating cycling training into their exercise routine may provide additional benefits by improving muscular strength, explosive power, cardiovascular efficiency, and psychological stability. Despite the well-known benefits of aerobic exercise, limited research has examined the influence of cycling training on physical, physiological, and psychological variables among regular walkers, particularly among middle-aged individuals. Therefore, the present study aims to examine the influence of cycling training on selected physical, physiological, and psychological variables among regular walkers.

METHODOLOGY

To achieve the purpose of the study, thirty (N=40) regular walkers were selected as subjects from Coimbatore, Tamil Nadu. The subjects' ages ranged from 30 to 40 years. The forty subjects were

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divided into two equal groups, each consisting of twenty (N = 20) walkers an Experimental Group, which underwent cycling training, and a Control Group, whose members did not participate in any specific training beyond their routine activities. The Experimental Group participated in varied walking training six days per week (Monday, Tuesday, Wednesday, Thursday, and Friday) for a period of twelve weeks. Data collected from both groups before and after the training period were statistically analyzed for significance using a dependent t-test at the 0.05 level of significance.

Criterion Measures

It is evaluated that Physical, Physiological and Psychological variables were chosen as the criterion measures for this study for testing.

Table 1: Criterion Measures

S. No	Criterion Measures	Test Items	Unit of Measurements
Physical Variables			
1.	Flexibility	Sit and Reach Test	In Centimeters
2.	Balance	Flamingo	In Minutes
Physiological Variables			
3.	VO2 max	Queen's College Step Test	In Ml/kg/min
Psychological Variables			
4.	Anxiety	Lovibond P.F. (1995)	In Questionnaire

Table 2: Computation of the 't' ratio on physical, physiological, and psychological variables of regular walkers in the experimental group

Experiment Group						
Variables		**N**	**Mean**	**Std. Deviation**	**Std Error Mean**	**'t' Ratio**
Flexibility	Pre test	20	17.20	0.69	0.16	81.00*
	Post test	20	23.25	0.78	0.18	
Balance	Pre test	20	20.36	0.02	0.00	61.00*
	Post test	20	20.28	0.02	0.00	
VO2 max	Pre test	20	30.90	0.56	0.13	121.00*
	Post test	20	31.35	0.57	0.13	
Anxiety	Pre test	20	21.70	0.47	0.05	61.00*
	Post test	20	15.65	0.58	0.13	

*Significant level 0.05 level (degree of freedom 2.09,1 and 19)

Table 3: Computation of the 't' ratio on physical, physiological, and psychological variables of regular walkers in the control group

Control Group						
Variables		**N**	**Mean**	**Std. Deviation**	**Std Error Mean**	**'t' ratio**
Flexibility	Pre test	20	17.20	0.69	0.16	1.37
	Post test	20	17.35	0.75	0.17	
Balance	Pre test	20	20.36	0.02	0.00	1.00
	Post test	20	20.36	0.02	0.00	
VO2 max	Pre test	20	30.80	0.51	0.11	1.00
	Post test	20	30.80	0.50	0.11	
Anxiety	Pre test	20	21.75	0.44	0.09	1.00
	Post test	20	21.70	0.47	0.10	

*Significant level 0.05 level (degree of freedom 2.09,1 and 19)

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Fig 1: Bar diagram showing the mean value on physical, physiological, and psychological variables of Flexibility among regular walkers in the experimental and control groups.

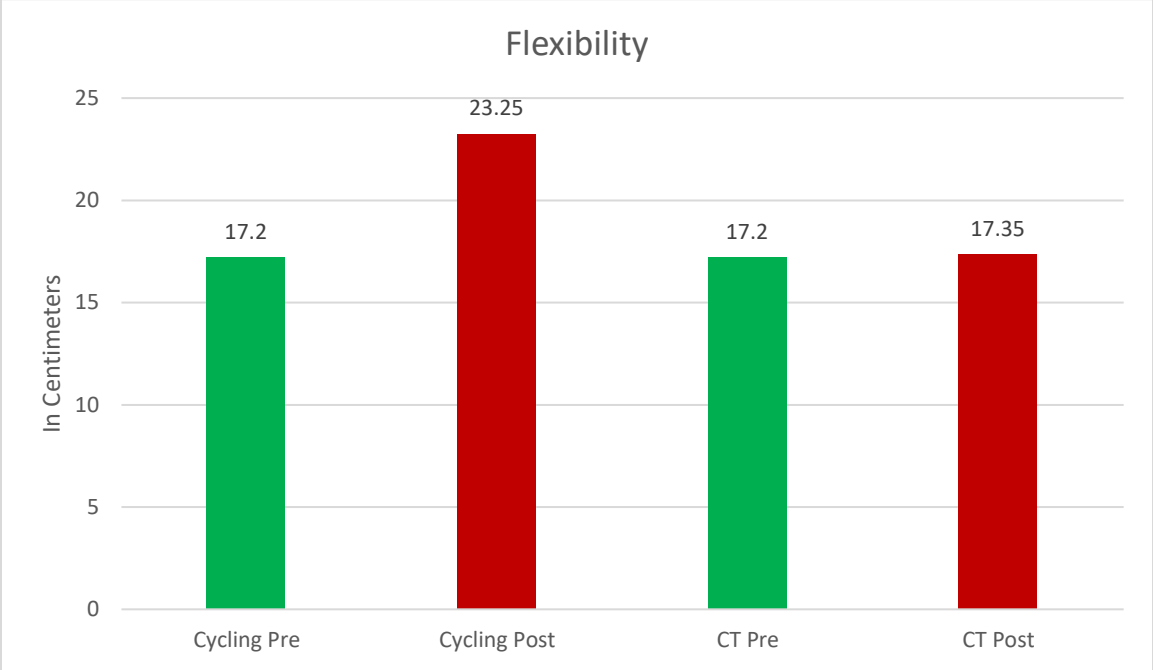

Fig 2: Bar diagram showing the mean value on physical, physiological, and psychological variables of Balance among regular walkers in the experimental and control groups.

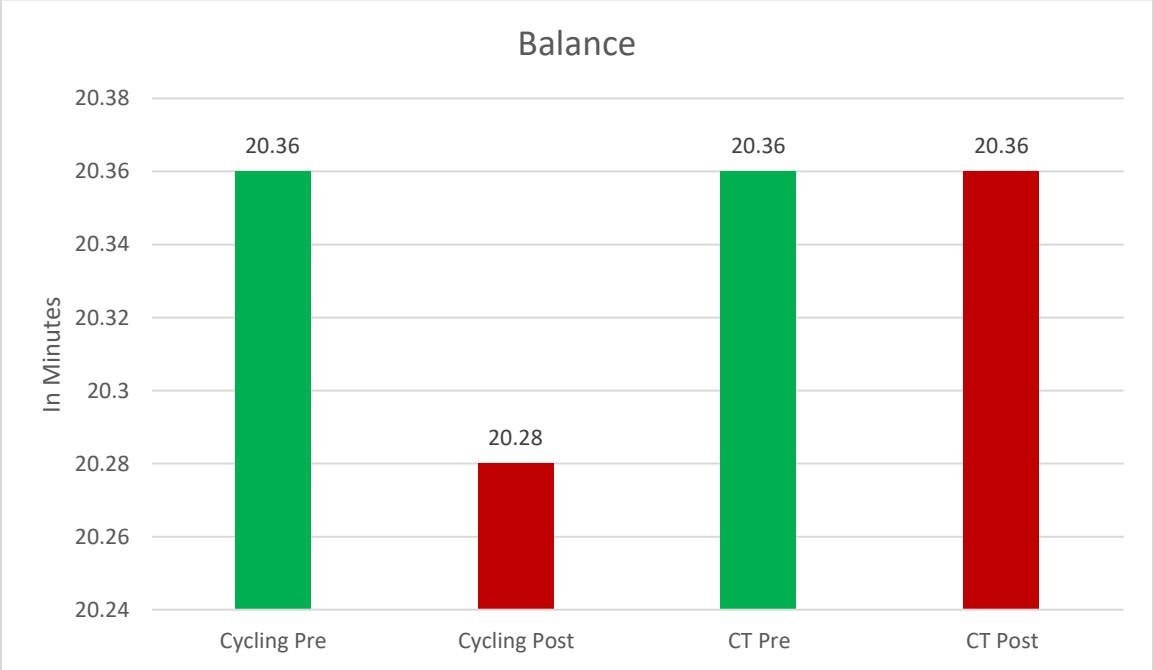

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Fig 3: Bar diagram showing the mean value on physical, physiological, and psychological variables of VO2 Max among regular walkers in the experimental and control groups.

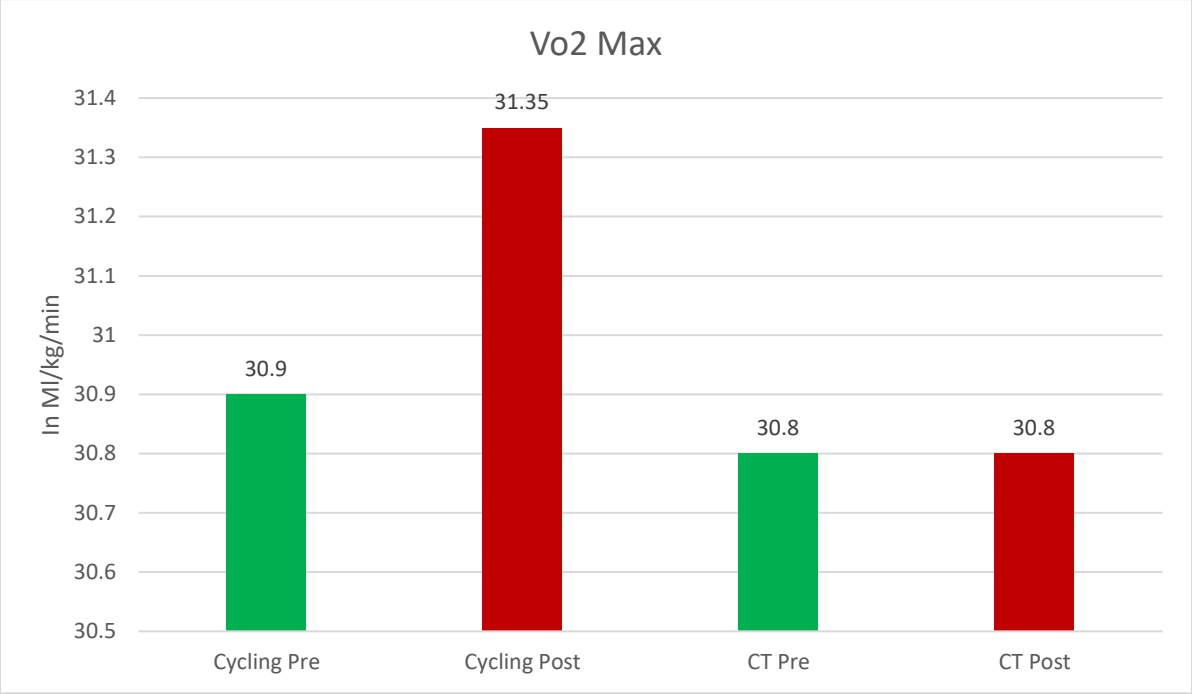
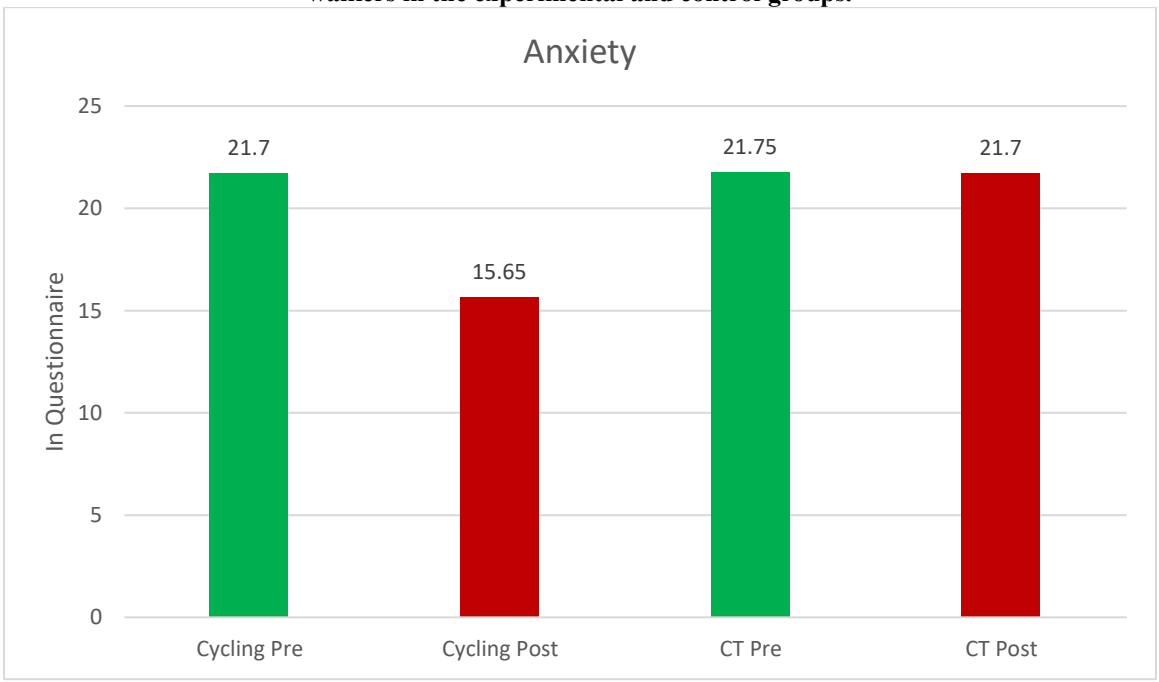


Fig 4: Bar diagram showing the mean value on physical, physiological, and psychological variables of Anxiety among regular walkers in the experimental and control groups.



RESULTS

The findings observed on the Impact of Influence of Cycling Training on Selected Physical, Physiological, and Psychological Variables among Regular Walkers.

1. In the Cycling training group, the mean differences observed between pre-test and post-test Flexibility, Balance, VO2 Max, and Anxiety Were statistically significant.

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2. In the control group, the mean differences observed between pre-test and post-test for Flexibility, Balance, VO2 Max, and Anxiety were not statistically significant.

DISCUSSION OF FINDINGS

The purpose of the present study was to examine the influence of cycling training on selected physical, physiological, and psychological variables among regular walkers. The results of the study revealed that the experimental group, which participated in cycling training for twelve weeks, showed significant improvements in flexibility, balance, VO_2 max, and anxiety levels when compared with the control group. These findings indicate that systematic cycling training can effectively enhance physical fitness, physiological efficiency, and psychological well-being among regular walkers.

Regarding flexibility, the results of the present study showed a significant improvement in the experimental group following the training period. Cycling training involves continuous and rhythmic movements of the lower limb muscles, which help maintain joint mobility and improve muscle elasticity. Regular participation in cycling exercises stretches the muscles around the hips, knees, and ankles, thereby enhancing flexibility. The findings of the present study are supported by the work of Jack H. Wilmore and David L. Costill (2004), who reported that regular aerobic training improves joint mobility and flexibility through repeated muscular movements. In terms of balance, the results indicated that the experimental group demonstrated significant improvement after twelve weeks of cycling training. Cycling requires continuous coordination between the lower limbs and the body's centre of gravity to maintain stability and posture. This repeated neuromuscular coordination helps improve balance and body control. The findings of this study are in agreement with the observations of Tudor O. Bompa (1999), who emphasised that systematic physical training enhances neuromuscular coordination and balance performance.

Regarding the physiological variable of VO_2 max, the study revealed a significant increase in the experimental group following the cycling training program. VO_2 max represents the maximum ability of the body to consume oxygen during intense exercise and is an important indicator of cardiovascular endurance. Cycling training, being an aerobic activity, strengthens the heart, improves blood circulation, and enhances oxygen delivery to the working muscles, thereby increasing aerobic capacity. The findings of the present study are consistent with the research of Per-Olof Astrand and Kaare Rodahl (1986), who reported that regular aerobic exercise significantly improves cardiovascular efficiency and increases VO_2 max levels. The improvement in VO_2 max observed in the present study may be attributed to several physiological adaptations associated with aerobic training. Regular cycling enhances cardiovascular efficiency by increasing stroke volume and cardiac output, enabling the heart to pump a greater volume of blood with each beat. It also improves respiratory efficiency by strengthening respiratory muscles and increasing lung ventilation capacity, which facilitates better oxygen uptake and carbon dioxide removal. In addition, aerobic training increases capillary density in skeletal muscles, improving blood flow and oxygen supply to the working muscles. Cycling training also enhances mitochondrial density and oxidative enzyme activity in muscle cells, which improves the muscles' ability to produce energy through aerobic metabolism. These adaptations help delay fatigue, improve endurance performance, reduce resting heart rate, and enhance recovery after exercise, indicating improved overall cardiovascular fitness.

With respect to the psychological variable of anxiety, the results of the study showed that cycling training significantly reduced anxiety levels among the participants in the experimental group. Regular physical activity is known to improve mental health by promoting relaxation and stimulating the release of endorphins that enhance mood and reduce psychological stress. Cycling, as a rhythmic aerobic exercise, provides both physical and mental relaxation, which helps in lowering anxiety levels. The findings of the present study are supported by the research conducted by Kenneth R. Fox (1999), who reported that moderate physical activities such as cycling and walking can improve psychological well-being and reduce anxiety. Similarly, Rod K. Dishman (2006) highlighted that regular aerobic exercise plays a significant role in reducing anxiety and improving emotional stability. Overall, the results of the study clearly demonstrate that cycling training is an effective training method for improving flexibility, balance, aerobic capacity, and psychological health among regular walkers. The findings of the present study are consistent with previous research, which emphasizes the importance of structured aerobic exercise programs in enhancing physical, physiological, and psychological fitness.

CONCLUSION

It was concluded that twelve weeks of cycling training produced significant improvements in flexibility, balance, VO_2 max, and anxiety levels among regular walkers. Based on these findings, it can be suggested that cycling training is an effective exercise method for enhancing the physical, physiological, and psychological variables of walkers.

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