

EFFECT OF 12-WEEK YOGA ASANA ON BASAL METABOLIC RATE OF YOUNG FEMALE ATHLETE

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The present investigation was conducted to determine the effects of 12-week yoga asana on basal metabolic rate of Young female athlete. Thirty female athletes were selected as subjects for the present investigation aged were ranging from 19- 21 years. To investigate the influence, 12-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 12-week of yoga asana includes Poorna Bhujangasana, Baddhapadmasana, Kukkut asana, Hal asana and ArdhaMatsyendrasana. The effect of 12-week yoga asana was used to identify the significant differences ($p < 0.005-0.001$) improvement on basal metabolic rate of Young female athlete 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.

Keywords: Yoga Asana, Basal Metabolic Rate, Young Female Athlete.

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Introduction

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.

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 AdhomukhaSvanasana (downward-facing dog posture) stimulates the nervous system, while the more daunting SalambaSirsasana (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.

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 young athletes.

Material and Method

Thirty subjects (Mean + SD: 20.21+ 1.45 years, weight 55.50 + 2.45 kg, height 1.61 + 0.035 m) were randomly selected from Vivekanand College, ChhatrapatiSambhaji Nagar to participate in the

Study. To investigate the influence of 12-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 12-week of yoga training, lasting 60 min each, which includes PoornaBhujangasana, Baddhapadmasana, Kukkut asana, Hal asana and ArdhaMatsyendrasana. The asanas includes:

- PoornaBhujangasana: (Full cobra pose)
- Baddhapadmasana : (Locked-up Lotus pose)
- Kukkut asana: (Cock Pose)
- Hal asana: (Plow Pose)
- ArdhaMatsyendrasana: (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 0.78.

The 12-week of yoga training, lasting 60 min each, which includes PoornaBhujangasana, BaddhapadmasanaKukkut asana, Hal asana and ArdhaMatsyendrasana. The differences between-group was assessed using the Student's t-test for dependent data are presented in table 1.

Result of the study

The results of basal metabolic rate of the experimental (Yoga asana) and control groups are presented in the table 1. The effect of 12-week yoga asana was used to identify the significant differences ($p < 0.005-0.001$) in improvement on basal metabolic rate of young female athlete of experimental group "A" compared with control group "B".

Table 1. Table shows Mean values (SD) of basal metabolic rate of experimental and control groups (Pre & Post) during 12-weeks of training yogasanas

Enclosed as Annexure 01

Table-1 shows that the mean of basal metabolic rate of pre-test of experimental group and post-test of experimental group was

232.4 and 122.1 respectively, whereas the mean of basal metabolic rate of pre-test of control and post-test of control group was 231.7 and 232.4. The "t" value in case of experimental group was 8.497 and for control group it was 0.263. Since 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 Twelve week training program of asanas by leads to significant improvement in basal metabolic rate of novice female players. No significant change over that 12-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.

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 (Iy2007). 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 sports events, nature, habits, personal exercise, regimens, diet, family back ground 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 then jogging in improving pulse rate, vital capacity, breath holding time and sacrum cholesterol (Shaynebanca, 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 12-week of yoga asana showed significant improvement in basal metabolic rate of young athletes 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 young female athletes

Annexure

Annexure 01

Table 1. Table shows Mean values (SD) of basal metabolic rate of experimental and control groups (Pre & Post) during 12-weeks of training yogasanas

Group	Number	Mean	S.D	SEM	't' Value
Experiment (Pre-test)	15	225.7	43.74	11.85	8.497*
Experimental (Post -test)	15	122.1	14.25	3.825	
Control (Pre-test)	15	231.7	63.13	15.75	0.263
Control (Post -test)	15	232.4	62.85	15.71	

*Significant at 0.05 level. **Tab t .05 (14) = 2.14**

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