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## A comparative study of selected body composition variables between yoga and non-yoga performers

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### Abstract

The present study was designed to compare the selected anthropometric variables i.e. Body Mass Index (BMI) and Hip-Waist ratio between yoga performers and non-yoga performers. A sample of Eighty (N=80) female school students from Govt. Model Sr. Sec. School Sector 56 Chandigarh were investigated in the present study, out of which forty (N=40) each were assigned to the yoga performers group and non-yoga performing group. The yoga performing group was treated as experimental group, thus, exposed to the 12 week self-developed yoga training schedule in according to the age of the sample whereas the non-yoga performing group was treated as control group, therefore, not involved in any special activity. The purposive sampling technique was used to collect the requisite information. Selected anthropometric variables i.e. BMI and Hip and waist ratio health status were measured with use of Weiner and Lourie (1969) methods. Descriptive statistics and t-test was employed to compare the BMI and Hip-waist ratio between yoga and non-yoga performers. The level of significance was set at 0.05. The result of the study explicated the significant differences on the variables; B.M.I and Hip-Waist ratio between Yoga and non-yoga performers groups. Further, it is concluded that yoga therapy is very useful and beneficial in maintaining good health by reducing BMI and Hip-waist Ratio. Yoga practice has direct impact, as a safe therapeutic modality in fighting against the obesity.

**Keywords:** Yoga, body mass index, waist-hip ratio

### Introduction

Health is a multidimensional concept because it is shaped by biological, social, economic and cultural factors. World Health Organization (1948) defines health as “a state of complete physical, mental and social wellbeing and not merely an absence of disease or infirmity.” In other words the health is not merely the absence of disease but is influenced and shaped by the access to basic need like food security; safe water supply, housing, sanitation and health services.

Children health is important concern for all the societies since it contributes to their overall development. Health, nutritional and education are important for the overall development of a child and these three inputs need to be addressed in a comprehensive manner. While the relationship between health and education is seen more in terms of the role that the latter plays in creating health awareness and health status improvements, what is not adequately presented in the debates is the reciprocal relationship between health and education, especially when it comes to children (Taneja, 2002) [7]. Studies have shown that poor health and nutritional status of children is a barrier to attendance and educational attainment and therefore plays a crucial role in enrolment, retention and completion of school education (Kumar, 2008) [4].

The concerns related to health and other input that contributes to the overall development of the child, therefore, needs to be part of the curriculum on ‘health and physical education’ at the primary, secondary and senior secondary schools.

Within this overall framework, both yoga and physical education are seen as routes for achieving not merely physical fitness but for psychological development as well (Ravishankar, 2002) [5].

There is a close relationship between three area namely health, yoga and education. There is need to identify topics that may covered in various school subjects, co-curricular subjects and also government programmes like the school health and mid-day meal initiatives.

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In 1986, the World Health Organization (WHO), in Ottawa Charter for health promotion, said that health is “a resource for everyday life, not the objective of living. Health is a positive concept emphasizing social and personal resources, as well as physical capacities. Over all health is achieved through a combination of physical, mental and social well-being, which, together is commonly referred to as the Health Triangle.

**Yoga:** In modern times, the value of Yoga is being increasingly recognized for general health and its preventive and curative effects and to know the extent of problems suffered by students. According to Iyengar, (1968) [3] Yoga is our richest ancient, culture and spiritual heritage. It is an art of living and holds key of youth-fullness, vitality and long life. Yoga has acquired global reorganization and it is not a physical but holistic medical science. It is a philosophy of life and spiritual knowledge. Modern scientific researches in India and abroad have proven that yoga is perfect art and science of healthy, happy and harmonious living. Yoga is a holistic and scientific process to transform body, mind and life. In the entire Bhagwat Geeta, yoga is described as an effective tool to control body and mind.

**Body Composition:** Body composition is one of the essential components of health related fitness. BMI and Hip and Waist ratio are among the two common measures used to determine the body composition of an individual (Annapoorna & Vasanta laxmi, 2013) [1]. The main purpose of these two techniques is to estimate the body fat and further to make conclusions about an individual's body fat in terms of his general health. Yoga activities especially, Asanas may prove to have significant positive effect on body composition of an individual. In other words it can be said that one can maintain the good health through engaging in regular yogic exercises by maintaining healthy body composition.

According to Swami, (1994) [6] established that the yoga practices are good and useful as they help not only to strengthen each organ and develop every muscle of the body but also regulate the circulation of the blood, purify the lungs,

inspire the mind to be more alert and give a feeling of well-being and harmonious development of human personality.

Although, the yoga has been promoted for the numerous health benefits in India since long but scientifically the benefits of yoga has not yet been investigated substantially, therefore, an effort has been attempted by the researchers to compare the selected physical and body composition variables of the yoga and non-yoga performers in Chandigarh school girls.

**Methodology:** The present study was designed to compare the selected anthropometric variables i.e. Body Mass Index (BMI) and Hip-Waist ratio between yoga performers and non-yoga performers. A sample of Eighty (N=80) female school students from Govt. Model Sr. Sec. School Sector 56 Chandigarh were investigated in the present study, out of which forty (N=40) each were assigned to the yoga performers group and non-yoga performing group. The age of the subjects ranged between 16 to 18 years. The yoga performing group was treated as experimental group, thus, exposed to the 12 week self- developed yoga training schedule in according to the age of the sample whereas the non-yoga performing group was treated as control group, therefore, not involved in any special activity. The purposive sampling technique was used to collect the requisite information. Selected anthropometric variables i.e. BMI and Hip and waist ratio health status were measured with use of Weiner and Lourie (1969) [8] methods. Body mass index (BMI) of all the subjects was determined by dividing body weight in kilogram by the square of height in meters. The Hip-Waist ratio was calculated by dividing the waist circumference by hip circumference in centimeters. Descriptive statistics and t-test was employed to compare the BMI and Hip-waist ratio between yoga and non-yoga performers. The level of significance was set at 0.05.

**Results:** Descriptive statistics of selected anthropometric variables i.e. B.M.I and hip waist ratio has been presented in table-1.

**Table 1:** Anthropometric indices of yoga and non yoga performers

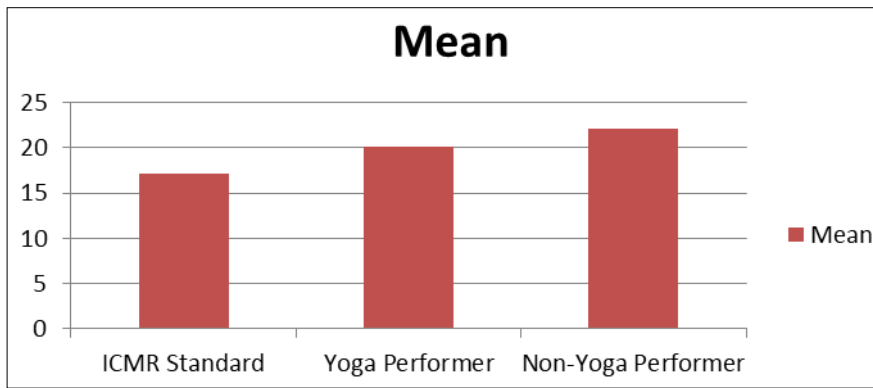
Anthropometric Indices	B.M.I(kg/m <sup>2</sup> )		Waist-Hip Ratio	
	Yoga Performer	Non-Yoga Performer	Yoga Performer	Non-Yoga Performer
Minimum	15.80	18.20	0.35	0.73
Maximum	29.50	34.0	0.95	0.96
Range	13.70	15.8	0.60	0.23
Mean	20.15	22.17	0.81	0.85
Median	19.17	20.93	0.80	0.84
S.D	3.07	4.68	0.07	0.05
Skewness	1.00	0.85	0.46	0.18
Kurtosis	0.70	0.18	0.432	0.13
t-value	2.27		2.74	
ICMR Standard	17.22		0.97	

Significant at the 0.05 level

Table 1 shows the mean, median and standard deviation of selected anthropometric variables i.e. Body mass index of the entire sample consisting of 40 students from yoga performer and non-yoga performers. The value for mean and standard deviation for Body Mass Index (B.M.I) are 20.15±3.07 respectively for yoga performers, while it is 22.17±4.68 for non-yoga performers. Table also shows the ICMR standard of B.M.I i.e. 17.22. The table-1 also shows that there is mean

difference of 2.27 between the BMI values of both the groups. Since t-value of Body mass index is 2.27 which is more than the table value of 2.02 hence significant at 0.05 level of significance differences.

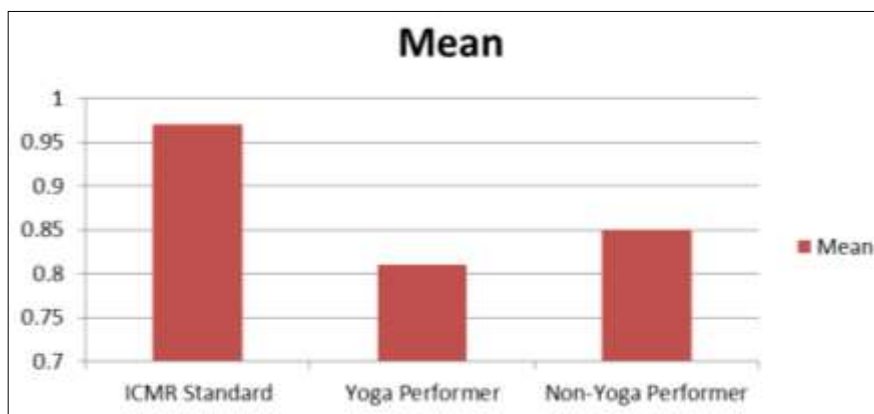
Graphical representation of B.M.I Mean scores of ICMR, Yoga performer and Non-Yoga performers has been depicted in figure-1.



**Fig 1:** Graphical representation of B.M.I Mean scores of ICMR, Yoga performer and Non-Yoga performers

Table 1 also shows the mean, median and standard deviation of selected anthropometric variables i.e. Hip-Waist ratio of the entire sample consisting of 40 students from yoga performer and non-yoga performers. The value for mean and standard deviation for Hip-Waist ratio are  $0.81 \pm 0.07$  respectively for yoga performers, while it is  $0.85 \pm 0.05$  for non-yoga performers. Table also shows the ICMR standard of Hip-Waist ratio i.e. 0.97 is higher than yoga performers as

compared to ICMR and Yoga performers. The table-1 also shows that there is mean difference of 2.74 between the Hip-Waist ratio values of both the groups. Since t-value of Hip-Waist ratio is 2.74 which is more than the table value of 2.02 hence significant at 0.05 level of significance difference. Graphical representation of Hip-Waist Ratio Mean scores of ICMR, Yoga performer and Non-Yoga performers has been depicted in figure-2.



**Fig 2:** Graphical representation of Hip-Waist Ratio Mean scores of ICMR, Yoga performer and Non-Yoga performers

## Discussion

It has been noticed from table-1 that statistically significant differences existed in Body Mass Index and Hip-waist ratio between Yoga performers and non-yoga performers. It might be regular yoga practices reduced the deposited fat on adipose tissues which may possess low BMI and Hip-waist ratio as compare to group not performing yoga practice regularly. However the study conducted by the Chauhan *et al.* (2017)<sup>[2]</sup> support the findings of present study who concluded that yoga practice reduced the B.M.I and similarly Annapoorna & Vasanta laxmi (2013)<sup>[1]</sup> also exhibited the same result and concluded that yoga significantly reduced the BMI and Hip-Waist ratio and very useful to reduce the body fat.

## Conclusions

It is concluded that the regular engagement in yoga exercises found to have positive impact on B.M.I and Hip-Waist ratio. It is concluded that yoga therapy is very useful and beneficial in maintaining good health by reducing BMI and Hip-waist Ratio. Yoga practice has direct impact, as a safe therapeutic modality in fighting against the obesity.

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