



Research article

THE EFFECT OF TAI CHI TRAINING ON CARDIOVASCULAR ENDURANCE AND FLEXIBILITY IN YOUNG MALES

Dr.D.Natarajan

Assistant Director of Physical Education, Fisheries College & Research Institute,
Tamil Nadu Fisheries University, Thoothukudi, Tamil Nadu, India.

Received 15th November 2017, Accepted 3rd December 2017

Abstract

The purpose of the study was to find out the effect of Tai Chi training on cardiovascular endurance and flexibility among young males. For the purpose, 60 young male were selected from Thootukudiregion, Tamil Nadu, as subjects, the age of the subjects ranged from 18 to 24 years. The random group design was used as experimental design in which the subjects were divided into two groups of 30 in each. The experimental group underwent Tai Chi training and the other group acted as control. The subjects were tested prior to and after the experimentation period on cardiovascular endurance and flexibility. The obtained data were statistically analyzed by using Analysis of Covariance (ANCOVA). The obtained F-values were found to be significant at 0.05 level of confidence. The results of the study indicate that the daily Tai Chi training increases cardiovascular endurance and flexibility in experimental group than the control group. It also clearly indicates that there is a significant difference between experimental group and control on cardiovascular endurance and flexibility.

Key words: Tai Chi, Cardiovascular Endurance and Flexibility

© Copy Right, IJAPEY, 2016. All Rights Reserved

Corresponding Author: Dr.D.Natarajan

e-mail: natarajanugc@gmail.com

INTRODUCTION

Tai chi is a old-style Chinese martial art that has been trained in China for many centuries. It combines deep diaphragmatic breathing and relaxation with many important stances that flow slowly and smoothly from one

to the other finished slow, gentle, graceful movements. It has been supported for development of mind, body interaction, breathing regulation with body movement, hand-eye coordination, and tranquilization (Chen Wang, 2003).

The benefits of Tai Chi on physical function and health-related excellence of lifespan for elderly have been documented, such as increased balance, flexibility, and sureness in less-robust elderly (Zhang et al, 2006), benefits of strengthened hamstrings and active balance (Fong, 2006), a valuable effect on physical functioning (Fisher et al, 2002) and increased perceptions of self-efficacy (Duncan et al, 2001). Furthermore, Tai Chi is a low-intensity workout that has aerobic benefits, is active for improving health fitness (Lin et al, 2006). Tai Chi in endorsing balance control, flexibility, and cardiovascular fitness (Wang, 2004).

A number of randomized controlled trials have absorbed on the optimistic effects of tai chi on numerous populations with exact medical conditions, with type 2 diabetes (Orr R et al, 2006), fibromyalgia (Wang et al, 2010), breast cancer (Mustian et al, 2004), osteoarthritis, cardiovascular conditions

(Yeh et al, 2009), rheumatoid arthritis (Wang et al 2005), and human immunodeficiency virus (HIV) infection (Galantino et al, 2005). Methodical reviews have been published, concentrating on cardiac conditions and rheumatoid arthritis (Lee et al, 2007).

METHODS AND MATERIALS

For the purpose of the study 60 young males from Thoot ukudi region, Tamil Nadu were selected as subjects, the age of the subjects ranged from 18 to 24 years. The random group design was used as experimental design in which the subjects were divided into two groups of 30 each. The experimental group underwent Tai Chi training and the other group acted as control. The subjects were tested prior to and after the research period on cardiovascular endurance and flexibility. The obtained data were statistically analyzed by using analysis of covariance (ANCOVA). The tests used to assess cardiovascular endurance and flexibility are given in table-I.

TABLE –I
TESTS USED IN THE STUDY

Sl.No	Variables	Methods	Unit of Measurement
1	Cardiovascular Endurance	Cooper's 12 Minutes run /walk. (Cooper's, 1968 cited in Penry, 2008)	Metre
2	Flexibility	Sit and Reach (Yobu, 2010)	Cm

The training programs were organized in a progressive manner and scheduled only in the morning session from 6.30 to 7.30am for 6 day in a week for 9 weeks continuously and the training schedule is given in table II.

TABLE II
TRAINING SCHEDULE

Weeks	Posture	Duration
1 to 3	Starting Posture, Mustang Parting Its Mane, White Crane Spreading Its Wings, Holding the Knee in Bending Step, Swinging Pipa, Upper Arm Rolling, Pulling Peacock's Tail (Left) and Pulling Peacock's Tail (Right).	60 Minutes
4 to 6	Single Whip, Cloud Hand, Single Whip, Reigning the Horse, Raising the Right Foot, Twin Peaks, Turning the Body and Raising the Left Foot, Standing on One Foot and Extending Left Leg, Standing on One Foot and Extending the Right Foot.	60 Minutes
7 to 9	Shutting Back and Front, Needle at the Bottom of the Sea, Swinging the Back, Turning Body, Pulling, Blocking and Pounding, Stopping Blows, Crossed Hands and Finishing Posture	60 Minutes

RESULTS

In order to find out the effect of training ANCOVA was calculated. The level of significance was set at 0.05. The 'F' ratio were tested for significance are given in tables.

TABLE III
ANALYSIS OF COVARIANCE FOR PRE AND POST TESTS DATA ON
CARDIOVASCULAR ENDURANCE OF EXPERIMENTAL AND CONTROL
GROUP

Test	Means		Source of Variance	Sum of Square	df	Mean Square	'F' Ratio
	Tai Chi Training Group	Control Group					
Pre Test Mean	1766	1785	Between	5415	1	5415	0.94
			Within	334870	58	5773.62	
Post Test Mean	1867.33	1763.67	Between	161201.67	1	161201.67	21.83*
			Within	428283.33	58	7384.20	
Adjusted Post Test Mean	1870.63	1760.37	Between	179480.06	1	179480.06	26.38*
			Within	387871.62	57	6804.77	

($F_{1, 58} = 4.03, p < 0.05$).

From the table III revealed no significant difference in cardiovascular endurance in pre test among Tai Chi and control group. The obtained 'F' value 0.94 was found lesser than the tabulated $F_{1, 58} = 4.03$, $p > 0.05$ level.

However, the 'F' ratio values in post test 21.83 and adjusted post test 26.38 were found significant for being greater than the tabulated $F_{1, 58} = 4.03$, $p < 0.05$ level.

TABLE IV
ANALYSIS OF COVARIANCE FOR PRE AND POST TESTS DATA ON FLEXIBILITY OF EXPERIMENTAL AND CONTROL GROUP

Test	Means		Source of Variance	Sum of Square	df	Mean Square	'F' Ratio
	Tai Chi Training Group	Control Group					
Pre Test Mean	32.87	32.52	Between	1.77	1	1.772	0.09
			Within	1129.39	58	19.47	
Post Test Mean	35.30	30.97	Between	280.78	1	280.78	12.83*
			Within	1268.94	58	21.88	
Adjusted Post Test Mean	35.21	31.06	Between	258.02	1	258.02	15.11*
			Within	973.41	57	17.08	

$F_{1, 58} = 4.03$, $p < (0.05)$.

From the table IV shows that no significant differences in flexibility in pre test among Tai Chi and control group. The obtained 'F' value 0.09 was found lesser than the tabulated $F_{1, 58} = 4.03$, $p > 0.05$ level.

However, the 'F' ratio values in post test 12.83 and adjusted post test 15.11 were found significant for being greater than the tabulated $F_{1, 58} = 4.03$, $p < 0.05$ level.

DISCUSSION ON FINDINGS

Findings of the study show that there was a significant improvement in cardiovascular endurance and flexibility among young males. It may be due to influence of Tai Chi training. The reasons

for continuous participation in training program which were related to the development of cardiovascular endurance and flexibility. Furthermore, the deep diaphragmatic and rhythmic breathing improved in cardiovascular endurance. It is also principled with slow and gentle movement improving better trunk and hamstring flexibility.

CONCLUSIONS

Within the limitations and delimitations set for the present study and considering the results obtained, the conclusion drawn was that cardiovascular endurance and flexibility was significantly increased due to nine weeks of Tai Chi training.

REFERENCES

- [1] Fong SM, Ng GY. The effects on sensorimotor performance and balance with Tai Chi training. *Arch Phys Med Rehabil.* 2006;87(1):82–87.
- [2] Galantino ML, Shepard K, Krafft L, LaPerriere A, Ducette J, Sorbello A, et al. The effect of group aerobic exercise and tai chi on functional outcomes and quality of life for persons living with acquired immunodeficiency syndrome. *J Altern Complement Med.* 2005;11:1085–92.
- [3] Lee MS, Pittler MH, Ernst E. Tai chi for rheumatoid arthritis: systematic review. *Rheumatol.* 2007; 46:1648–51.
- [4] Li F, Duncan TE, Duncan SC, McAuley E, Chaumeton NR, Harmer P. Enhancing the psychological well-being of elderly individual through Tai Chi exercise: A latent growth curve analysis. *Structural Equation Modeling.* 2001;8:53–83.
- [5] Li F, Fisher KJ, Harmer P, McAuley E. Delineating the impact of Tai Chi training on physical function among the elderly. *Am J Prev Med.* 2002;23(Suppl 2):92–97.
- [6] Lin MR, Hwang HF, Wang YW, Chang SH, Wolf SL. Community-based tai chi and its effect on injurious falls, balance, gait, and fear of falling in older people. *Phys Ther.* 2006;86(9):1189–1201.
- [7] Mustian KM, Katula JA, Gill DL, Roscoe JA, Lang D, Murphy K. Tai chi chuan, health-related quality of life and self-esteem: a randomized trial with breast cancer survivors. *Support Care Cancer.* 2004;12:871–6.
- [8] Orr R, Tsang T, Lam P, Comino E, Singh MF. Mobility impairment in type 2 diabetes: association with muscle power and effect of tai chi intervention. *Diabetes Care.* 2006;29:2120–2.
- [9] Wang C, Collet JP, Lau J. The effect of Tai Chi on health outcomes in patients with chronic conditions: a systematic review. *Arch Intern Med.* 2004;164(5):493–501.
- [10] Wang C, Roubenoff R, Lau J, Kalish R, Schmid CH, Tighiouart H, et al. Effect of tai chi in adults with rheumatoid arthritis. *Rheumatol.* 2005; 44:685–7.
- [11] Wang C, Schmid CH, Rones R, Kalish R, Yinh J, Goldenberg DL, et al. A randomized trial of tai chi for fibromyalgia. *N Engl J Med.* 2010;363:743–54.
- [12] Yeh GY, Wang C, Wayne PM, Phillips R. Tai chi exercise for patients with cardiovascular conditions and risk factors: a systematic review. *J Cardpulm Rehabil Prev.* 2009;29:152–60.
- [13] Zhang JG, Ishikawa TK, Yamazaki H, Morita T, Ohta T. The effects of Tai Chi Chuan on physiological function and fear of falling in the less robust elderly: An intervention study for preventing falls. *Arch Gerontol Geriatr.* 2006;42(2):107–116.

Site this article:

Natarajan, D. (2017). The effect of tai chi training on cardiovascular endurance and flexibility in young males. *International Journal of Adapted Physical Education & Yoga*, Vol. 2, No. 12, pp. 1 to 5.