Effect of Selected Yogasanas on Anthropometric Measurements and Body Composition of Secondary School Obese Boys

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Abstract

Obesity in children is gradually becoming a major health problem in many developing countries including India. Due to the change in life style, the children of today face so many problems related to health. To cure these problems everyday requires yoga practices, exercises, pranayamas and health are the integral part of human life fitness and wellness of a person are correlated to each other. In fitness, body proportion and composition are important parameters. Yogasanas give a tremendous help in making their body into good physi and also reduce the body fat and weight. Therefore the present study was undertaken to effect of selected yogasanas on anthropometric measurements and body composition of secondary school obese boys. A sampling of 60 obese boys were selected from selected secondary schools of Vijayapura, Devanahalli Tahal, Bangalore, Karnataka by using the BMI formula by considering purpose sampling technique. They were in the age group of 14 to 16 years. The researcher selected two groups viz. control and experimental groups. The experimental group was given training in yogasanas and control group were undergone day to day activity. The duration of experimental group is for twelve weeks. The standard procedures were followed to assess the skinfolds measure to find out the body fat percentage. It was statistically concluded that the yogasana training programme has a good effect to reduce the body fat, body weight, arm girth of obese boys.

Key words: Yogasanas, Anthropometric Measurements, Body Composition, Obese boys

Introduction

Yoga is an ancient discipline. It is recognized as one of the most important and valuable gifts of our culture. The modern era with the development of science and technology, provides man more comforts for his basic necessities. But with these comforts man faces lot of problems, which cannot be solved only by the above facilities. Today the world is looking for solutions to solve the threatening problems of unhappiness, restlessness, emotional imbalance, hyper activity, tension, stress, etc. Yoga provides the body with fitness, free of diseases and aches and efficiency. Secondly mind plays an important role in the learning process. Yoga assures the mind with alertness, awareness, attention, concentration and peace. Thus there is a higher need of yoga for the health and fitness. Yoga gives a tremendous helping not only developing one's fitness ability but also helps in making our body into good body shape. Hence the present study.

Importance of Study

Child obesity has become an increasingly important health issue. One of the causes of increased childhood obesity is the broad shift over the last 30 years to more sedentary leisure activities i.e. television viewing, playing video games and using the computer. In addition to a sedentary lifestyle, the diets of today's children consist of more fast and convenient foods resulting in greater overall energy intake. For many physically inactive people who are overweight, any kind of physical activity appears difficult, and this often prevents people who are obese from initiating and adhering to a specific form of physical activity. Yogasanas give a tremendous help not only developing one's fitness ability but also helps in making one's body fit enough. Hence the present study was aimed to find out the effect of Yogasanas on Anthropometric Measurements and Body Composition of Secondary school obese boys.

Objectives

The objective of the present study is to find out the effect of yogasanas on anthropometric measurements and body composition of secondary school obese boys.

Limitations

This study is limited to:

- Secondary school obese boys.
- Secondary school obese boys from selected schools.

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• Secondary school obese boys age ranged between 14 to 16 years.
• Selected anthropometric measurements i.e. height, weight, arm and calf girth.
• Body composition i.e. 4 sites skinfolds to find out the body fat percentage.

Review of Literature

A review of literature is instrumental in the formulation of hypothesis and deductive reasoning to the problem. Some of the research studies reviewed as given below:

Yokeshe and Chandrasekararan (2011) conducted a study on “effect of yogic practice on selected physical fitness among overweight school boys.” In this study thirty overweight school boys from various schools in Tiruchirappalli district were selected at random. Their age ranged between 14 and 17. The selected subjects were divided into two equal groups of 15 each namely yogic practice group (Group A) and control group (Group B). The experimental group had undergone yogic practices for 12 weeks, five days a week. Whereas the control group (Group B) maintained their daily routine activities and no special training was given. The subjects of the two groups were tested using standardized tests and procedures on selected physical variables before and after the training period to find out the training effects in the following test items: BMI (body mass index) by measuring their height and weight of the subjects and flexibility by sit and reach box. The collected data was analyzed statistically through analysis of covariance (ANACOVA) to find out the pre and post training performances. To compare the significant difference between the adjusted final means and better group, and the control group showed significant improvement due to 12 weeks of training on BMI and flexibility compared to control group.

Rane and Asai (2010) studied on “Aerobics Training Programme on Body Fat and Selected Anthropometric Measurements of Obese Girls”. In this study a sampling of 50 females subjects were selected from Gyan Kendra Secondary school, Mumbai, by using the BMI formula by considering purposeful sampling technique. They were in the age group of 12 to 14 years. The researcher was selected to groups viz. experimental and control groups. The experimental group was given training in aerobic and control group underwent day to day activity. The duration of experimental group is for eight weeks. The result showed significant enhancement in body weight, BMI measurement, chest circumference, abdominal circumference, thigh circumference and skinfold measurements. Therefore, it was statistically concluded that the aerobic exercises training programme has good effect on BMI anthropometric measurement and body fat.

Nayak and Vinod Bhat (2011) conducted a study on “Prevalence of Overweight (Obesity) among School Children in Karnataka, South India”. The study was undertaken to identify the prevalence of childhood overweight/obesity and to find out the relationship between BMI and waist circumference of the children. Eleven schools were selected randomly from Udupi district of Karnataka state, India. A school based survey was carried out among 2093 school children in the age group of 10-16 years. On the day of survey, the purpose of the study was explained. The demographic and standard procedures were followed to assess the anthropometric measurements. Result shows that 7% of children were overweight and 5% were obese. The Pearson Correlation computed between BMI and Waist Circumference showed a positive (r=0.763), relationship between BMI and Waist Circumference. The study conclusion that childhood obesity prevalence is increasing among children. Higher BMI was found among children in the age of 10-12 years and among girls than the boys. The gender difference in BMI could be due to sedentary lifestyles of girls. As the BMI of children increases the waist circumference also increases.

Methodology

Hypotheses

The following are the hypotheses formulated for the study:

1. It was hypothesized that there was a significant improvement in anthropometric measurements of secondary school obese boys after intervention of yogasanas for experimental group.
2. It was hypothesized that there was a significant improvement in body fat percentage of secondary school obese boys after intervention of yogasanas for experimental group.

Materials and Methods

The purpose of the study was to find out the effect of the yogasanas on Anthropometric Measurements and Body Composition of secondary school obese boys.

Subjects

A sampling of 60 obesity boys were selected from selected secondary schools of Vijayapura, Devanahalli Taluk, Bangalore, Karnataka by using the BMI Children Percentile formula by considering purposeful sampling technique. They were in the age group of 14 to 16 years.

Procedures

There were two groups viz. one was a control group and another was experimental group. The experimental group’s subjects had undergone training in yogasanas for total period of twelve weeks, where as the control group’s subjects had not received the above training. However the subjects of control group were
engaged in physical education activity. The experimental group's subjects were engaged Daily program consist warming up exercises for 10 minutes, training for 40 minutes and cooling down for 10 minutes. The duration of training was 60 minutes, 6 days per week for a total period of twelve weeks.

Variables

Resorting from the review of literature, discussions with the experts, considering the feasibility criteria of the study and the relevance of the variables of the study dependent and independent variables were selected. The dependent variables such as Height, Weight, Arm and Calf Girth and Body Fat Percentage. Determining the body fat percentage, equation developed Jackson and Pollock (1978) for predicting body density from skinfold measurements and adapted by YMCA (Golding, Myers, and Sinning 1989) was used. The independent variables such as yogaana training i.e. Warming up and Stretching Exercises, Suryanamaskar, Ardha Kati Chakrasana, Parivrittha, Trikonasana, Veerabhadrasana, Padahastasana, Pachimotasana, Vakrasana, Vajrasana, Ustrasana, Bujangasana Dhanurasana, Navasana and Shavasana.

Statistical Technique

The data was analyzed by using 't' test with the help of SPSS software. The level of significance was found at 0.05 and 0.01 levels.

Analysis and Interpretation

The results are presented in the following tables:

The data obtained pertaining to the selected anthropometric measurements and body composition are presented in the following tables:

Table-1

Table showing comparison of mean scores between the pre and post tests of the control group (N=30).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>'t' value</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>Pre Test</td>
<td>156.333</td>
<td>5.480</td>
<td>0.145</td>
<td>NS</td>
</tr>
<tr>
<td></td>
<td>Post Test</td>
<td>156.333</td>
<td>5.168</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>Pre Test</td>
<td>77.156</td>
<td>4.536</td>
<td>2.095</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>Post Test</td>
<td>79.623</td>
<td>4.559</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arm Girth</td>
<td>Pre Test</td>
<td>32.016</td>
<td>0.807</td>
<td>2.743</td>
<td>**</td>
</tr>
<tr>
<td></td>
<td>Post Test</td>
<td>32.063</td>
<td>1.027</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calf Girth</td>
<td>Pre Test</td>
<td>35.676</td>
<td>1.290</td>
<td>3.742</td>
<td>**</td>
</tr>
<tr>
<td></td>
<td>Post Test</td>
<td>35.100</td>
<td>1.415</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Fat Percentage</td>
<td>Pre Test</td>
<td>26.291</td>
<td>0.423</td>
<td>5.434</td>
<td>**</td>
</tr>
<tr>
<td></td>
<td>Post Test</td>
<td>26.002</td>
<td>0.419</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NS Not Significant; * Significant at 0.05 level; ** Significant at 0.01 level (df=28)

Results of selected variables on the controlled group (N=30):

In the case of height measured in standing height test the mean scores of pre and post of the controlled group are 156.133 and 156.333 respectively, whereas the 't' value is which 0.145 which is not significant even at 0.05 level.

In the case of weight measured in body weight test the mean scores of pre and post of the controlled group are 77.156 and 79.623 respectively, whereas the 't' value is which 2.095 which is significant at 0.05 level.

In the case of arm girth the mean scores of pre and post of the controlled group are 32.016 and 32.063 respectively, whereas the 't' value is which 2.743 which is significant at 0.01 level.

In the case of calf girth the mean scores of pre and post of the controlled group are 35.676 and 35.100 respectively, whereas the 't' value is which 3.742 which is significant at 0.01 level.

In the case of body fat percentage the mean scores of pre and post of the controlled group are 26.291 and 26.002 respectively, whereas the 't' value is which 5.434 which is significant at 0.01 level.

The same is represented in graphical presentation in Fig.1.

Fig.1 : Graph showing comparison of mean scores between the pre and post tests of the control group.

Table-2

Table showing comparison of mean scores between the pre and post tests of the experimental group (N=30).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>'t' value</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>Pre Test</td>
<td>139.900</td>
<td>7.576</td>
<td>0.098</td>
<td>NS</td>
</tr>
<tr>
<td></td>
<td>Post Test</td>
<td>154.166</td>
<td>8.024</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>Pre Test</td>
<td>73.593</td>
<td>7.510</td>
<td>1.549</td>
<td>NS</td>
</tr>
<tr>
<td></td>
<td>Post Test</td>
<td>72.586</td>
<td>7.520</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arm Girth</td>
<td>Pre Test</td>
<td>31.803</td>
<td>1.405</td>
<td>2.783</td>
<td>**</td>
</tr>
<tr>
<td></td>
<td>Post Test</td>
<td>31.813</td>
<td>1.350</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calf Girth</td>
<td>Pre Test</td>
<td>36.233</td>
<td>2.243</td>
<td>2.173</td>
<td>**</td>
</tr>
<tr>
<td></td>
<td>Post Test</td>
<td>35.090</td>
<td>2.151</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Fat Percentage</td>
<td>Pre Test</td>
<td>10.187</td>
<td>0.543</td>
<td>6.102</td>
<td>**</td>
</tr>
<tr>
<td></td>
<td>Post Test</td>
<td>10.277</td>
<td>0.562</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NS Not Significant; ** Significant at 0.01 level (df=28)

Results of selected variables on the experimental group (N=30):
In the case of height measured in standing height test the mean scores of pre and post of the experimental group are 153.906 and 154.166 respectively, whereas the 't' value is which 0.098 which is not significant even at 0.05 level.

In the case of weight measured in body weight test the mean scores of pre and post of the experimental group are 75.593 and 72.586 respectively, whereas the 't' value is which 1.549 which is not significant even at 0.05 level.

In the case of arm girth the mean scores of pre and post of the experimental group are 31.803 and 32.813 respectively, whereas the 't' value is which 2.783 which is significant at 0.01 level.

In the case of Calf girth the mean scores of pre and post of the experimental group are 36.323 and 35.090 respectively, whereas the 't' value is which 2.173 which is significant at 0.05 level.

In the case of body fat percentage the mean scores of pre and post of the experimental group are 26.185 and 25.271 respectively, whereas the 't' value is which 6.402 which is significant at 0.01 level.

The same is represented in graphical presentation in Fig.2.

Fig.2: Graph showing comparison of mean scores between the pre and post tests of the Experimental group

Discussion

Discussion of Hypotheses

In case of height, the obtained 't' value 0.145 which is less than the table value and it was not significant even at 0.05 level in controlled group and the obtained 't' value 0.098 which is less than the table value and it was not significant even at 0.05 level in experimental group. This indicates that the yoga asana training not improves the height significantly.

In case of weight, the obtained 't' value 2.095 which is greater than the table value and it was a significant at 0.05 level in controlled group and the obtained 't' value 1.519 is less than the table value and it was not significant even at 0.05 level in experimental group. This indicates that the yoga asana training not helps to reduce weight significantly.

In case of arm girth, the obtained 't' value 2.743 which is greater than the table value and it was a significant at 0.01 level in controlled group and the obtained 't' value 2.783 which is greater than the table value and it was a significant at 0.01 level in experimental group. This indicates that the yoga asana training reduces the arm girth significantly, but in controlled group the arm girth was increases due to food intake, heredity, lifestyle, physical inactivity and growing stage.

In case of calf girth, the obtained 't' value 3.742 which is greater than the table value and it was a significant at 0.01 level in controlled group and the obtained 't' value 2.173 which is greater than the table value and it was a significant at 0.05 level in experimental group. This indicates that the yoga asana training reduces the calf girth significantly, but in controlled group the calf girth was increases due to food intake, heredity, lifestyle, physical inactivity and growing stage.

In case of body fat percentage, the obtained 't' value 5.434 which is greater than the table value and it was a significant at 0.01 level in controlled group and the obtained 't' value 6.402 which is greater than the table value and it was a significant at 0.01 level in experimental group. This indicates that the yoga asana training reduces the body fat percentage significantly, but in controlled group the body fat percentage was increases due to food intake, heredity, lifestyle and physical inactivity.

Discussion of Results

From the interpretation of the data the following results of anthropometric measurements and body fat percentage which shows only significant improvement in arm and calf girth and body fat percentage. It means the selected yoga asana training did not show significant effect on height and weight. The analysis of data reveals that the experimental group has reduced in the arm & calf girth and body fat percentage.

Conclusion

Twelve week training of Yoga training imparted in this study was effective in improving height, reducing excessive body weight, arm & calf girth and effective in reducing body fat percentage.

References


