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Aftermath of Tempo Training on Functional Aspects in Adult Sense

Dr. R. Saravanan and ****Mr. Robin Raja J

*Associate Professor, Koviloor Andavar College of Physical Education and Sports Science, Koviloor, Karaikudi, Tamil Nadu, India.
**Ph.D Research Scholar, Department of Physical Education, Bharathiar University, Coimbatore, Tamil Nadu, India.

ABSTRACT

The present study aimed to examine the aftermath of tempo training on functional aspects in adult sense. To achieve the purpose of the study thirty (N=30) adult sense boys were selected as subjects from green fields football club, Coimbatore, Tamilnadu. The subject's ages ranged between 13 to 17 years. The selected thirty subjects were divided into two equal groups consisting of fifteen (n=15) each, Experimental Group which underwent tempo training and Control Group. The subjects in the control group will not undergo any sort of training except their routine work. The experimental group was treated with tempo training for three days per week for a period of twelve weeks. Data collected from the two groups before and after the training period was statistically examined for significant by using dependent 't' test. The level of significance was fixed at 0.05. The results indicated that experimental group (tempo training) improved significantly at the end of twelve weeks of training. The experimental group was showed highly significant when compared with control group. It was concluded that the tempo training achieves an optimum level of functional aspects in adult sense over twelve weeks of training.

***Keywords**: Tempo training, Functional aspects.*

INTRODUCTION

Tempo training: Tempo training in sports refers to a method of training that focuses on controlling the speed (tempo) of movements during an exercise or activity. It is widely used in both strength training and endurance sports to improve performance, control, and efficiency.

In strength training, this involves adjusting the time spent in each phase of a lift lowering, pausing, lifting, and resting usually described with a four-number tempo code (e.g., 3-1-1-0). This type of training increases time under tension, helping to build muscle, improve technique, and reduce the risk of injury by encouraging proper form. In endurance sports like running, swimming, or cycling, tempo training typically refers to exercising at a sustained, moderately hard pace, often near the lactate threshold. These tempo sessions help athletes improve their aerobic capacity, muscular endurance, and ability to maintain high performance for longer periods. Overall, tempo training enhances control, efficiency, and focus, making it a valuable component of athletic development across various disciplines.

METHODOLOGY

To achieve the purpose of the study, thirty (N=30) adult sense boys were selected as subjects from green fields football club, Coimbatore, Tamilnadu. The subject's ages ranged between 13 to 17 years. The selected thirty subjects were divided into two equal groups, each consisting of fifteen (n-15) players. Experimental Group underwent tempo training and Control Group. The subjects in the Control Group did not undergo any specific training, except their routine activities. The experimental group underwent tempo training three days per week for a period of twelve weeks. Data collected from the two groups before and after the training period were statistically tested for significance using dependent't' test at the 0.05 level of significance.

Criterion Measures: It is evaluated functional aspects that were chosen as the criterion measures for this study for testing.

TABLE-I

CRITERION MEASURES

S. NO	CRITERION VARIABLES	TEST ITEMS	UNIT OF MEASUREMENTS
FUNCTIONAL ASPECTS			
1.	Muscular strength	1 RM	In weight (kg)
2.	Muscular endurance	Bend knee situps	In counts
3.	Cardiovascular endurance	12 min Copper walk/run test	In meters
4.	Flexibility	Sit and reach test	In centimeters

RESULT:

TABLE -II

't'- RATIO FOR ADULT SENSE BOYS ON MUSCULAR STRENGTH, MUSCULAR ENDURANCE, CARDIOVASCULAR ENDURANCE, FLEXIBILITY

Variable	Groups	Pre mean	Post mean	M. D	SEM	t
Muscular strength	Experimental group	4.80	7.00	2.20	0.43	**5.14***
	Control group	4.73	4.47	0.27	0.27	**1.00**
Muscular endurance	Experimental group	53.33	57.33	4.00	0.83	**4.80***
	Control group	52.27	51.20	1.06	0.87	**1.23**
Cardiovascular endurance	Experimental group	14.18	13.79	0.39	0.07	**5.21***
	Control groups	14.22	14.30	0.08	0.06	**1.26**
Flexibility	Experimental group	4.80	6.26	1.47	0.31	**4.79***
	Control groups	4.73	4.33	0.40	0.25	**1.57**

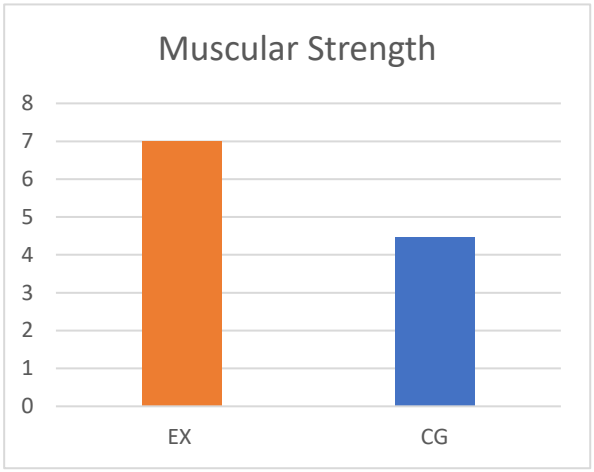
(Significance at 0.05 level of confidence for df of 1 and 28, is 2.14)

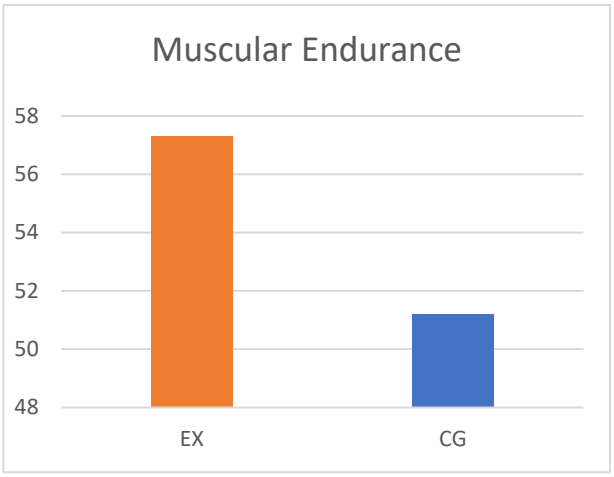
The mean standard deviation and t-value were calculated for each outcomes measure as shown in Table-II. The result shows that the pre-test and post-test mean values of the Experimental group (tempo training) for Muscular strength (4.80 & 7.00), Muscular endurance (53.33 & 57.33), Cardiovascular endurance (14.18 & 13.79) and Flexibility (4.80 & 6.26) respectively. In comparison, the Control group had mean values for Muscular strength (4.73 & 4.47), Muscular endurance (52.27 & 51.20), Cardiovascular endurance (14.22 & 14.30) and Flexibility (4.73 & 4.33) respectively. The obtained dependent t-test value of Experimental group on Muscular strength (**5.14***), Muscular endurance (**4.80***), Cardiovascular endurance (**5.21***) and Flexibility (**4.79***) and Control group on Muscular strength (**1.00**), Muscular endurance (**1.23**), Cardiovascular endurance (**1.26**) and Flexibility (**1.57**) respectively. The table value required for a significant difference, with 28 and 1 degrees of freedom at a 0.05 level of confidence, was 2.14.

Since the obtained 't' test value for the Experimental group was greater than the table value (2.14), the results clearly indicated that the Muscular Strength, Muscular Endurance, Cardiovascular endurance, Flexibility significantly improved due to the tempo training on functional aspects in adult sense.

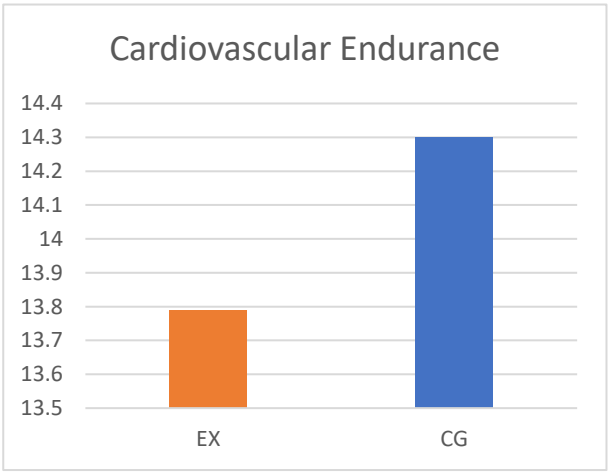
FIGURE-I

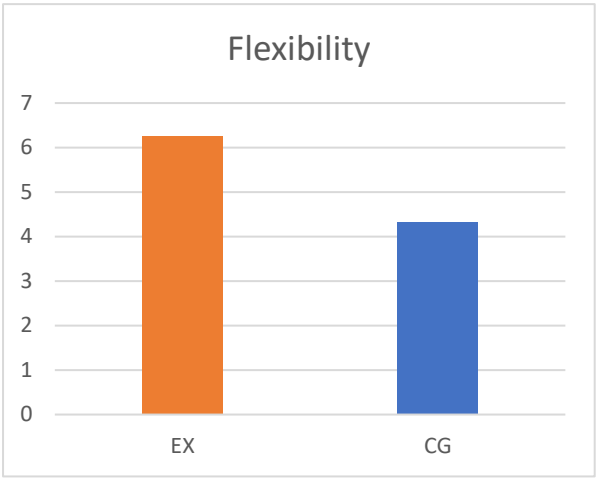
BAR DIAGRAM SHOWS THE MEAN VALUES OF MUSCULAR STRENGTH AND MUSCULAR ENDURANCE IN ADULT SENSE





BAR DIAGRAM SHOWS THE MEAN VALUES OF CARDIOVASCULAR ENDURANCE AND FLEXIBILITY IN ADULT SENSE





FINDINGS

The findings observed on aftermath of tempo training on functional aspects in adult sense are as follows:

1. In the tempo training group, the mean differences observed between pre– test and post – test for Muscular Strength, Muscular Endurance, Cardiovascular endurance, Flexibility were statistically significant.
2. In the control group, the mean differences observed between pre– test and post – test for Muscular Strength, Muscular Endurance, Cardiovascular endurance, Flexibility were not statistically significant.

DISCUSSION ON FINDINGS

The study found that a twelve week of tempo training had a significant positive impact on the functional aspects namely Muscular Strength, Muscular Endurance, Cardiovascular endurance, Flexibility. It is also found that the improvement caused by tempo training significantly improved the experimental group when compared to the control group. Thus, the results are in line with other study of which has aftermath of tempo training on functional aspects in adult sense.

Tempo-controlled resistance training has a significant impact on muscular strength development. Studies by **Schoenfeld et al. (2021) and Wilk et al. (2020)** suggest that **slower eccentric tempos** (e.g., 2–4 seconds) increase time under tension, which may promote greater mechanical stress and neural adaptation, thereby enhancing strength gains. **Wilk et al. (2018)** further emphasized that **faster tempos with maximal intent** could lead to higher force production due to the recruitment of type II muscle fibers. Moreover, the study by **Pearson et al. (2024)** demonstrated that **low-dose, high-intent resistance training** was as effective as traditional methods in improving strength in untrained adults.

For muscular endurance, slower tempos are more beneficial. **Wilk, Golas et al. (2018) and Schoenfeld et al. (2021)** found that prolonged time under **tension (TUT)** increases metabolic stress, which enhances local muscular endurance. The slow-tempo protocols lead to greater fatigue within sets, promoting adaptations in fatigue resistance. Similarly, the mini review by **Wilk, Tufano, and Zajac (2020)** suggests that **adjusting tempo** can shift emphasis from strength to endurance, especially when rest periods and intensity are carefully managed.

Though tempo training is primarily anaerobic, certain tempo-controlled or rhythm-based exercises can indirectly affect cardiovascular endurance. For instance, music tempo has been shown to influence physiological responses during activity. **Feiss et al. (2021) and Szabó et al. (2009)** both found that **fast-tempo music** increased heart rate and perceived exertion during isometric or basketball training, potentially enhancing cardiovascular output during extended sessions. Also, **Bakayev and Bolotin (2020)** focused on **endurance training models and highlighted that tempo variability** tailored to an athlete's metabolic type can optimize cardiovascular training outcomes.

Tempo-based training does not directly target flexibility, but controlled movements and increased time under tension can contribute to improved joint mobility. Controlled eccentric phases (e.g., slow descents) can gently stretch the muscle-tendon units under load, supporting dynamic flexibility gains over time **(Schoenfeld et al., 2021)**. Additionally, **StrengthGaming by Lai et al. (2020)** proposes **dynamic tempo-modulated** exergames that could be adapted to incorporate flexibility-enhancing movements like tempo-based mobility drills.

CONCLUSIONS

The study concludes that a twelve week program of tempo training effectively enhances Muscular Strength, Muscular Endurance, Cardiovascular endurance, Flexibility. Moreover, these improvements were significantly greater in the Experimental group compared to the Control group, highlighting the efficacy of this training approach in enhancing functional aspects.

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