



EFFECTIVENESS OF FOUR WEEKS INTENSIVE HULA HOOPS TRAINING ON SPOT REDUCTION IN YOUNG WOMEN

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Abstract

Obesity is a significant health problem in all around the Globe irrespective of socio-economic background. Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have a negative effect on health. Abdominal fat causes the increased fat cells accumulated in the abdominal area to secrete increased amounts of various hormones from fat cells into the bloodstream. Studies have found the use of medication together with behavior modification can minimize risk factors for the occurrence of metabolic disorder. Searching for ways to make physical fitness refreshing while providing enough physical demand to create a positive change in health is the goal of many exercise programs. Hula hooping is a fun and widely practiced form of exercise, the functional goal of which is to maintain a hoop in continuous oscillation parallel to the ground through coordinated body movements. They are a popular piece of fitness equipment used to attempt to slim the waistline and improve core muscle endurance. The purpose of the present study was to examine the effectiveness of four weeks intensive hula hoops training on spot reduction in young women. The study investigated the effects of hula hoops training on waist circumference, hip circumference and waist-hip ratio. The subjects for study were female (N=10) Post Graduate students Kuvempu University

campus, Shankaraghatta selected through purposive random technique. Their age ranged 20 to 25 years. The inclusion criteria was Body Mass Index 25 and above. The waist-to-hip ratio is the dimensionless ratio of the circumference of the waist to that of the hips. One group pre-test, post-test design was used for the present investigation. Descriptive statistics like Mean and Standard Deviation were calculated for all the subjects. In order to test the hypothesis of the study, independent sample 't' test was employed at .05 levels of significance. The four weeks intensive hula hoops training are an effective way to reduce body fat in waist and hip region of young women.

Keywords: Obesity, Waist, Hip, Circumference, Fat, Body Mass Index, Hula Hoops and Exercise.

Introduction

Obesity is a significant health problem in all around the Globe irrespective of socio-economic background. Although genetics can play a role in the likelihood that a person will become obese, the condition occurs when the amount of calories consumed exceeds the amount of calories expended over a long period of time. Excess calories are stored as fat in the body, and with long-term caloric excess, an individual eventually becomes obese. Exercising regularly and eating a



healthy diet are ways in which to combat obesity. Obesity has also reached alarming levels in the Asean Economic Community (Nicharojana & Singsawad, 2016).

Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have a negative effect on health. People are generally considered obese when their body mass index, a measurement obtained by dividing a person's weight by the square of the person's height, is over 30 kg/m², with the range 25–30 kg/m² defined as overweight. Some East Asian countries use lower values. Abdominal obesity, also known as central obesity, is when excessive abdominal fat around the stomach and abdomen has built up to the extent that it is likely to have a negative impact on health. There is a strong correlation between central obesity and cardiovascular disease. Visceral and central abdominal fat and waist circumference show a strong association with type 2 diabetes (Yusuf, et. al., 2004; Razay, Vreugdenhil & Wilcock, 2006).

Abdominal fat causes the increased fat cells accumulated in the abdominal area to secrete increased amounts of various hormones from fat cells into the bloodstream. Which is result in abnormal blood-cholesterol levels in which triglyceride levels are high, High-Density lipoprotein cholesterol levels are low, blood-glucose is high and blood pressure is high. Therefore, the main goal of care and treatment is reducing risk factors of metabolic syndrome, e.g. weight loss, reducing abdominal fat and decreasing blood-cholesterol levels to a normal level (Dirojanawongse, 2007).

Studies have found the use of medication together with behavior modification can minimize risk factors for the occurrence of metabolic disorder. Exercise is an activity involving movement of the body or muscles and causes the muscles to contract and relax.

Furthermore, exercise triggers changes in the muscles and blood-glucose levels. There are numerous exercise methods, e.g. swimming, running, aerobic dancing, fitness, etc. However, hula-hoop exercise to promote health is currently popular (Barnard, Dilauro, & Inkeles, 1997).

Searching for ways to make physical fitness refreshing while providing enough physical demand to create a positive change in health is the goal of many exercise programs. New core training programs are continually being developed and marketed to individuals of all ages and fitness levels. Hula hooping was popularized in the late 1950s, but new adaptations of hula hoop construction have been suggested to create increased physical demands and potential for added fitness benefits (McGill, Cambridge & Andersen, 2015).

Hula hooping is a fun and widely practiced form of exercise, the functional goal of which is to maintain a hoop in continuous oscillation parallel to the ground through coordinated body movements. Hula hoops are a popular piece of fitness equipment used to attempt to slim the waistline and improve core muscle endurance. Although there are obvious visible movements at the waist and hip, very few studies have quantified the intensity of muscle activity during hula hooping. (Chen, et. al., 2019).

Hula-hooping is considered an ancient type of dance, which has recently experienced a comeback in the form of aerobic core training. Hula-hooping has been practiced in fitness classes worldwide and utilized in activity-promoting video games such as the Nintendo Wii. The energy expenditure of hooping has been estimated to vary from 3 to 7 kcal/min (moderate-intensity activity) depending on the hoop, hooping style, and individual metabolic



factors (Lahelma, et. al., 2019). The bigger and heavier the loop, the slower it rotates and the easier it is to use.

Hula hooping activates muscles in the trunk such as lower abdominals, psoas major, and back extensors as well as those in the lower limbs (hip abductors and, to a small extent, muscles of the knee and ankle) (Cluff, Robertson & Balasubramaniam, 2008). Data on the effects of hula-hooping on body composition are limited.

The movement of playing the hula hoop when done regularly will affect the muscles of the body, because playing the hoop will cause stimulation of the muscles. This stimulation results in muscle contractions that produce motion in the body, so that it will affect the body's motor abilities such as strength, speed, agility, flexibility, power and endurance. According to Kalangi (2014) there is an influence on the body's motor skills because with exercise the muscle fibers will enlarge (hypertrophy), the number of cell organelles increases and the number of blood vessels increases. Correspondingly, the energy content and metabolic rate will increase so that the strength and endurance will increase. In addition, according to Harsono (2015), any activity that involves muscles, is rhythmic and continuous will provide the desired training effect. This provides clarity that the effect of training caused by a physical activity such as playing hula hoop will affect the basic physiological functions of the body such as muscles and joints because these basic functions contain the body's biomotor elements (Rohman, 2019).

According to Falgueras (2017), the hula hooping is a symmetrical circular motion on its axis. Some of the forces generated when playing it are gravitational and inertial forces. The inertial force moves in two points opposite

the straight acceleration so as to produce the effect of the motion. In addition, Falgueras (2016) explains that hula hoop is a sport that requires body skills and balance like most other sports activities. This exercise not only increases the body's metabolism and abdominal muscle strength, but also within 20-30 minutes can burn around 200 calories.

Hula hooping is a complex function that requires proper organization and movement of the body in order to maintain an unstable object amid stable oscillatory motion. During hula hooping, the hula hoop moves around the waist parallel to the ground. The angular momentum of the hoop is presented as vertical and horizontal components of which the performer must manipulate the hoop's oscillation amplitude and frequency with synchronicity throughout the hips, knees, and ankles during oscillatory movement. Simultaneously, the torso is organized in an almost straight or neutral position with minimal movement in addition to co-contraction of the torso muscles to maintain a consistent swing of the hula hoop around the waist. Various muscles are activated during hula hooping that include the torso muscles, lower abdominals, erector spinae, and muscles of the hips, knees, and ankles (Balasubramaniam & Turvey, 2004; Cluff, Robertson & Balasubramaniam, 2008).

Methodology

The purpose of the present study was to examine the effectiveness of four weeks intensive hula hoops training on spot reduction in young women. The study investigated the effects of hula hoops training on waist circumference, hip circumference and waist-hip ratio.



Subject

The subjects for study were female (N=10) Post Graduate students residing in Thunga and Sharavathi Hostels of Jnansahyadri campus, Shankaraghatta. Their age ranged 20 to 25 years. The subjects for the study were selected through purposive random technique. The subjects were studying in 1st and 2nd year of Post-Graduation. The inclusion criteria was Body Mass Index 25 and above.

Criterion Measures

The waist-to-hip ratio is the dimensionless ratio of the circumference of the waist to that of the hips. This is calculated as waist measurement divided by hip measurement. For example, a person with a 30" (76 cm) waist and 38" (97 cm) hips has a waist-hip ratio of about 0.78. According to the World Health Organization's data gathering protocol, the waist circumference should be measured at the midpoint between the lower margin of the last palpable ribs and the top of the iliac crest, using a stretch-resistant tape that provides constant 100 g (3.53 oz) tension. Hip circumference should be measured around the widest portion of the buttocks, with the tape parallel to the floor. For both measurements, the individual should stand with feet close together, arms at the side and body weight evenly distributed, and should wear little clothing. The subject should be relaxed, and the measurements should be taken at the end of a normal respiration. Each measurement should be repeated twice; if the measurements are within 1 cm of one another, the average should be calculated. If the difference between the two measurements exceeds 1 cm, the two measurements should be repeated. Practically, however, the waist is more conveniently measured simply at the smallest circumference of the natural waist, usually just above the belly button, and the hip

circumference may likewise be measured at its widest part of the buttocks or hip. Also, in case the waist is convex rather than concave, such as with different body types, and obesity, the waist may be measured at a horizontal level 1" (2.5 cm) above the navel.

The investigator herself approached the Post Graduate female students for collecting necessary data required for the study. The spare time of the subject was made known and was instructed to assemble in a closed room for data collection. The subjects were given a brief orientation regarding tests to be conducted and their objectives. The investigator herself collected necessary data through standard procedure already discussed. Taking a waist circumference measurement: The tape measure was wrapped around the narrowest part of stomach, near or just above belly button. The tape measure rested gently on skin, and not pulled tightly. Once the tape measure was positioned correctly, the subject breathed in gently, and then the measurement was taken on the exhale. The measurement was taken in inches. The subject stood with feet directly beneath hips and the tape was wrapped around the widest part of hips and buttocks. The measurement was noted in inches. Waist size was divided by hip size to get Waist-Hip ratio.

Study Design

One group pre-test, post-test design was used for the present investigation. The selected subjects underwent pre-test of waist to hip ratio prior to the treatment in the form of Hula hoops training. This was followed by four weeks intensive training with hula hoops. Later, after four weeks training the subjects were subjected to post test of waist to hip ratio.



Descriptive statistics like Mean and Standard Deviation were calculated for all the subjects. In order to test the hypothesis of the study, independent sample 't' test was employed at .05 levels of significance.

Exercise Protocol

TABLE NO. 1
DETAILS ON HULA HOOPS EXERCISE PROTOCOL
ADMINISTERED

S. No.	Names of Exercise	Repetitions and Sets
1.	Rolling round the trunk. (clock wise and anti-clockwise)	20 repetitions X 3 sets
2.	Rolling round the trunk and moving forward and backward. (clock wise and anti-clockwise)	20 repetitions X 3 sets
3.	Rolling round the trunk and moving sideward. (clock wise and anti-clockwise)	20 repetitions X 3 sets
4.	Rolling round the trunk and half squatting. (clock wise and anti-clockwise)	20 repetitions X 3 sets

Analysis of Data and Findings

The raw data on Body Mass Index, Waist Circumference, Hip Circumference and Waist-hip ratio during pre and post test situation were subjected to descriptive statistics. The results on Mean and Standard Deviation in Men section are presented in table 2.

TABLE NO. 2
DESCRIPTIVE STATISTICS ON BODY MASS INDEX, WAIST CIRCUMFERENCE, HIP CIRCUMFERENCE AND WAIST-HIP RATIO DURING PRE AND POST TEST

Variables	Mean	Std. Deviation	Std. Error Mean
Body Mass Index pre-test	27.52	4.32	1.36
Body Mass Index post-test	24.90	9.55	3.02
Waist Circumference pre-test	33.50	2.12	0.67
Waist Circumference post-test	32.20	2.25	0.71
Hip Circumference pre-test	34.40	3.24	1.02
Hip Circumference post-test	33.70	2.87	0.90
Waist-hip ratio pre-test	0.98	0.02	0.015
Waist-hip ratio post-test	0.96	0.03	0.009

The raw scores on Body Mass Index, Waist Circumference, Hip Circumference and Waist-hip ratio during pre and post-test situation were further subjected to paired samples 't' test in order to find differences in mean scores

between pre-test and post-test situations. The results are provided in table 3.

TABLE NO. 3
'T' TEST FOR DIFFERENCES IN BODY MASS INDEX, WAIST CIRCUMFERENCE, HIP CIRCUMFERENCE AND WAIST-HIP RATIO BETWEEN PRE AND POST TEST

Variables	Mean	SD	SE Mean	t	df	Sig.
Body Mass Index	2.62	8.05	2.54	1.028	9	0.165
Waist Circumference	1.30	1.06	0.34	3.881	9	0.002
Hip Circumference	0.70	0.48	0.15	4.583	9	0.001
Waist-Hip Ratio	0.02	0.03	0.01	1.957	9	0.041

Table 3 provides results on 't' test for Waist Circumference (3.881), Hip Circumference (4.583), Waist-hip ratio (1.957), is higher than the table value (1.833) required for significance at .05 levels. The 't' values of Body Mass Index was not significant at 0.05 levels of significance because the obtained value (1.028) was less than table value required for significance.

From table 3 it becomes clear that the Waist Circumference, Hip Circumference and Waist-hip ratio significantly reduced from pre-test to post-test situation due to the practice of hula hoops for 4 weeks intensively.

The differences in Waist Circumference, Hip Circumference and Waist-hip ratio between pre and post-test situation are graphically depicted as below.

Conclusion

The Waist Circumference, Hip Circumference and Waist-hip ratio was significantly reduced from pre-test to post-test situation due to the practice of hula hoops for 4 weeks intensively. The hula hoops are an effective way to reduce body fat in waist and hip region of young women. In a similar study by Lahelma, et. al., (2019) Hula-hooping with a weighted hula-



hoop was found to be effective in decreasing abdominal fat % and increase trunk muscle mass in overweight subjects. Hula hooping was found to be suitable for moderate-intensity core muscle activation in another study by Chen, et. al., (2019). In the study of weighted hula hooping by McGill, Cambridge & Andersen (2015) suggested that regular hooping was associated with reduced waist and hip girth together with a redistribution of body mass. Aerobic hula hoop exercise is a type of exercise that can be chosen for reducing abdominal fat and good for group exercise (Nicharohana & Singsawad, 2016).

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