Original Research Paper

Volume-9 | Issue-7 | July - 2019 | PRINT ISSN No. 2249 - 555X

Physiotherapy

COMPARATIVE STUDY BETWEEN EFFECTS OF SURYA NAMASKAR VERSUS PILATES ON BODY MASS INDEX IN OBESE WOMEN

Grishma Sonawane — BPTh Intern, MAEER's Physiotherapy College, Pune,India

Dr. Sanjivani Kamble (PT)* — Associate Professor, MAEER's Physiotherapy College, Pune, India *Corresponding Author

Dr. Snehal Ghodey (PT) — Principal, MAEER's Physiotherapy College, Pune,India

ABSTRACT

Background: Obesity, a major problem these days, commonly seen in women leading to a number of health diseases. Obesity can be managed by various forms of exercises such as high intensity work out, Zumba, surya namaskar, Pilates, and also diet. Surya namaskar is a dynamic yogic exercise which increases the body metabolism and eventually helps for fat loss. Pilates work on the core along with movements of the limbs which strengthen the muscles and help in weight loss.

Objectives: To see the effects of surya namaskar and Pilates on BMI, compare the two and find out which one is more effective for weight loss by assessing the BMI values of the subjects.

Subjects: 34 female subjects with BMI more than 25 were included.

Method: The subjects were divided into two groups of 17 each one of surya namaskar and Pilates. Their BMI was assessed pre and post treatment. Both sessions were conducted 5 days a week for 4 weeks.

Results: The clinical results do not show much of a significant difference between the two groups, however the statistical results show a significant difference in the effects between the two groups.

Conclusion: Statistically surya namaskar shows a much significant effect on the BMI.

KEYWORDS : Obesity, BMI, Surya Namaskar, Pilates.

INTRODUCTION

Obesity is said to be a chronic and common condition characterized by excess of body fat which accumulates to an extend that leads to adverse effects on health leading to increased health problems such as diabetes mellitus, hypertension, coronary artery disease, stroke, osteoarthritis, obstructive sleep apnoea, depression etc. Wrong eating habits, lack of physical activity or exercise, excess of junk food are contributing factors of obesity.

Recently obesity has become a global phenomenon which is increasing rapidly and is seen more in women. Currently there are about 1.6 billion over weight and 400 million obese people in the world. In the developing country like India, abdominal obesity is an emerging health problem. Indians are genetically susceptible to fat accumulation especially around the waist.

There are two types of obesity: Android Obesity and Gynoid Obesity Android Obesity is collection of fat mostly in the abdomen (apple shaped body) and is also called as abdominal or central obesity.

Gynoid Obesity is the collection of fat in the hips and buttocks (pear shaped body).[1,2,12,13]

Obesity can be measured by assessing the BMI. The values of BMI according to Asian criteria are as follows.

Table 1:

Classification	BMI(kg/m^2)
Under weight	< 18.5
Normal	18.5 – 22.9
Over weight	23 – 24.9
Obese 1	25 – 29.9
Obese 2	>30

Proper diet, gyming, yoga, Pilates, Zumba, aerobics, etc. are various ways by which people can control and lose weight and thus reduce obesity. There are many different studies done which prove that the above help in weight loss to manage obesity

SURYA NAMASKAR

Surya namaskar is a part of yoga which consists of 12 steps/postures and this completes one cycle of surya namaskar. Surya namaskar makes the joint and muscles stronger and helps in improving and maintaining the flexibility of the body. It helps in increasing the metabolic rate. Also the viscera-receptors gets stimulated by the visceral pressure and thus it helps in proper functioning of all systems. Surya namaskar also helps in improving and increasing the blood circulation. It thus helps in mobilizing the excessive amount of accumulated fat in the body and is thus helpful for weight loss. There are many different studies done which prove that surya namaskar helps in weight loss. Also practice of surya namaskar helps the patient to feel fit and refreshed.[1,3]

PILATES

Pilates is one such form of exercise which works more on the core of the body i.e. the abdomen, back and hips. If the posture and flexibility. Also it helps to strengthen the core muscle.

Pilates exercise consists of controlled movements of the arms and legs. Pilates emphasizes on alignment, breathing, to develop a strong core and improve balance and co-ordination. These exercises are done in a controlled manner and the range of difficulty varies from beginner to advanced. Number of repetitions can be increased over time as the body gets accustomed to the exercises. Also pilates helps to prevent falls and thus injuries, especially in elderly population. There are a number of studies done which prove how effective is pilates for all of the above.[12,13]

Since both surya namaskar and pilates help in weight loss and thus controlling obesity, the aim of our study is to prove which one of these is more effective and is a better intervention

METHODOLOGY

- Study design- Experimental study
- Sampling method- purposive random sampling
- Sample size- 34 (17 in each group)
- formula: $\frac{(z\alpha/2+z\beta/2)^2+(SD)^2}{l^2}$
- Sampling duration- 4 weeks
- Place of study-tertiary health care opd
- Age group- 20-40 years.

MATERIALS

- Pen

- Paper
- Weighing Machine
- Height scale
- Mats for pilates
- Mats for surya namaskar

INCLUSION CRITERIA
- Age Group- 20-40
- Gender- females
- BMI- 25 and above

EXCLUSION CRITERIA
- Fractures
- Prolapsed intervertebral disc.
- Any heart or pulmonary condition.
- Any neurological condition.

OUT COME MEASURES
- The outcome measure was Body Mass Index.
- Body Mass Index is calculates by measuring the weight and height.
- The weight is measured in kilograms and the height is measured in metres.
- The formula to calculating BMI is:
- weight(kg)/height(m^2)

PROCEDURE

After approval from the ethical committee, the subjects who fulfilled the inclusion criteria were included in the study. Inform consent was taken. 34 female subjects between the of 20-40 were included who were divided by purposive random sampling into two equal groups of 17 each.

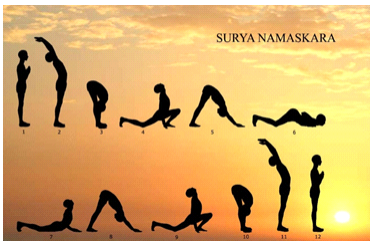
Group A Surya namaskar: Duration of treatment was 4 weeks and in all 5 sessions per week. Subjects performed total 24 cycles of surya namaskar. They performed 6 cycles on the first day. The no of cycles were increased each day +2. By the third week subjects performed 24 cycles each day.

Group B Pilates: Duration of treatment was 4 weeks and in all 5 sessions per week. Subjects performed total 8 repititions of each exercise. They were made to perform 4 repetitions on day 1 and number of repetitions were increased gradually. By the second week subjects performed 8 repetitions each session.

The BMI of the subjects were assessed on the first day (pre treatment) and on the last day (post treatment).

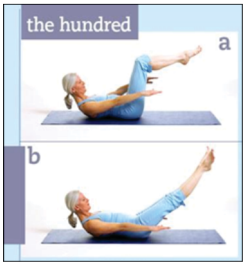
Following are the 12 steps of surya namaskar
1. While inhaling, slowly lift the hands and bend backward.
2. While breathing out bend forward, keeping the knees straight, rest the hands on the ground on both sides of the feet. Try to bring the forehead in contact with the knees.
3. Rest the palms on the ground. While breathing in take the right leg back and inhale
4. Take the left leg behind, holding the breath. Join both legs at ankles and toes. Bring the buttocks, waist and head in one line like a wooden plank. Look to the front.
5. While exhaling touch the ground with the knees, bend forward and touch the forehead to the ground. Palms are fixed at one place since the position of three.
6. Exhale and lower your body gently to touch your skin to the ground raise your butt a little.
7. Now inhale and assume the pose of Sarpasana by lifting the chest above and straitening the hands.
8. Take a posture like inverted V by pulling the back up. Hold the breath.
9. Exhale, put down both the knees and come to the position five.
10. While inhaling bring the right leg in between the two palms and come to the position of three.
11. While exhaling move the left leg and join it with the right foot. Come to the position two.
12. Now inhale and stand up with palms in namaskar position like initial posture. This completes one round of Surya Namaskar.[3]

Figure 1

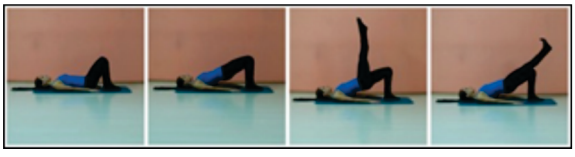


The Pilates training program.
- Breathing
- Spinal rotation
- The hundred
- The shoulder bridge
- One leg stretch
- Double leg stretch
- Bridging
- The saw
- Spine Twist
- Shavasana[12]

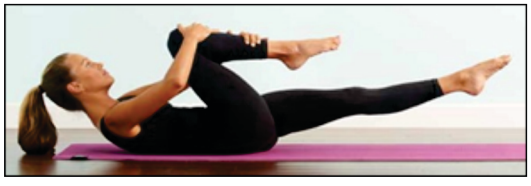
(Figure2)



SHOULDER BRIDGE(Figure 3)



SINGLE LEG STRETCH(Figure 4)



DOUBLE LEG STRETCH(Figure 5)



STATISTICALANALYSIS
- Statistical analysis of values, obtained after pre and post parameter measurements will be performed using InStat (Version 3.05, created 27 September 2000.)

1. Comparison of **BMI** within the group were assessed using *paired t-test* and
2. Comparison of **BMI** between of two groups were done using *unpaired t- test.*

RESULTS

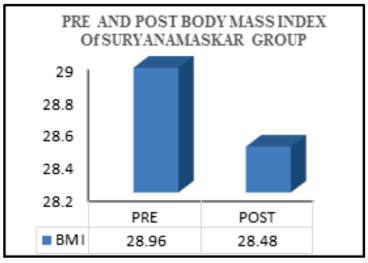
The results obtained are as follows :

Table 2:

	MEAN		P VALUE	SIGNIFICANCE
SURYA NAMASKAR	PRE	POST		
	28.96+/-2.89	28.48+/-2.98	<0.0001	Extremely Significant

SURYANAMASKAR GROUP

Graph 1



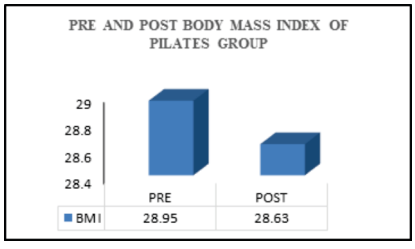
The data of BMI within the group for group A was analysed using paired t test with p value <0.0001 which is considered extremely significant.

PILATES GROUP

Table 3:

	MEAN		P VALUE	SIGNIFICANCE
PILATES	PRE	POST		
	28.95+/-2.43	28.63+/-2.44	<0.0001	Extremely Significant

Graph 2



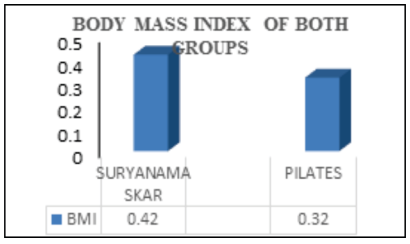
The data of BMI within the group for group B was analysed using paired t test with p value <0.0001 which is considered extremely significant.

SURYANAMASKAR GROUPAND PILATES GROUP

Table 4:

	MEAN	P VALUE	SIGNIFICANCE
SURYANAMASKAR	PILATES		
0.38+/-0.12	0.33+/-0.08	0.005	Extremely Significant

Graph 3



The data of BMI between the two groups A and B was analysed using unpaired t test with p value of 0.005 which is considered very significant.

DISCUSSION

The current study compares the effects of surya namaskar and pilates on body mass index in obese women to find out which of the two is more effective on weight loss.

Based on the results, surya namaskar shows significant changes in the BMI post treatment with p value of <0.0001.

According to the research done by Rajni N et al, surya namaskar is an isotonic type of exercise which does not increase the tension but increases the metabolic rate. Surya namaskar also increases the cardiovascular endurance. It makes the body system work at optimum level. It increases the blood circulation and thus mobilises the stored or accumulated fat in the body. [1]According to another study done by Milind Bhutkar et al, surya namaskar practice leads to a decrease in body weight, body fat percent and increase in lean body mass. It also leads to an increase in energy expenditure which statistically shows significant changes in the body composition. [2]The study done by Sunil Kumar et al on obesity management explains that the various postures of surya namaskar affect the body, internal organs, endocrine glands.
Based on the results, pilates shoes significant changes in the BMI post treatment.

According to Russell Jago et al, pilates is a series of low impact muscle contraction exercises which train the muscles in the core of the body. With their study t hey concluded that pilates lowered the BMI percentile and proves to be effective for weight loss.[13]

Another study done by Maryam Torbian says that the deep and diaphragmatic breathing increases the level of energy consumption because even the breathing muscles are involved and they consume more energy. Thus training of the core muscles, deep breathing along with controlled movement of the arms and legs together are effective for weight loss.[14]

According to the study done by O Cakmakci, Pilates are exercises which work on the core of the body and helps to strengthen the core muscles. It enhances the body function, muscle strength, posture correction. It emphasizes on proper breathing while performing the exercises. By training the core muscles along with controlled movements of arms and legs it promotes fat loss. The above studies prove that both surya namaskar as well as pilates are effective for weight loss.[12]

In our study, on comparing the effects, based on the clinical results the conclusion emphasizes that surya namaskar and pilates both are effective for weight loss. According to the tests done statistically the results between the two groups are considered to be very significant which concludes surya namaskar to be more effective than pilates for weight loss.

CONCLUSION

- On comparing between two groups clinically, there is not much of a significant difference between the results.
- Based on the results the conclusion emphasizes that surya namaskar and pilates both are effective for weight loss.
- However, statistically the results conclude that surya namaskar is more effective than pilates for managing obesity.

REFERENCES

1. Rajni Nautiyal et al, March'16, Effect of Surya namaskar on weight loss in obese persons, International Journal of Science and Consciousness (IJSC).
2. Milind V. Bhutkar et al August'11, How Effective Is Sun Salutation in Improving Muscle Strength, General Body Endurance and Body Composition, Asian Journal of Sports Medicine,.
3. Komal A Jakhotia et al January'15, Surya namaskar: An Equivalent approach towards management of physical fitness in obese females, International Journal of Yoga,.
4. Bhavesh Mody July'11, Acute effects of Surya namaskar on the cardiovascular and metabolic system, Journal of Bodywork and Movement Therapies,.
5. Holger Cramer et al, June'16, Yoga in women with abdominal obesity-a Randomized Controlled Trial, Deutsches Arzteblatt International.
6. Deb Prasad et a, September'16l, Effect of yogic practices on weight management of women, International Journal of Yogic, Human Movement and Sport sciences.
7. Adam M et al, July'13, Yoga in the Management of Overweight and Obesity, American Journal of Lifestyle Medicine.
8. Puja Bhardwaj et al, April'15, Therapeutic applications of Yoga for weight reduction in obese population, Journal of Multidisciplinary Research.
9. Dinkar Kekan, March'13, Effect of Kapalbhati Pranayama on waist and hip circumference, Journal of Evolution of Medical and Dental Sciences.
10. Sarvesh Kumar, June'17, Assessment of the Efficacy of Surya Namaskar in management of Sthaulya, World Journal of Pharmacy and Pharmaceutical Sciences.
11. Tosca D et al, October'12, Psychological well-being, health behaviors and weight loss among participants in a residential, Kripalu Yoga, International Journal of Yoga Therapy.
12. O Cakmakci,October'11, The Effect of 8 Week Pilates Exercise on Body Composition in Obese Women.
13. Russell Jago et al, December'15, Effect of 4 weeks of Pilates on body composition of young girls, Preventive Medicine.
14. Maryam Torabian et al, 2013 The effect of Pilates exercise on general health in women with type 2 diabetes, Life Science Journal.
15. M Fourie, 2013 Effect of Mat Pilates programme on Body Composition in Elderly

Women, West Indian Medical Journal.
16. Azam R et al, Comparing Effects of Aerobics, Pilates Exercise and Low calorie diet on Leptin Levels and Lipid Profiles in Sedentary Women, Iranian Journal of Basic Medical Sciences.
17. Silvana Junges, November'10, Effect of Pilates exercise in risk factors for cardiometabolic diseases: a systemic review,2015.
18. Hyo Teak Lee et al, Feb'15, Effect of Mat Pilates Exercise on Postural Alignment and Body Composition of Middle-Aged Women, The Journal of Physical Therapy Sciences.
19. Arslan et al, April'12, Evaluation of the effects of mat pilates exercise on fitness parameters and weight loss of middle aged perimenopausal sedentary women, Journal of Physical Education and Sports Sciences.
20. Sailee Wakade et al, March'18, Added Effect of Yoga based exercise program on Balance and fear of fall in chronic post stroke patients, International Journal of Allied Medical Sciences and Clinical Research.