

Effect of Selected Yogic Practices and Dynamic Stretching on Flexibility of the School Children

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Abstract: The purpose of the study was to find out the effects of yogic practice and dynamic stretching exercises on muscular flexibility of the school children. To run the human machine smoothly it depends upon one of the most fitness component that is Flexibility. Flexibility is the range of motion through which the limbs are able to move. Dynamic stretching, as the name implies involves movement and muscular effort for the stretch to occur. For the purpose of this study 60 Children age ranged between 10 to 14 years were selected randomly from SAPTAGRAM ADARSHA HIGH SCHOOL, NORTH 24 PARGANAS To compare the Back and Hamstring muscle flexibility between the Dynamic Stretching and Yogic Practices groups Sit and Reach Test was induced to the subjects. After initially tested on flexibility all the subjects were divided in to two equal groups. One group was given 6 weeks of dynamic stretching training and the other group was received 6 weeks of yoga exercises. After 6 weeks both the groups were again tested on same the variable. Analysis of covariance (ANCOVA) was used to calculate the collected data at 0.05 level of Significance. Significant difference was found in Sit and Reach Test in case of flexibility of both the groups after 6 weeks of treatment. Yogasana was slightly better than the dynamic stretching exercise for the school going children.

Keywords: muscular flexibility, Dynamic Stretching, Yogic Practices groups.

I. Introduction

Now a day's use of machine is very frequent and it also is a sign of development. But no machine is more sophisticated and better than the human machine (body and mind). So why not to use this god gifted finest machine for the progress of densely populated country. To run the human machine smoothly it depends upon fitness. Flexibility is one of them. The capacity to perform movement over a broad range is known as flexibility. It is a pre-requisite to performing any activity with high amplitude. There are many health benefits that string from working on your flexibility. You will be able to do daily works or daily activities much easier. It also defines as a looseness or suppleness of the joint.

Flexibility is the range of motion through which the limbs are able to move. Skin, connective tissue and conditions within joints restrict the range of motion. Injury can occur when limbs is forced beyond its normal range. Improved flexibility reduces this potential. Flexibility exercises are important when you are training for strength or endurance helps to maintain the range of motion in bone and muscles. Flexibility of a person is less when he gets up in the morning, when he under some depression or when his muscles cool down, fatigue also lowers the flexibility. After warming up flexibility increases but it totally depend upon age and sex.

Dynamic stretching, as the name implies involves movement and muscular effort for the stretch to occur. All movements during a dynamic stretch are done deliberately and slowly so as to avoid activating the stretch reflex at the end of the movement and movements used are those that mimic those movements used in specific sports but in a controlled yet exaggerated manner. This type of stretch starts from the joints neutral position. A slow movement occurs in the limbs to its end range, and then slowly returning to the neutral position with an eccentric contraction. This contraction by the antagonist muscles allows the lengthening muscles to relax by reciprocal inhibition. It increases power, endurance, co-ordination, balance, and speed for contraction. Dynamic hamstring stretching involves a gentle swinging motion of the leg. The theory is that the muscles spindles which sense speed of movement in muscles will gradually allow the muscles to lengthen.

Dynamic stretching and yogic practice both effected on hamstring and back muscles flexibility. Yoga may be an important tool for every individual to maintaining health and improving quality of life. Yoga asana are simple actions for keeping the internal and external parts of the body in good health. This is especially useful in athletic when muscles are develop in the particular area, due to its use in a chosen sports. Yoga offers a support system that contracts the over use of specific muscle groups. Regular practice of yoga increases the athletes' energy level and one pointed contraction and motor fitness.

II. Statement Of The Problem

The study was to compare the effects of yogic practice and dynamic stretching exercises on muscular flexibility of the school children.

III. Methodology

For the purpose of the study 60 Children were selected randomly from SAPTAGRAM ADARSHA HIGH SCHOOL, NORTH 24 PARGANAS and age ranged between 10-14 years.

To compare the Back and Hamstring muscle flexibility between the Dynamic Stretching groups and Yogic Practices groups Sit and Reach Test was induced to the subjects. After initially tested on flexibility they were randomly divided equally (30) Dynamic Stretching groups and (30) Yogic Practices groups. all the subjects were divided in to two equal groups. One group was given 6 weeks of dynamic stretching training and the other group was given 6 weeks of yoga exercises. After 6 weeks, then both the group were again tested on same variable.

Study Protocol

The Dynamic Stretching training schedule was as follows.

Particular	Training Schedule	Dynamic Stretching		
		Tuesday	Thursday	Saturday
Total Duration	6weekes	Pike stretch, Toy soldier, Scorpion,	Pike stretch, Toy soldier, Scorpion,	Pike stretch, Toy soldier, Scorpion,
Frequency	3 days per week	Butt kickers, Lunging walk,	Butt kickers, Lunging walk,	Butt kickers, Lunging walk,
Repeation	3 times	Hand walk, Leg swing,	Hand walk, Leg swing,	Hand walk, Leg swing,
Duration	1hours	Straight leg dead lift, Inchworms with press-- -up, Walking lunge with	Straight leg dead lift, Inchworms with press-- -up, Walking lunge with	Straight leg dead lift, Inchworms with press-- -up, Walking lunge with
Time	4-5 pm	twist, Lateral Lunge, Bounding	twist, Lateral Lunge, Bounding	twist, Lateral Lunge, Bounding

- 80 meters jogging 4 times before performing Dynamic Stretching exercise.
- 30 second duration for each exercise.
- After each exercise 1.30 minutes active rest was given.

The Yogic training schedule was as follows.

Particular	Training Schedule	yoga exercises		
		Monday	Wed	Fri
Total Duration	6 weekes	Padmasana, Vrikshasana, Bhujangasana, Dhanurasana,	Padmasana, Vrikshasana, Bhujangasana, Dhanurasana,	Padmasana, Vrikshasana, Bhujangasana, Dhanurasana,
Frequency	3 days per week	Makarasana, Poschimattanasana, Matsyasana, Chakrasana,	Makarasana, Poschimattanasana, Matsyasana, Chakrasana,	Makarasana, Poschimattanasana, Matsyasana, Chakrasana,
Repeation	3 times	Sarvangasana, Halasana, Salvasana,	Sarvangasana, Halasana, Salvasana,	Sarvangasana, Halasana, Salvasana,
Duration	1hours	Matasana, Padohastanasana, Shavasana	Matasana, Padohastanasana, Shavasana	Matasana, Padohastanasana, Shavasana
Time	4-5pm			

- Surya Namaskar was performed 3 minutes before training
- 20 second hold in final positin of all asanas
- After every asana 1.30 minutes Savasana or Makarasana was given.

In order to find out the significant difference of on Back and Hamstring muscle flexibility Analysis of covariance (ANCOVA) was used at 0.05 level of Significance.

IV. Findings

To find out whether there was any significant difference between mean values of Flexibility on pre and post test between dynamic stretching group and yogasana group, analysis of Co-variance technique was employed. „F“ –ratio of Flexibility for different groups has been presented in Table“1” and Table „2

Table-1. Mean on Flexibility on pre and post test between dynamic stretching and yogasana group

GROUPS	MEAN
PRE-TEST DYNAMIC STRETCHING	22.97
PRE-TEST YOGASANA	22.9
POST-TEST DYNAMIC STRETCHING	29.87
POST-TEST YOGASANA	30.03

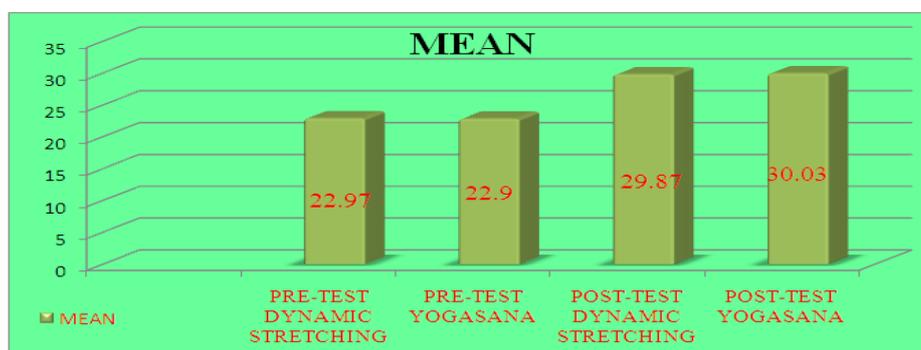


Figure-1. Graphical representation of Mean on Flexibility on pre and post test between dynamic stretching group and yogasana group

Table-3 ANOVA Table for Dynamic Stretching Group And Yogasana Group.

Source of variance	df	SSx	SSy	MSSx	MSSy
Treatment group mean	r-1 =1	714.15	763.26	714.15	763.26
Error	N-r =58	1440.43	1557.67	24.84	26.86

$F_x = 28.75$, $F_y = 28.42$, Tab $F_{0.05}(1,58)=4.00$, x= Dynamic Stretching Group, y= Yogasana Group
Both the value of calculated F are significant that indicates initial performance of school children were not homogenous.

Table-4 ANCOVA Table for Dynamic Stretching Group And Yogasana Group

Source of variance	df	SSx	SSy	SSxy	MSSx	MSSy
Treatment group mean	r-1 =1	714.15	763.26	738.3	404.05	404.05
Error	N-r-1 =57	1440.43	1557.67	164.03	1538.99	27

$F_{xy} = 14.96$, Tab $F_{0.05}(1,58)=4.00$, x= Dynamic Stretching Group, y= Yogasana Group
Since F_{xy} is greater than $F_{0.05}$ it is concluded that all the treatment are not equal effective in improving the performance of school children.

Table-5 Analysis Of Co-Variance Of The Means Of Sit And Reach Test Between Dynamic Stretching Group And Yogasana Group

Mean	Dynamic stretching	Yogasana	Source of variance	SS	Df	MSS	F-ratio
Pre-Test	22.97	22.9	Among	714.15	1	714.15	28.75*
			Within	1440.43	58	24.84	
Post-Test	29.87	30.03	Among	763.26	1	763.26	28.42*
			Within	1557.67	58	26.86	
Adjusted Post-Test	23.28	29.65	Among	738.3	1	738.3	14.96*
			Within	164.03	57	2.87	

*significant at 0.05 level of Significance, $F_{0.05}(1, 58) = 4.00$, A=among means variance.
 $F_{0.05}(1, 57) = 4.00$, W=within group variance

The table -2 revealed that there was significance difference on Sit and Reach test ($F=28.75 > 4.0$ at 58 degree of freedom at 0.05 level of significance) between dynamic stretching group and yogasana group of school children in pre-test phase. However the F ratio values of the post and the adjusted post test also revealed significant difference in sit and reach test between dynamic stretching group and yogasana group. The F value in post test and adjusted post test was 28.42 and 14.96 were found which was higher than the table value of F at 0.05 level of confidence ($28.42 > 4.0$ in post-test, $14.96 > 4.0$ in adjusted post-test). So the table shows that all the

treatment was not equally effective in Back and Hamstring muscle flexibility improving of school children. Yogasana group was more effective than the Dynamic Stretching group.

Table-6 Analysis of critical difference of groups- between dynamic stretching group and yogasana group, in Flexibility

GROUP COMPARED	Flexibility		
	MEAN	MEAN DIFFERENCE	CRITICAL DIFFERENCE
Pre-test of Dynamic stretching and Yogasana	22.97	0.07	2.68
	22.90		
Post test of Dynamic stretching and Yogasana	29.87	0.16	2.68
	30.03		
Pre-test of Dynamic stretching and Post test of Dynamic	22.97	6.90*	2.68
	29.87		
Pre-test of Yogasana and Post test of Yogasana	22.90	7.13*	2.68
	30.03		

V. Discussion Of Finding

Gathering the pre and post test data of both dynamic stretching group i.e. GROUP-A and yoga asana group i.e. GROUP-B and after its calculation employing the statistics of Analysis of Co-variance (ANCOVA) revealed that the application of dynamic stretching exercise training and yoga asana exercise training programme resulted in significant improvement in flexibility. Both the treatment showed significant improvement in Group-A and Group-B from pre-test to post-test. But if we consider the mean difference between pre and post test it shows that the yogasana was more effective than the dynamic stretching.

Yoga is a postural pattern, these postural pattern are to be achieved slowly, maintained for some time steadily and released again in a slow and smooth manner. It relax the whole body and more utilization of oxygen during the practice will certainly effect to improve the rigidity of the whole body and makes more flexible(P.Manjappa, 2013) but Dynamic stretching are active movements of muscle that bring forth a stretch but are not held in the end position. Dynamic stretching continues your mental preparation for the competition ahead. Dynamic stretching is a key component in a pre-activity warm up.

Dynamic stretching means that a person bounces or jerks into a certain position. The complete stretch is seldom held for more than a few seconds. The initial is to achieve a pre determine degree of Flexibility. This method of stretching is an attempt by the mind to before the body into an idealised form. In yoga stretching a person used a slow and steady motion to entire a pose holding at the limit of his /her stretch for 10seconds or longer. The slowness of yoga gives the performer greater control over the positioning safety. Yoga is an effective way to both stretch and strength the body. After yogic exercise you feel refresh because activity has stimulate the action of muscles in pumping through the body, more efficient pumping by the muscles depending on their level of elasticity . Such elasticity will increase through the practice of yoga. Pure strength is an important component of fitness, it provides stability and power, but the flexibility is crucial for adaptability. Genuine fitness means achieving a balance between strength and flexibility (Jean couch,1989) which Can provide more by the yoga than the dynamic stretching and it reflects in the result.

VI. Conclusion

From the obtain result it was concluded that the yogasana and dynamic stretching found effective for development of flexibility component on school children because Significant difference was found in Sit and Reach Test in case of flexibility of both the groups after 6 weeks of treatment and also it can be concluded that yogasana was slightly better than the dynamic stretching exercise for the school going children.

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