

Effect of 6-Week Yoga Asana on Basal Metabolic Rate of Novice Female Players

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Abstract- The present investigation was conducted to determine the effects of 6-week yoga asana on basal metabolic rate of novice female players. Thirty female novice players were selected as subjects for the present investigation aged were ranging from 17- 24 years. To investigate the influence, 6-week yoga asana was imparted to the subject of group A (Yoga training) and B (control group). The significance of difference was tested for the basal metabolic rate by paired 't' test. The 6-week of yoga asana includes Poorna Bhujangasana, Baddhapadmasana, Kukkut asana, Hal asana and Ardha Matsyendrasana The effect of 6-week yoga asana was used to identify the significant differences ($p < 0.005-0.001$) improvement on basal metabolic rate of novice female players in group A (Yoga training) compared with control group B. Asana training may be recommended to improve other physiological based performance and enhance basal metabolic rate.

Index Terms- Yoga asana, Basal metabolic rate, Novice female players

I. INTRODUCTION

Awadesh (2012) in recent years there has been considerable interest in scientific research on yoga in India and in the west. Today yoga being a subject of varied interest, has gained worlds wide popularity. The basic Adhomukha Svanasana (downward-facing dog posture) stimulates the nervous system, while the more daunting Salamba Sirsasana (headstand) promotes clarity of thought and improves your memory. Other postures, boost the respiratory and immune systems, tone muscles and, most important, relieve stress (Iyengar 2007). Yoga has both preventive and therapeutic benefits. The nature of every yogic practice is Psycho Physiological and if this conceptual background is not clearly understood, the whole outlook on yogic practices will be disturbed. The relation of yogic practice in terms of anatomy and physiology would remove many misconceptions about them (Gore, 1984). An overview of the development of various metabolic measurements and describe how one such measurement came to be known as the basal metabolic rate (BMR). (Hulbert 2004; McNab 1992; and Speakman 2004) BMR is the metabolic rate measured in an adult non reproducing individual in a zone of thermo neutrality and in a post absorptive state during the inactive phase of its circadian cycle, with body temperature at a normothermic level (McNab, 1997). There are three types of asana (a) Relextive (b) Corrective (c) Meditative. Yoga has become increasingly popular in western countries as a method for coping with stress and as a means of exercise and fitness training (Schell, 1994). Asanas are body positions in which one remains steady and comfortable, both physically and mentally, for a desired length of time without strain. Asanas help the muscles relax by improving circulation, which in turn relieves built- up tension and stress. In all Meditative posture spine is erect which allows all the physiological activities go on normally. Physiology says that erect postures create proper balance posture for digestive organs, heart and lungs (Amresh, 2007). Over the last 10 years, a growing number of research studies have shown that the practice of yoga can improve strength and flexibility, and may help control such physiological variables as blood pressure, respiration and heart rate, and metabolic rate to improve overall exercise capacity (Raub, 2002). There have been many studies on yoga and its effects on physical function (Hadi, 2007) but with the phenomenal and ever increasing popularity of yoga asana in the past few years, there is a surprising lack of research on this particular discipline and as a result the present study had been undertaken to examine the effects of selected asanas in yoga on basal metabolic rate of novice players.

II. IDENTIFY, RESEARCH AND COLLECT IDEA

Thirty subjects (Mean \pm SD: 23.21 \pm 1.45 years, weight 60.50 \pm 2.45 kg, height 1.67 \pm 0.035m) were randomly selected from Lakshmbai National Institute of Physical Education in Guwahati (Assam, India) volunteered to participate in the study. To investigate the influence of 6-week yoga training was imparted to the subject of experimental "A" and control group "B". The groups were consisted of 15 subjects each. Prior to the testing and experimental programme the subjects were assembled and oriented regarding the objectives and requirements of the test items. The 6-week of yoga training, lasting 60min each, which includes Poorna Bhujangasana, Baddhapadmasana, Kukkut asana, Hal asana and Ardha Matsyendrasana. The asanas includes:

- Poorna Bhujangasana: (Full cobra pose)

- Baddhapadmasana : (Locked-up Lotus pose)
- Kukkut asana: (Cock Pose)
- Hal asana: (Plow Pose)
- Ardha Matsyendrasana: (Half Lord of the Fishes Pose)

The BMR formula was uses the variables of height, weight, age and gender to calculate the Basal Metabolic Rate (BMR). Women: $BMR = 655 + (9.56 \times \text{weight in pounds}) + (1.85 \times \text{height in inches}) - (4.68 \times \text{age in years})$ (Harris, 1919). The reliability coefficient for institute students was found to be 0.79.

The 6-week of yoga training, lasting 60min each, which includes Poorna Bhujangasana, Baddhapadmasana Kukkut asana, Hal asana and Ardha Matsyendrasana.

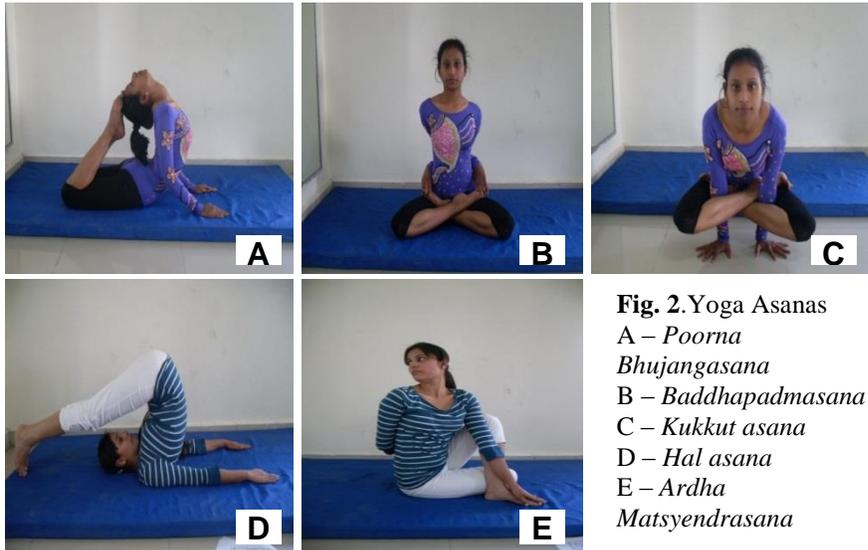


Fig. 2. Yoga Asanas
A – Poorna Bhujangasana
B – Baddhapadmasana
C – Kukkut asana
D – Hal asana
E – Ardha Matsyendrasana

The differences between-group was assessed using the Student’s t-test for dependent data (Verma, 2000) are presented in table 1.

III. WRITE DOWN YOUR STUDIES AND FINDINGS

The results of basal metabolic rate of the experimental (Yoga asana) and control groups are presented in the table 1. The effect of 6-week yoga asana was used to identify the significant differences ($p < 0.005-0.001$) in improvement on basal metabolic rate of novice female players of experimental group “A” compared with control group “B”.

Table 1. Mean values (\pm SD) of basal metabolic rate in yoga asana and control groups (n = 15 each) before (Pre) and after (Post) 6-weeks of training asanas

Group	Number	Mean	S.D.	SEM	‘t’ Value
Experiment (Pre-test)	15	234.5	46.88	12.10	8.587*
Experimental (Post-test)	15	127.6	15.16	3.916	
Control (Pre-test)	15	232.8	65.10	16.80	0.269
Control (Post-test)	15	233.8	64.93	16.76	

*Significant at 0.05 level.

Tab t .05 (14) = 2.14

Table-1 shows that the mean of basal metabolic rate of pre-test of experimental group and post-test of experimental group was 234.5 and 127.6 respectively, whereas the mean of basal metabolic rate of pre-test of control and post-test of control group was 232.8 and 233.8. The “t” value in case of experimental group was 8.587 and for control group it was 0.269. Since $\text{cal. } t (=8.587) > \text{tab } t .05 (14) (=2.145)$, H_0 (null hypothesis) is rejected at .05 level of significance. Thus it may be concluded that six week training program of asanas by leads to significant improvement in basal metabolic rate of novice female players. No significant change over that 6-week yoga training was noted in the control group, not subjected to any training. As per the study the above remark can be given at 95% confidence.

IV. CONCLUSION

Yoga is a popular aid in improving both physical and mental health. Yoga is a powerful tool to help blossom and reach full human potential. Physiological responses to physical training, including yoga, have been well studied by many investigators (Iyengar,

2007). The findings are supported by the study conducted by Udupa K.N. on Yogic and Non Yogic exercise: Improved Physiological variables of students to determine the effects of yogic exercise on Physiological variables showed a statistically significant ($P < .001$) improvement (Schell, 1994). These studies have shown that regular practice of yoga leads to improvement in physiological functions and human performance. The subjects of this study belonged to different nature, habits, personal exercise, regimens, diet, family background and other natural factor which are not under the control of the investigator and were considered as limitation of the study. Yoga asana on selected physiological variable observed to the signification improved breath holding capacity vital capacity and resting rate (Indirani, 1993). Asana and jogging on selected physiological and hematological variables were found to be more effective than jogging in improving pulse rate, vital capacity, breath holding time and serum cholesterol (Shaynebance, 2003). Physical activity increased following yoga, and symptoms decreased, as did BMI and hip and waist measurements (McIver, 2009). The study conducted by Sohoni studied that blood pressure and blood cholesterol reduced considerably in 23 patients and they experienced an overall relief of 90% after they practiced asana, pranayama, meditation, yoganidra and omkar chanting for 6 months considering the effect of selected yogic exercise (Sohoni, 1995). In conclusion, the present study suggested that a 6-week of yoga asana showed significant improvement in basal metabolic rate of novice players through a variety of effect including body mass index (BMI), waist and hip circumference, fat-free mass, total cholesterol, high-density lipoprotein and fasting serum leptin levels (Telles, 2010). These data provide more evidence to support the beneficial effect of yoga asana on basal metabolic rate and thus, such may be recommended to improve body fat percentage, body water content level and lean body mass (Sajwan, 2010). On the basis of the findings of the study, the following conclusions are drawn significantly improvement in the basal metabolic rate of novice female players.

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