

A COMPARATIVE STUDY BETWEEN PILATES AND SURYANAMASKAR ON FLEXIBILITY IN WOMEN

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Abstract

Individuals who undertake no leisure time activity and individuals who undertake 30 min of physical activity each day are all defined as sedentary. Yoga is an ancient Indian form of physical activity which may assist in achieving recommended levels of fitness. Pilates inspired to reach the desired level of muscular strength and flexibility on simple equipment such as mats. The aim is to study the effects between Pilates and Suryanamaskar on flexibility in women having sedentary lifestyle using Sit and Reach test and Shoulder and Wrist test. 30 female students of Physical Education College, aged 18 - 22 years were selected as per inclusion criteria. Outcome measures used where Sit and reach test and Shoulder and wrist test. The subjects were made to do 12 Suryanamaskar and Modern Mat Pilates for 6 weeks (3 days/ week). The findings of the study depicted evidence of significant difference in flexibility in pre and post values in Pilates and Suryanamaskar, but when comparison was made between two groups Suryanamaskar training is effective to observe improving flexibility in Physical Education college female students.

Keywords: Suryanamaskar, Pilates, flexibility, sit and reach test, shoulder and wrist test, female students.

Introduction

A sedentary lifestyle without physical activity. Individuals who undertake no leisure time activity and individuals who undertake 30 min of physical activity each day are all defined as sedentary. Researchers also define it as time spent engaged in sitting or lying down activities that require an energy expenditure of 1.0 -1.5 basal metabolic rates. Activities included in it are sitting, reading, socializing, watching television for much of the day with little or no vigorous physical exercise. It can contribute to many preventable causes of diseases. The amount of time spent in sedentary behaviour has been independently associated with lower levels of physical activity energy expenditure, increased risk of weight gain, diabetes and increased risk of metabolic syndrome, and heart disease Sedentary activities are described in different domains such as work, leisure, entertainment, commuting. In addition these activities have been categorized as non discretionary or discretionary. Behaviours such as sitting at work, or while commuting via car or bus are non

discretionary; whereas watching television, reading, using a computer and playing video games are discretionary.

The need to improve flexibility and fitness of sedentary women has prompted development of new and creative approaches that provide for an option for women to participate in regular healthful physical activity. Among adults of all, 28.6% do not exercise enough to meet current public health guidelines of at least 30 minutes of moderate intensity exercise on most of days of week. This lifestyle is undesirable in terms of future health, but formerly sedentary individuals can gain fitness quite rapidly even with moderate levels of physical activity. The current targets should be focused on improving overall physical health rather than only reducing body weight. There are many forms of exercise which help and improve physical fitness and flexibility. Activities like Aerobics, Pilates, Zumba fitness, Functional training, Suryanamaskar, Dancing, Walking. Out of these. Suryanamaskar and Pilates have proven to be more effective in improving physical health of people.

Yoga is an ancient Indian form of physical activity which may assist in achieving recommended levels of fitness. Suryanamaskar (SN) is a part of yoga. It is a set of sequential yogic postures which are called as asana. Suryanamaskar may be recommended to improve muscular endurance and flexibility among college level girls. Studies say it is effective in increasing flexibility and improving upper body muscle endurance.

Despite the increased popularity of Pilates mat exercises within the last two decades, little research has been conducted on the method and its benefits in a sedentary population. The importance of training the core abdominal and lower back muscles to stabilize the torso and allow the whole body to move freely was recognized. This method inspired other exercises to reach the desired level of muscular strength and flexibility on simple equipment such as mats. Further research is necessary to ascertain the method's potential to improve the outcome of Modern Pilates mat exercises in a sedentary population.

Aims and Objectives

Aim

To compare and study the effects between Pilates and Suryanamaskar on flexibility in women having sedentary lifestyle using Sit and Reach test and Shoulder and Wrist test.

Objective

1. To determine flexibility using Suryanamaskar in women having physical education students using Sit and Reach test and Shoulder and Wrist test.
2. To determine flexibility using Pilates in women having physical education students using Sit and Reach test and Shoulder and Wrist test.
3. To compare Suryanamaskar and Pilates in women having physical education students using Sit and Reach test and Shoulder and Wrist test.

Need of Study

1. To determine the effects as to how effect of Pilates Suryanamaskar can improve flexibility physical education women students.

2. Physical inactivity is a modifiable risk factor for cardiovascular disease, osteoporosis and a widening variety of other chronic diseases.
3. Reduced flexibility maybe because of various reasons like deskbound lifestyle, physical inactivity or deposition of fat in around the joints restricting complete ROM. Alterations in flexibility can lead to various biomechanical changes in joints and altered postures.
4. Hence flexibility is needed to perform daily activities with ease. Keeping the body flexible may help decrease tightness and tensions that can lead to chronic and often debilitating physical problems. Suryanamaskar is a series of 12 physical postures made up of a variety of forward and backward bends. The simulated push-up movement and upper body weight bearing positions in the series may help to develop muscular strength and endurance in the pectoral, triceps, as well as the muscles of the trunk. The series gives such a profound stretch to the body that it is considered to be a complete yoga practice by itself.

Materials and Methodology

The study was designed to evaluate the effectiveness of Pilates and Suryanamaskar on flexibility in college women

1. Type of study: Experimental
2. Sample size: 30; Pilates (n=15), Suryanamaskar (n=15)
3. Type of sampling: Simple random sampling
4. Study place: Selvam College of physical education, Namakkal.

Inclusion Criteria

1. Female population in age group of 18 - 22 years
2. Women not undergoing intense physical activity for more than 30 minutes in a day.
3. Having 15 inches value in Sit and Reach test and inches value in Shoulder and Wrist flexibility test.
4. Not on any weight reduction programme.

Exclusion Criteria

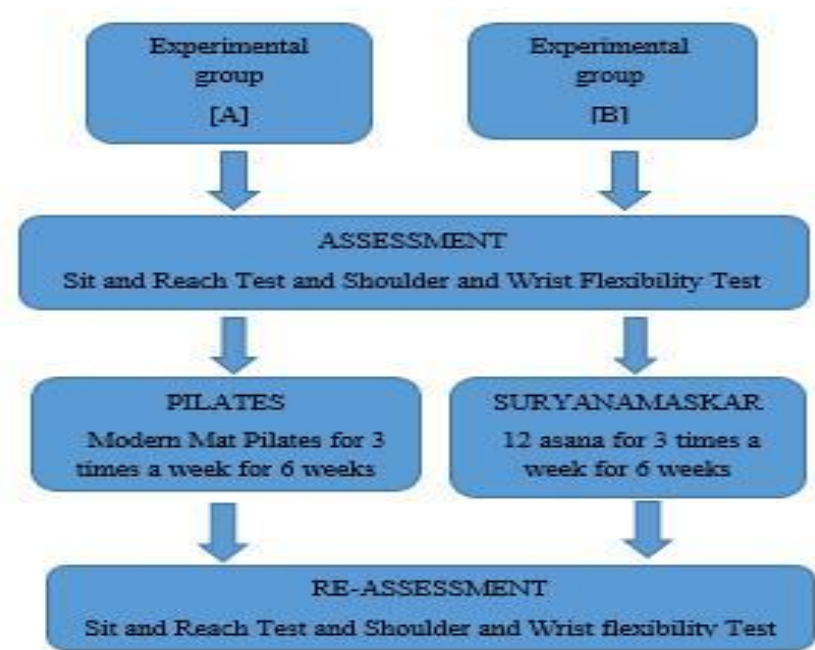
1. Hyper flexible women
2. Having Complains of cardiovascular and neurological problems, pulmonary disorders and cardiac problems.
3. Doing exercises regularly.
4. Not willing to participate.

Methodology

1. In this study total 30 females students participated.
2. Demographic details of the participants were collected.
3. The subjects were assessed using two tests of flexibility taken prior to start of the study and it was assessed at 0 week and 6 weeks.
4. All participants studying in selvam college of physical education, Namakkal Tamlinadu, in the age group of 18- 22 as per criteria will be taken.
5. They were divided into 2 groups each of 15 female students .
6. 1st group was given Pilates exercises and 2nd group was given Suryanamaskar protocol.
7. The duration of the treatment was 6 weeks.

8. The protocol was for 3 times in a week for 6 consecutive weeks.
9. Progression after 3 weeks to increasing the number of sets or performing the same set repeatedly.

At the end their tightness levels will be checked using two flexibility tests Sit n Reach test which is used to measure hip and trunk flexibility and Shoulder and Wrist Elevation test which is used to measure shoulder and wrist flexibility.



Results and Discussion

Mean and standard deviation were calculated. Paired t-test was used in pre and post intervention within the groups and comparison between 2 groups was done using unpaired t-test.

The current study was undertaken to assess and compare the effect of Pilates and Suryanamaskar on flexibility in women having sedentary lifestyle. Flexibility can be improved with stretching exercises. It is an important part of reducing injury risk and soreness that result from activity. Pilates helps in increasing flexibility because Pilates elongates and strengthens muscles, elasticity, and joint mobility. Pilates creates a long, strong muscle by taking advantage of a type of muscle contraction called an eccentric contraction, A body with balanced strength and flexibility is less likely to be injured. Study by Noelia Gonzalez *et al.*, proved there was significant increase in hamstring flexibility using Pilates. Suryanamaskar is a series of 12 physical postures. The alternating backward and forward bending postures flex and stretch the spinal column through their maximum range giving a profound stretch to the whole body. It helps to promote sleep and calmness, improves muscle flexibility, strengthens abdominal muscle and improves human organ capacities. These components in turn enhance an individual's physical fitness. Study by Nigar Shigalkar *et al.*, found improved flexibility in college females using Suryanamaskar. In this study, 30 females were selected and divided into 2 groups. The outcome measures were two tests. Viz Sit and reach test and Shoulder and wrist test. Each subject received 3 treatment sessions for 6 weeks. In 1st group subjects received Pilates protocol and in 2nd group subjects received Suryanamaskar protocol.

When the comparison of pre and post treatment of Pilates group was done using Sit and Reach test we found significant increase in flexibility and the one tailed p-value is <0.0001 , which is extremely significant. The flexibility has reduced significantly post treatment when compared to pre-treatment. Similar study was done by Betul Sekendiz *et al.*, in which he found Pilates to be an efficient training method with significant changes in posterior trunk flexibility in sedentary adult females. On the other side when the comparison of pre and post treatment of Suryanamaskar group was done using Sit and Reach test we too found significant increase in flexibility and the one tailed p-value is <0.0001 , which is extremely significant. Equivalent study mentioned by Madan Singh Rathore *et al.*, demonstrates improved flexibility and endurance in college level girls using Suryanamaskar. Pilates group showcase to have significant improvements in skeletal muscle mass, flexibility, balance, core- and abdominal muscle strength and body awareness; however when evaluated using Shoulder and Wrist test pre and post treatment was found to be considered not significant with one tailed p-value 0.1249. However according to Tolani N; Pilates helps in increasing flexibility. The possible reason for flexibility to not increase could be that Pilates will build your strength and improve your posture, but could give u tight hip flexors. Also Suryanamaskar will also work on core and posture but can give greater emphasis on flexibility.

Suryanamaskar comprehensively includes asana, pranayama, mantra and meditative awareness. Different evidence-based study suggested that Suryanamaskar improves metabolic function, strengthen and flexible musculoskeletal system, balances endocrinal system, tunes central nervous system, supports urogenital system and boosts gastrointestinal system. Suryanamaskar practice revitalizes body and keeps mind calm, attentive and stress-free. Most of the physiological and psychological effect of Suryanamaskar still unexplored on the scientific ground but thousand years old tradition of these yogic practices explains its immense therapeutic potential. Thus, it should be a need to incorporate Suryanamaskar practices in modern lifestyle for healthy mind and body. Study by Amit Vaibhav *et al.*, and Manju Deorari *et al.*, recommend Suryanamaskar to keep mind and body healthy [24] and also

So the results obtained from the study and statistical analysis supported by H2 hypothesis proves that Suryanamaskar has a positive effect on increasing flexibility in college women.

Paired t-test was applied in pre –post of Pilates in Sit and Reach test that showed the one tailed P values is <0.0001 . Hence considered extremely significant. $t=7.618$ with 14 degrees of freedom Paired t-test was applied in pre-post of Suryanamaskar in Sit and Reach test that showed the one tailed P value is <0.0001 . Hence considered extremely significant. $t=9.275$ with 14 degrees of freedom

Table 1

Vabiabes	Sit And Reach Test			
	PRE		POST	
	Mean	S.D	Mean	S.D
Pilates	9.36	3.050	10.8	3.034
Suryanamaskar	8.46	2.264	14.4	3.203

Paired t-test was applied in pre –post of Pilates in Shoulder and Wrist test that showed the one tailed P values is 0.1249. Hence considered not significant. $t=1.200$ with 14 degrees of freedom Paired t-test was applied in pre-post of Suryanamaskar in Shoulder and Wrist test that showed the one tailed P value is <0.0001 . Hence considered extremely significant. $t=7.924$ with 14 degrees of freedom

Table 2

Vabiables	Shoulder and wrist test			
	PRE		POST	
	Mean	S.D	Mean	S.D
Pilates	12.3	3.052	11.7	2.491
Suryanamaskar	15.3	2.491	8.8	2.004

Unpaired t-test was applied in Sit and Reach of Pilates and Suryanamaskar showed the P value is 0.0019 considered very significant. The tests suggest that difference between two S.D's is very significant= $t=3.160$ with 28 degrees of freedom

Comparing both groups

Unpaired t-test was applied in Sit and Reach of Pilates and Suryanamaskar showed the P value is 0.0019 considered very significant. The tests suggest that difference between two S.D's is very significant. $t=3.160$ with 28 degrees of freedom.

Table 3

Sit and Reach test		
	Mean	
	Pilates	Suryanamaskar
Post difference	10.8	14.4
Significance	Very Significant	

Unpaired t-test was applied in Shoulder and Wrist of Pilates and Suryanamaskar showed the P value is 0.0007 considered extremely significant. The tests suggests that difference between two S.D's is extremely significant. $t=3.545$ with 28 degrees of freedom

Table 4

Shoulder and Wrist Test		
	Mean	
	Pilates	Suryanamaskar
Post difference	11.7	8.8
Significance	extremely significant	

Conclusion

Women who were given Suryanamaskar had excessive increase in flexibility as compared to Pilates the flexibility also improved in Pilates group but women in Suryanamaskar group had better response. So Suryanamaskar is beneficial in increasing flexibility in college women Therefore Suryanamaskar may be incorporated into daily fitness routine Regular practice of Suryanamaskar as an exercise, will give benefits of fitness and wellness in one's life.

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