Study of Utility of Martial Arts as A Counteractive Strategy for Improving Physical Fitness of Obese Teenagers – A Case of Haryana

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Introduction

Man has probably not seen obesity for more than thousands of years. It was not until the 20th century that it became common, so much so that in 1997 the World Health Organization formally recognized obesity as a global epidemic. The current estimates by the WHO show that at least 400 million adults (9.8%) are obese, with higher rates among women than men. Obesity is increasing at an alarming rate throughout the world and India is not an exception. Though obesity is not immediate lethal disease itself, but it is a significant risk factor associated with a range of serious non-communicable diseases and condition (Tanaka and Nakanishi, 1996). Some studies have indicated that obesity may be linked with an increased risk of coronary heart disease, hypertension, diabetes mellitus and gallstone in the later years (Raj and Kumar, 2010). Obesity has reached epidemic proportions in India in the 21st century, with morbid obesity affecting 5% of the country's population. India is following a trend of other developing countries that are steadily becoming more obese (Kelishadi and Azizi-Soleiman 2014). Unhealthy, processed food has become much more accessible following India's continued integration in global food markets. Although there are many approaches for fighting the obesity problem (Deforche et al., 2003) in kids, the use of physical activities like martial arts has not been explored through systematic research studies.

Martial arts are extensive systems of codified practices and traditions of combat, practiced for a variety of reasons, including self-defense, competition, physical health and fitness, as well as mental and spiritual development (Bu et al., 2010). Exercise though martial arts practice is a great way to lose weight, but it should not get boring. Learning martial arts is an excellent way to lose weight, build stamina, learn self discipline and develop a positive sense of self and the advantages of this type of training cannot be overstated. Martial arts have been known to be very effective in reducing body weight (Burke et al., 2007; Tsang et al., 2008; Woodward, 2009). Martial arts involve a variety of techniques to overpower an opponent and learning these techniques involves a lot of physical exercise to the body. In view of this present study assessed the effect of various martial arts training on obese urban teenagers.

Research Methodology

For this study 300 obese urban teenagers (boys) were selected from urban area of 10 Districts (Rohtak, Bhiwani, Jhajjar, Sonipat, Panipat, Karnal, Kurukshetra, Jind, Hissar and Gurgaon) in Haryana State. The criterion measures i.e. variables selected for this study included Body Weight, Skinfold measurement for percent body fat. All the tests were performed following standard procedures. All the teenagers were subjected to the martial arts training for the period of 6 months.

Martial Arts Training

The martial arts training schedule for the obese teenagers was decided on the basis of their prevailing physical fitness. The selection of obese teenagers was carried out upon consultation with the medical practitioner (only the teenagers declared fit by the doctors were selected). The training programs consisted of following activities like, Jogging (400 m), General Warming Up, Ankle Rotation (10 reps

Both legs), Calf Raises, Thighs Stretching, Hip Rotation- Clock Wise & Anti Clock Wise, Shoulder Rotation (10 reps), Finger Stretching (5 reps*2), Neck Rotation (5 up & down & 5side), Jumping Exercises, Specific Warming up, Leg Stretching (front) 5 reps both legs, Stretching kick (front) 10 reps both legs, Balancing exercise, Sit-ups (10*2 reps), Push – Ups (2 sets), Front Kick (10*2 reps), Side kick (10*2 reps), Single Punch (50 reps), Double Punch (15 reps).

Statistical Analysis

The data generated during the study was analyzed with the aid of SPSS 18.0 software. The descriptive statistics, such as mean, SD, minimum and maximum, etc were determined. The Analysis of Variance test was used to check the effect of martial arts training on the weight and fat percentage of obese teenagers. The significance level was chosen to be 0.05 (or equivalently, 5%).

Results of the Study

Body Weight

Table 1: Body weight of the obese teenager at different time interval

Training period	N	Mean	±SD	Min	Max	F	P
Before 1st Cycle	300	74.5	±3.3	67.0	86.0	336.815	<0.05
After 1st Cycle	300	70.4	±3.7	63.0	82.0		
After 2nd Cycle	300	68.0	±4.0	59.0	81.0		
After 3rd Cycle	300	63.4	±6.0	8.0	81.0		

N: No. of children; **SD**: Standard deviation; **Min**: Minimum; **Max**: Maximum; **F**: 'F' ratio; **P**: Probability

Above **Table 1** presents results regarding the assessment of body weight of the obese teenage boys of urban area before and after physical fitness trainings. The results indicated that the mean body weight of the teenagers before 1st cycle is 74.5±3.3 cm (with overall variation between 67 and 86), whereas mean body weight of the obese teenagers after 1st cycle is 70.4±3.7 (with overall variation between 63 and 82). In addition to it mean body weight of the teenagers after 2nd cycle was 68±4.0 (with overall variation between 59 and 81) and mean body weight of the teenagers after 3rd cycle was 63.4±6.0 (with overall variation between 8 and 81).

Biceps Skinfold

Table 2: Biceps Skinfold of the obese teenager at different time interval

	N	Mean	±SD	Min	Max	F	P
Before 1st Cycle	300	26.1	±0.8	25.0	27.0	972.310	<0.05
After 1st Cycle	300	24.4	±0.9	23.0	27.0		
After 2nd Cycle	300	22.7	±1.4	21.0	26.0		
After 3rd Cycle	300	20.9	±1.7	19.0	25.0		

N: No. of children; **SD**: Standard deviation; **Min**: Minimum; **Max**: Maximum; **F**: 'F' ratio; **P**: Probability

Above **Table 2** presents results regarding the assessment of biceps skinfold of the obese teenage boys of urban area before and after physical fitness trainings. The results indicated that the mean biceps skinfold of the teenagers before 1st cycle is 26.1±0.8 cm (with overall variation between 25 and 27), whereas mean biceps skinfold of the obese teenagers after 1st cycle is 24.4±0.9 (with overall variation between 23 and 27). In addition to it mean biceps skinfold of the teenagers after 2nd cycle was 22.7±1.4

(with overall variation between 21 and 26) and mean biceps skinfold of the teenagers after 3rd cycle was 20.9±1.7 (with overall variation between 19 and 25).

Chest Skinfold

Table 3: Chest Skinfold of the obese teenager at different time interval

	N	Mean	±SD	Min	Max	F	P
Before 1st Cycle	300	24.0	±1.3	22.0	27.0	532.939	<0.05
After 1st Cycle	300	22.2	±1.4	20.0	25.0		
After 2nd Cycle	300	20.6	±1.7	18.0	26.0		
After 3rd Cycle	300	18.8	±2.1	16.0	25.0		

N: No. of children; **SD**: Standard deviation; **Min**: Minimum; **Max**: Maximum; **F**: 'F' ratio; **P**: Probability

Above **Table 3** presents results regarding the assessment of chest skinfold of the obese teenage boys of urban area before and after physical fitness trainings. The results indicated that the mean chest skinfold of the teenagers before 1st cycle is 24.0±1.3 cm (with overall variation between 22 and 27), whereas mean chest skinfold of the obese teenagers after 1st cycle is 22.2±1.4 (with overall variation between 20 and 25). In addition to it mean biceps skinfold of the teenagers after 2nd cycle was 20.6±1.7 (with overall variation between 18 and 26) and mean chest skinfold of the teenagers after 3rd cycle was 18.8±2.1 (with overall variation between 16 and 25).

Abdominal Skinfold

Table 4: Abdominal Skinfold of the obese teenager at different time interval

	N	Mean	±SD	Min	Max	F	P
Before 1st Cycle	300	25.9	±0.8	24.0	27.0	840.273	<0.05
After 1st Cycle	300	24.1	±1.0	21.0	26.0		
After 2nd Cycle	300	22.4	±1.5	19.0	26.0		
After 3rd Cycle	300	20.6	±1.8	17.0	25.0		

N: No. of children; **SD**: Standard deviation; **Min**: Minimum; **Max**: Maximum; **F**: 'F' ratio; **P**: Probability

Above **Table 4.9** presents results regarding the assessment of abdominal skinfold of the obese teenage boys of urban area before and after physical fitness trainings. The results indicated that the mean abdominal skinfold of the teenagers before 1st cycle is 25.9±0.8 cm (with overall variation between 24 and 27), whereas mean abdominal skinfold of the obese teenagers after 1st cycle is 24.1±1.0 (with overall variation between 21 and 26). In addition to it mean abdominal skinfold of the teenagers after 2nd cycle was 22.4±1.5 (with overall variation between 19 and 26) and mean abdominal skinfold of the teenagers after 3rd cycle was 20.6±1.8 (with overall variation between 17 and 25).

Calf Skinfold

Table 5: Calf Skinfold of the obese teenager at different time interval

	N	Mean	±SD	Min	Max	F	P
Before 1st Cycle	300	23.1	±0.9	22.0	25.0	639.143	<0.05
After 1st Cycle	300	21.4	±1.1	20.0	25.0		
After 2nd Cycle	300	19.7	±1.6	18.0	24.0		
After 3rd Cycle	300	18.0	±2.1	16.0	23.0		

N: No. of children; **SD**: Standard deviation; **Min**: Minimum; **Max**: Maximum;**F**: 'F' ratio; **P**: Probability

Above **Table 5** presents results regarding the assessment of calf skinfold of the obese teenage boys of urban area before and after physical fitness trainings. The results indicated that the mean calf skinfold of the teenagers before 1st cycle is 23.1±0.9 cm (with overall variation between 22 and 25), whereas mean calf skinfold of the obese teenagers after 1st cycle is 21.4±1.1 (with overall variation between 20 and 25). In addition to it mean calf skinfold of the teenagers after 2nd cycle was 19.7±1.6 (with overall variation between 18 and 24) and mean calf skinfold of the teenagers after 3rd cycle was 18.0±2.1 (with overall variation between 16 and 23).

Conclusions

On the basis of the study results, conclusions were drawn and on the basis of conclusions, which are as follows

- **Body Weight:** In view of the comparative assessment (using one way ANOVA) it is concluded that there is significant (P<0.05) difference in the body weight of the obese teenage boys of urban area post undergoing physical fitness training.
- **Biceps Skinfold**: On the basis of the comparative assessment (using one way ANOVA) it is concluded that there is significant (P<0.05) difference in the biceps skinfold of the obese teenage boys of urban area post undergoing physical fitness training.
- **Chest Skinfold**: From, the comparative assessment (using one way ANOVA) it is concluded that there is significant (P<0.05) difference in the chest skinfold of the obese teenage boys of urban area post undergoing physical fitness training.
- **Abdominal Skinfold**: In view of the comparative assessment (using one way ANOVA) it is concluded that there is significant (P<0.05) difference in the abdominal skinfold of the obese teenage boys of urban area post undergoing physical fitness training.
- **Calf Skinfold**: From, the comparative assessment (using one way ANOVA) it is concluded that there is significant (P<0.05) difference in the calf skinfold of the obese teenage boys of urban area post undergoing physical fitness training.

Thus, overall, it is evident from the study results that the body weight as well as the percent body fat as observed through the skinfold measurement has significantly reduced due to martial arts training. Hence, it is concluded that the regular martial arts training has positive impact on the general health of the teenagers.

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