STAR
Research Journal

Available online at www.starresearchjournal.com (Star International Journal)
PHYSICAL EDUCATION
Star. Phy. Edn 1 (2014)

EFFECT OF YOGIC PRACTICES AND PHYSICAL EXERCISES ON FLEXIBILITY ANXIETY AND BLOOD PRESSURE

Dr. S. CHIDAMBARA RAJA,
Associate Professor, Department of Physical Education and Sports Sciences, Annamalai University.

Abstract

The aim of the study was to find out whether yogic practices or physical exercises enhancing the physical, mental and physiological fitness of middle aged men. The purpose of the present study was to find the effect of yogic practice and physical exercises on flexibility, anxiety and blood pressure (both systolic and diastolic). Forty-five middle aged women in 35 and 40 years of age group from in and around Annamalainagar, Chidambaram were selected as subjects. They were divided into three equal groups, each group consisted of fifteen subjects, in which group – I underwent yogic practices, group – II underwent physical exercises and group – III acted as control which did not participate any training apart from their day to day activities. The period of training for the present study was six days (Monday to Saturday) in a week for thirteen weeks. Prior to and after the training period the subjects were tested for flexibility, anxiety and blood pressure (systolic and diastolic). The flexibility was measured by administering sit and reach test, anxiety was measured by using Taylor's Manifest Anxiety Scale and blood pressure (both systolic and diastolic) was measured by using sphygmomanometer. The analysis of covariance (ANCOVA) was applied as statistical tool and whenever the 'F' ratio for adjusted post-test means were significant, the Scheffé S test was used as post-hoc test to find out any significant difference between the training groups. It was concluded from the result of the study that yogic practices and physical exercises groups have improved ($P < 0.05$) all the criterion variables, such as, flexibility, anxiety and decreased the blood pressure (both systolic and diastolic). Moreover there was no significant difference ($P > 0.05$) was found between the experimental groups on selected criterion variables.

Key Words: *Yogic practices, physical exercise, flexibility, anxiety, blood pressure.*

INTRODUCTION

Yoga is a complete science of life that originated in India many thousands of years ago. It is the oldest system of personal development in the world, encompassing body, mind and spirit.[1] Yoga is not an ancient myth buried in oblivion. It is the most valuable inheritance of the present. It is the essential need of today and the culture of tomorrow.[2] The yoga postures (known as asanas), help to stretch and relax the muscles and skeletal system. The physical release through these soothing movements can help create a sense of calmness and well-being.[3]

Physical exercise is any bodily activity that develops and maintains physical fitness and overall health.[4] Frequent and regular aerobic exercise has been shown to help prevent or treat serious and life-threatening chronic conditions such as high blood pressure, obesity, heart disease, Type 2 diabetes, insomnia, and depression.[5]

This observation is supported strongly by ***Rasch and Burkey (1978)*** [6] in their book, they stated that "flexibility is not a general factor but is highly specific to each joint. The socio-psychological concept of self-confidence relates to self-assuredness in one's personal judgment, ability, power, etc., sometimes manifested excessively.[7] Blood pressure (BP) is a force exerted by circulating blood on the walls of blood vessels, and is one of the principal vital signs.

METHODS

This study under investigation involves the experimentation of yogic practices and physical exercises on flexibility, anxiety and blood pressure (systolic and diastolic). Forty five middle aged women those who were living around Annamalainagar, Chidambaram with age between 35 and 40 years were selected as subjects. The selected forty five subjects were randomly divided into three groups of fifteen each, out of which group - I (n = 15) underwent yogic practice, group - II (n = 15) underwent physical exercise training and group - III (n = 15) remained as control. The training programme was carried out for six days (Monday to Saturday) per week during morning session only (6 am to 8 am) for thirteen weeks. Flexibility was measured by administering sit and reach test, anxiety was measured by using

Taylor's Manifest Anxiety Scale and blood pressure was measured by using sphygmomanometer. The analysis of covariance (ANCOVA) was used to find out the significant difference if any, between the experimental groups on selected criterion variables separately. In all the cases, 0.05 level of confidence was fixed to test the significance, which was considered as an appropriate. Since, there were three groups involved, the Scheffé *S* test was applied as post hoc test

ANALYSIS OF DATA

The data collected prior to and after the experimental periods on flexibility, anxiety and blood pressure (systolic and diastolic) on yogic practices group, physical exercises group and control group were analysed and presented in the following table -I.

Table – I

Analysis of Covariance and 'F' ratio for Flexibility, Anxiety and Blood Pressure (systolic and diastolic) for Yoga Practice Group, Physical Exercise Group and Control Groups

Variable Name	Group Name	Yoga Practice Group	Physical Exercise Group	Control Group	'F' Ratio
Flexibility (in inches)	**Pre-test Mean ± S.D**	6.20 ± 0.11	6.22 ± 0.21	6.23 ± 0.22	0.451
	Post-test Mean ± S.D.	8.11 ± 0.25	7.87 ± 0.51	6.23 ± 0.21	48.12*
	Adj. Post-test Mean	8.02	7.75	6.63	55.21*
Anxiety (in points)	**Pre-test Mean ± S.D**	16.00 ± 1.02	16.12 ± 1.11	16.10 ± 1.14	1.112
	Post-test Mean ± S.D.	14.41 ± 1.60	15.10 ± 1.08	16.11 ± 1.51	31.22*
	Adj. Post-test Mean	14.21	15.29	16.65	54.03*
Systolic Blood Pressure (mmHg)	**Pre-test Mean ± S.D**	128.31 ± 5.20	128.22 ± 5.02	127.53 ± 6.50	0.112
	Post-test Mean ± S.D.	120.11 ± 4.99	122.21 ± 4.10	128.12 ± 6.56	12.53*
	Adj. Post-test Mean	120.18	122.75	128.54	73.94*
Diastolic Blood Pressure (mmHg)	**Pre-test Mean ± S.D**	83.07 ± 3.22	83.17 ± 3.21	83.88 ± 3.02	0.22
	Post-test Mean ± S.D.	80.13 ± 4.11	81.70 ± 4.98	83.6 ± 4.74	4.22*
	Adj. Post-test Mean	80.81	81.26	83.37	12.22*

* Significant at .05 level of confidence. (The table value required for significance at .05 level of confidence with df 2 and 43 and 2 and 42 were 3.21 and 3.22 respectively).

The data are presented in the above table – I and the result shows that there was a significant improvement was occurred on all criterion variables such as, flexibility, anxiety, systolic and diastolic blood pressure after the yogic practices and physical exercises when compared with the control group. Further to determine which of the paired means has a significant improvement, Scheffĕ *S* test was applied as post-hoc test. The result of the follow-up test is presented in Table - II.

Table – II: Scheffĕ S Test for the Difference Between the Adjusted Post-Test Mean of Flexibility, Anxiety and Blood Pressure (systolic and diastolic)

Adjusted Post-test Mean of Flexibility				
Yoga Practice Group	**Physical Exercise Group**	**Control Group**	**Mean Difference**	**Confidence interval at .05 level**
8.02		6.63	1.39*	0.899
8.02	7.75		0.27	0.899
	7.75	6.63	1.12*	0.899
Anxiety				
14.21		16.65	2.44*	1.256
14.21	15.29		1.08	1.256
	15.29	16.65	1.36*	1.256
Systolic Blood Pressure				
120.18		128.54	8.36*	4.481
120.18	122.75		2.57	4.481
	122.75	128.54	5.79*	4.481
Diastolic Blood Pressure				
80.81		83.37	2.56*	1.189
80.81	81.26		0.45	1.189
	81.26	83.37	2.11*	1.189

* Significant at 0.05 level of confidence.

Results

Before applying the experiment all the subjects of the yoga practice, physical exercise and control groups were attended the pre-test, which was conducted a day prior to the commencement of the training and the data were collected on flexibility, anxiety and blood pressure (systolic and diastolic). After eight weeks of training the post-test was conducted one day after the training period to find out any changes in the criterion variables.

The analysis of covariance (ANCOVA) was used to find out the significant difference if any, among the experimental groups and control group on selected criterion variables separately. In all the cases, .05 level of confidence was fixed to test the significance, which was considered as an appropriate. Since there was three groups were involved in this study, the Scheffé *S* test was used as pos-hoc test and it was shown in Table - II.

After applying the analysis of covariance, the result of this study showed that there was a significant difference among yoga practice, physical exercise and control groups on the changes in flexibility, anxiety and blood pressure after eight weeks of training. The criterion variables such as, flexibility and anxiety was improved for both the yoga practice group and physical exercise group and systolic and diastolic blood pressure has significantly decreased after the yoga practice, physical exercise period. Further, comparing the adjusted post-test means of all the criterion variables, such as, flexibility, and anxiety both the training groups were significantly increased the performance after the training period, when compared with the control group.

Conclusions

Flexibility and anxiety has improved for both the experimental groups, such as yogic practice group and physical exercise group, when compared with the control group. The blood pressure has also decreased in yogic practice group and physical exercise group when compared with the control group. But there was no significant difference was found between the experimental groups on selected criterion variables. There are so many evidences shows that selected yogasana practices and physical exercises has enhanced the health related physical fitness such as, muscular strength,

endurance, flexibility, body composition and pulmonary function.[8,9,12,15,18] Moreover performing yogasana postures which helps to reduction in anxiety.[10,11,17] It is also evident that both physical exercises and yogic practices were reduced the anxiety level.[16] Blood pressure was also reduced significantly after the selected yogic practices which will avert the hyper or hypotension for normal human beings who were attained the above 40 years of age.[13] Involving the physical activity improves the muscle strength, balance and endurance for people who were attained 40 years of age.[14]

Reference:

[1] Swami Vishnu Devananda, ***The Sivananda Companion to Yoga***, (New York: Fireside Book, Simon and Schuster, 2000), p. 10.

[2] Swami Satyanand Saraswath, ***Asana Pranayama Mudra Bandha***, (Varanasi: Bharagava Bushan Press, 1999), p.1.

[3] Nan Little, "Breathe Deep: Yoga and Anxiety", www.anxiety-and-depression-solutions.com

[4] Retrieved from http://en.wikipedia.org/wiki/Physical_exercise on 26-12-2011.

[5] Retrieved from http://en.wikipedia.org/wiki/Physical_exercise on 25-01-2012

[6] Rasch, Philip J. and Rogher K. Burkey, ***Kinesiology and Applied Anatomy***, 6th Ed., (Philadelphia: Lea and Febiger Co., 1978), p. 31.

[7] ***The Macquaire Dictionary***, compared by Raymond J. Corsini, ***The Dictionary of Psychology***, (New York: Brunner-Routledge, 2002), p.875.

[8] M.D. Tran, R.G. Holy, J. Lashnrook and E.A. Amsterdam, "Effects of Hatha Yoga Practice on the Health-Related Aspects of Physical Fitness", ***Preventive Cardiology***, 4:4, (2001), 165-170.

[9] Baljit Singh Sekhon and P.V. Shelvam, "Effect of Selected Yogic Practices on Bio-Motor Variables among University Men Students", ***International Journal of Humanities and Social Science Invention***, 2:9, (September 2013), 25 – 26.

[10] U.S. Ray, S. Mukhopadhyaya, S.S. Purkayastha, V. Asnani, O.S. Tomar, R. Prashad, L. Thakur and W. Selvamurthy, "Effect of Yogic Exercises on Physical and Mental Health of Young Fellowship Course Trainees", ***Indian J of Physiol Pharmacol***, 45:1, (January 2001), 37 – 53.

[11] Nidhi Gupta, Shveta Khera, R.P. Vempati, Ratna Sharma and R.L. Bijlani, "Effect of Yoga Based Lifestyle Intervention on State and Trait Anxiety", ***Indian J Physiol Pharmacol***, 50:1, (2006), 41-47.

[12] Fogelholm, M. "How Physical Activity Can Work?", ***Int J Pediatr Obes***, 3:1 (Suppl) (2008), 10 – 4

[13] Moa Wolf, Kristina Sundquist, Sara Larsson Lonn and Patrik Midlov, "Impact of Yoga on Blood Pressure and Quality of Life in Patients with Hypertension-A Controlled Trial in Primary Care, Matched for Systolic Blood Pressure", ***BMC Cardiovascular Disorders***, 13, (2013), 1-9

[14] Indla Devasana and Pandurang Narhare, "Effect of Yoga on Heart Rate and Blood Pressure and Its Clinical Significance", ***International Journal of Biological and Medical Research***, 2:3, (2011), 750-753.

[15] Chien, M.Y. Y.T. Wu, A.T. Hsu, R.S. Yang and J.S. Lai, "Efficacy of a 24 – Week Aerobic Exercise Program for Osteopenic Postmenopausal Women", ***Calcified Tissue International***, 67:6, (December 2008), 443 – 448.

[16] Anil Kumar Karwande, "Influence of Yogic Practices on Mental Fatigue", ***Yoga Mimamsa***, 28, (July 1979), 2 – 3.

[17] M. Javnbakht, R. Hejazi Kenari and M. Ghasemi, "Effects of Yoga on Depression and Anxiety of Women", ***Complementary Therapies in Clinical Practice***, 15:2, (May 2009), 102 – 104.

[18] M.L. Ferreira, C. Sherrington, K. Smith, P. Carswell, R. Bell, M. Bell, D.P. Nascimento, L.S. Maximo Pereira and P. Vardon, "Physical Activity Improves Strength, Balance and Endurance in Adults Aged 40-65 Years: A Systematic Review", ***J Physiothe***, 58:3, (2012), 145 – 56.

APPENDICES

Appendix – I

TRAINING SCHEDULE FOR YOGIC PRATICE GROUP

List of Yogasanas	Weeks	Duration	Maintaining Duration (seconds)	Recovery between Yogasanas	Repetitions	Frequency	Warming up and cooling down
Padmasana	1- 3 Weeks	20 min.	30 seconds	1 minute	2	Monday Tuesday Wednesday Thursday Friday & Saturday	5 – 10 Minutes
Trikonasana			1 minute	1 minute			
Dhanurasana			30 seconds	1 minute			
Shashangasana			30 seconds	1 minute			
Patchimosthasan			30 seconds	1 minute			
Shavasana			2 minutes		1		
Pranayama – Nadisuthi			30 seconds		1		
Meditation – Omkar.			2 minutes		1		
As in previous week	4 – 6 Weeks	40 min	20 minutes		2	Monday Tuesday Wednesday Thursday Friday & Saturday	5 – 10 Minutes
Bhujangasana			20 seconds	1 minute			
Shalabasana			15 seconds	1 minute			
Utkattasana			30 seconds	1 minute			
Gomukasana			30 seconds	1 minute			
Shavasana			2 minutes		1		
Pranayama – Sitali.			30 seconds		1		
Meditation – Omkar.			2 minutes		1		
As in previous week	7– 9 Weeks	110 min	40 minutes		3	Monday Tuesday Wednesday Thursday Friday & Saturday	5 – 10 Minutes
Sedhupandhasan			15 seconds	1 minute			
Matsyasana			15 seconds	1 minute			
Uttanasana			15 seconds	1 minute			
Shavasana			2 minutes				
Pranayama – Bhastrika.			30 seconds		1		
Meditation - Omkar			2 minutes		1		
As in previous week	10 – 12 Weeks	120 min	110 minutes		5	Monday Tuesday Wednesday Thursday Friday & Saturday	5 – 10 Minutes
Paschimottasana			20 seconds	1 minute			
Ushatrasana			8 seconds	1 minute			
Shavasana			2 minutes		1		
Pranayama – ujjayi.			30 seconds		1		
Meditation – Omkar.			2 minutes		1		

Appendix – II
TRAINING SCHEDULE FOR PHYSICAL EXERCISE GROUP

List of Physical exercise	Weeks	Duration	Maintaining Duration (seconds)	Recovery in between exercise in seconds	Repetitions	Frequency	Warming up and cooling down
Neck rotation	1- 3 Weeks	20 min.	30 seconds	1 minute	2	Monday Tuesday Wednesday Thursday Friday & Saturday	5 – 10 Minutes
Arms forward and backward rotation			1 minute	1 minute			
Flexed Arms forward and backward rotation			30 seconds	1 minute			
Trunk twist			30 seconds	1 minute			
Sideward lunges			30 seconds	1 minute			
Relaxation			2 minutes		1		
As in previous week	4 – 6 Weeks	40 min	20 minutes		2	Monday Tuesday Wednesday Thursday Friday & Saturday	5 – 10 Minutes
Forward bending			20 seconds	1 minute			
Backward bending			15 seconds	1 minute			
Squat thrust			30 seconds	1 minute			
Sit ups			30 seconds	1 minute			
Relaxation			2 minutes		1		
As in previous week	7– 9 Weeks	110 min	40 minutes		3	Monday Tuesday Wednesday Thursday Friday & Saturday	5 – 10 Minutes
Opposite toe touching			15 seconds	1 minute			
Burbees			15 seconds	1 minute			
Heels raise			15 seconds	1 minute			
Relaxation			2 minutes		1		
As in previous week	10 – 12 Weeks	120 min	110 minutes		5	Monday Tuesday Wednesday Thursday Friday & Saturday	5 – 10 Minutes
Push ups			20 seconds	1 minute			
Split jumps			8 seconds	1 minute			
Relaxation			2 minutes		1		