

Research Paper :

The effect of yogic asanas on selected joint's range of movement

VINAY PAWAR AND J.P. BHUKAR

Received : January, 2011; Accepted : February, 2011

ABSTRACT

The purpose of the study was to see the effects of Yogic Asanas on the improvement of Range of movement at wrist (flexion), hip, knee and ankle (Planter flexion) Joints. The subjects were 30 male students of L.N.I.P.E, Gwalior. The age of the subjects ranged between 20 to 23 years. The subjects were equally assigned random sampling procedure into two groups i.e. experimental group and control group. The experimental group participated in yogic practices training programme. The duration of the training programme was 6 weeks. Quantities measurements of range of movement with standard equipment for wrist, hip, knee and ankle joints were taken in the beginning and at the end of experimental period of 6 weeks. Training was given 6 times a week each session scheduled lasting 45 minutes. The significance of mean difference between the pre-test and post-test means of range of movement for wrist, hip, knee and ankle joints was analyzed using t-ratio. The level of significance chosen was 0.05. The result pertaining to t-test indicated experimental group showed significant improvement as a result of, systematic training of yogic asanas, whereas control group did not show any significant improvement.

See end of the article for authors' affiliations

Correspondence to:

VINAY PAWAR

Lakshmbai National Institute
of Physical Education
GUWAHATI (ASSAM)
INDIA
vinay_1034@rediffmail.com

Pawar, Vinay and Bhukar, J.P. (2011). The effect of yogic asanas on selected joint's range of movement. *Internat. J. Phy. Edu.*, 4 (1): 53-56.

Key words : Yogic Asanas, Planter flexion, Flexion

Yoga is a complete science of life that originated thousands of years ago. It is the oldest system of personal development in the world encompassing the entire body, mind and spirit. It is the union between a person's own consciousness and the universal consciousness. The Ancient Yogis had a profound understanding of man's essential nature and of what he needs to live in harmony with himself and his environment. They perceived the physical body as a vehicle, with the mind as driver, the soul as man's true identity, and action, emotion and intelligence as the three forces which pull the body-vehicle (Suza Francina, 2007). In order for these to be integrated, these three forces must be in balance. Taking into account the interrelationship between body and mind, the Yogis formulated a unique method for maintaining this balance - a method that combines all the movements you need for physical health with the breathing and meditation techniques that ensure peace of mind. (Sandra and Rolf, 2010).

Flexibility is generally defined as the range of motion of the joints. It is the ability to bend and stretch easily without too much effort. Flexibility depends upon various factors like the state of the joints, muscles, length and looseness of muscles, shape of bones, age etc. Some medical conditions like arthritis can affect flexibility.

(Renning, 2010)

METHODOLOGY

Thirty boys studying in B.P.E. 1st Year of L.N.I.P.E., Gwalior were selected at random as subjects of the study and divided into two groups of 15 subjects each.

All subjects were almost from the same socio-economic group and were found to be physically fit for the type of programme they were subjected to. The subjects were divided into two groups (experimental group and control group) at random by drawing the lots. The ages of these subjects ranged between 20 to 23 years. All of them were taking part in routine physical education programme as per the schedule of the college.

Asanas were selected for their contribution to enhance stretch ability of muscles and for improving mobility of joints. To finalize the list of asanas the scholar consulted experts and studied the related literature also. The finalized list is as follows:

- Halasana
- Bhujangasana
- Dhanurasana
- Paschima-Uttan-Asana
- Chakrasana
- Ushttrasana

- Vajrasana
- Baddha-Padmasana

Pre-test and post-test randomized group design was employed in the study. The subjects were divided into experimental groups and control group. The experimental group was imparted for 45 minutes of training of Asanas for 6 weeks under the supervision and guidance of the scholar. No training was imparted to control group.

At the end of six weeks, post-test was conducted for both the groups.

To find out the significance of difference between different paired means, the 't' ratio was used. The level of significance was set at 0.05 level of confidence.

OBSERVATIONS AND DISCUSSION

In order to determine the significance of difference, in range of movements at wrist, hip, knee and ankle joints, if any, between the pre-test and post-test of experimental group and the control group and their interaction, t-test was applied. The results pertaining to the range of movement of wrist performance have been presented in Table 1.

Table 1: Significance of difference between the performance of range of movements before and after training at wrist joint (in degrees)

Mean						
Experimental group		Control group		DM	σDM	't'-ratio
Pre-test	Post-test	Pre-test	Post-test			
72.67		73.33		0.66	0.96	0.69
72.67	78.20			5.53	0.85	6.50*
		73.33	73.47	0.14	1.10	0.13
	78.20		73.47	4.73	1.00	4.73*

* Significant, $t_{0.05}(14) = 2.14$

Table 1 reveals that the significance of difference between the pre-means of experimental group and control group was 0.69, which was much below than the required value at 0.05 level of confidence ($t=2.14$). It showed that both the groups were having similar range of movement at wrist joint.

Further Table 1 also reveals that the significance of difference between the pre and post means of experimental group was 6.50, which was much higher than the required value at 0.05 level of confidence ($t=2.14$). It showed significant improvement regarding range of movement at wrist joint in experimental group.

Table 1 also reveals that the significance of difference between the pre and post-means of control group was 0.13, which was much below than the required

value at 0.05 level of confidence ($t=2.14$). It showed that both the groups were having similar range of movement at wrist joint.

Further Table 1 also reveals that the significance of different between the post means of experimental group and control group was 4.73, which was much higher than the required value at 0.05 level of confidence ($t=2.14$). It showed significant improvement regarding range of movement at wrist joint in experimental group.

Table 2 reveals that the significance of difference between the pre-means of experimental group and control group was 0.82, which was much below than the required value at 0.05 level of confidence ($t=2.14$). It showed that both the groups were having similar range of movement at hip joint.

Table 2: Significance of difference between the performance of range of movements before and after training at hip joint (in degrees)

Mean						
Experimental Group		Control Group		DM	σ DM	't'-ratio
Pre-Test	Post-Test	Pre-Test	Post-Test			
50.00		49.33		0.67	0.82	0.82
50.00	56.27			6.27	0.93	6.74*
		49.33	49.60	0.27	0.65	0.41
	56.27		49.60	6.67	0.76	8.78*

* Significant, $t_{0.05}(14) = 2.14$

Further Table 2 also reveals that the significance of difference between the pre and post means of experimental group was 6.74, which was much higher than the required value at 0.05 level of confidence ($t=2.14$). It showed significant improvement regarding range of movement at hip joint in experimental group. Significance of difference between the pre and post-means of control group was 0.41, which was much below than the required value at 0.05 level of confidence ($t=2.14$). It showed that both the groups were having similar range of movement at hip joint. Further, Table 2 also reveals that the significance of difference between the post means of experimental group and control group was 8.78, which was much higher than the required value at 0.05 level of confidence ($t=2.14$). It showed significant improvement regarding range of movement at hip joint in experimental group.

Table 3 reveals that the significance of difference between the pre-means of experimental group and control group was 0.67, which was much below than the required value at 0.05 level of confidence ($t=2.14$). It showed that both the groups were having similar range of movement

Table 3: Significance of difference between the performance of range of movements before and after training at knee joint (in degrees)

Mean				DM	σ DM	't'-ratio
Experimental group		Control group				
Pre-test	Post-test	Pre-test	Post-test			
100.67		101.33		0.66	0.99	0.67
100.67	104.87			4.20	1.09	3.85*
		101.33	101.27	0.06	0.90	0.07
	104.87		101.27	3.60	1.00	3.60*

* Significant, $t_{0.05}(14) = 2.14$

at knee joint. Further, it also reveals that the significance of difference between the pre and post means of experimental group was 3.85, which was much higher than the required value at 0.05 level of confidence ($t=2.14$). It showed significant improvement regarding range of movement at knee joint in experimental group. Table 3 also reveals that the significance of difference between the pre and post-means of control group was 0.07, which was much below than the required value at 0.05 level of confidence ($t=2.14$). It showed that both the groups were having similar range of movement at knee joint. Significance of difference between the post means of experimental group and control group was 3.60, which was much higher than the required value at 0.05 level of confidence ($t=2.14$). It showed significant improvement regarding range of movement at knee joint in experimental group.

Table 4 reveals that the significance of difference between the pre-means of experimental group and control group was 0.30, which was much below than the required value at 0.05 level of confidence ($t=2.14$). It showed that both the groups were having similar range of movement at ankle joint. Further Table 4 also reveals that the Significance of difference between the pre and post means of experimental group was 4.38, which was much

Table 4: Significance of difference between the performance of range of movements before and after training at ankle joint (in degrees)

Mean				DM	σ DM	't'-ratio
Experimental group		Control group				
Pre-test	Post-test	Pre-test	Post-test			
64.00		64.33		0.33	1.10	0.30
64.00	68.73			4.73	1.08	4.38*
		64.33	64.47	0.14	1.13	0.12
	68.73		64.47	4.26	1.11	3.84*

* Significant, $t_{0.05}(14) = 2.14$

higher than the required value at 0.05 level of confidence ($t=2.14$). It showed significant improvement regarding range of movement at ankle joint in experimental group.

Table 4 also reveals that the significance of difference between the pre and post-means of control group was 0.12, which was much below than the required value at 0.05 level of confidence ($t=2.14$). It showed that both the groups were having similar range of movement at ankle joint. Significance of difference between the post means of experimental group and control group was 3.84, which was much higher than the required value at 0.05 level of confidence ($t=2.14$). It showed significant improvement regarding range of movement at ankle joint in experimental group. The result of this study was supported by (Bal and Kaur, 2009) who found that thirty ($N=30$) male students from D.A.V. Institute of Engineering and Technology, Jalandhar (Punjab), showed improvement after the six weeks training programme. Bobbi Casey (2010) also observed similar result on male and female students of North Dakota State University (USA) after the 7 weeks of yoga practice.

Conclusion:

This flexibility can be attained by effective exercise and also through Yoga. Stretching is generally done to increase flexibility. Flexibility can be best gained by performing stretching exercises which may include exercises of back, neck, shoulder, wrist, legs etc. If exercise is done in a proper way it is observed that a person with a rigid body before starting exercise will have gained flexibility of almost every part of his body with regular practice of exercise. (Martin, 2009)

The selected yoga asana had significantly improved the range of movement at wrist, hip, knee and ankle joints. This may be due to the fact that the load which was experienced by the subjects in a yogic practice programme was adequate to produce significant improvement in range of movement as subjected to involvement of yogic practices. The yoga asana selected for the experimental group were having more flexibility enhancement asana such as Halasana, Bhujangasana, Dhanurasana, Paschima-Uttan- Asana, Chakrasana, Ushtrasana, Vajrasana and Baddha-Padmasana. The study conducted on effect of yogic asana discovered the fact that regular involvements in yoga practice have considerable development on range of movement of the joint. During the practice of yoga asana individuals have to stretch and maintain the position for sufficient duration of the time and if perform continuously for six to eight weeks regularly, it enhances the range of the movements.

Authors' affiliations:

J.P. BHUKAR, Lakshmibai National University of Physical Education, GWALIOR (M.P.) INDIA

REFERENCES

Bal, B.S. and Kaur, P.J. (2009). Effects of selected asanas in *Hatha yoga* on agility and flexibility level. *J. Sport & Health Res.*, **1(2)**:75-87.

Bobbi Casey (2010). Improving lower body flexibility, comparing the use of Yoga and static stretching programme. <http://www.ndsu.edu/fileadmin/hde/research/casey-1.pdf>

Martin, Nita A. (2009). Yoga for flexibility, strength and balance: A practical structured guide Crowood Press.

Sandra Anderson and Rolf Sovik (2000). Yoga: mastering the basics. Himalayan Institute Press, Health & Fitness.

Suza Francina (2007). The New Yoga for healthy aging: Living longer, living stronger and loving every day HCI, - Health & Fitness T. T. Renning Yoga Exercises to Increase Flexibility www.yogabodynaturals.com
