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Effect of modified series of Pawanmuktasan on back and leg flexibility of sedentary men

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Abstract
The Pawanmuktasana Series is found out to be one of the most important practices that has a proved to be very effective on bringing tranquility in the human body, mind. It is one of the most important techniques used in treating patients especially Arthritis. The aim of the study is to investigate the effect of Modified Series of Pawanmuktasana in improving back and leg flexibility of sedentary men. For the purpose of the study, 20 sedentary men ranging between 45 to 55 years of age, resident of Gwalior, M.P (India) were selected randomly. Then these 20 participants were divided equally into two groups i.e., experimental group and control group. Experimental group had undergone the training programme for six weeks (six days/week) regularly whereas the control group did not face administration of any kind of training programmes. Pre-test were conducted for both the groups prior to the administration of training protocol and post-test was conducted after six weeks for both the groups. No significant difference was found in control group in terms of leg and back flexibility whereas a significant difference in the leg and back flexibility of sedentary men was found in experimental group.

Keywords: Modified Pawanmuktasana series, leg flexibility, and back flexibility

Introduction

The Pawanmuktasana Series is one of the most important practices that has proven to be very effective on bringing tranquility in the human body, mind. It is one of the most important techniques used in treating patients especially Arthritis, Bronchial Asthma, etc. Pawanmuktasana series of asana are such that it develops awareness of the body's movements and subtle effects the practice can be experienced. Pawanmuktasana Series helps to open up all the major joints of the body and induces relaxation to the muscles of the body (Brown M, Rose DJ, 2005) [1].

Nowadays, many diseases have been encountered and were found out to be the outcome of malfunctioning of body, bad postures, unbalanced lifestyle, psychological problems etc. Due to which the energy of the body becomes blocked, causing diseases or deformity in the body (Sherman KJ, Cherkin DC, 2005) [15]. For instance, arthritis occurs due to the stagnant air gets blocked which causes restriction in the movement.

The mind is freed of stress and tension when breathe synchronization is integrated along with the practice (Williams K, Abildso C, 2009) [18]. Therefore, it can be said that the nature of the series is more mental than physical alone. Lifestyles that involve very little or physical activity is said to be sedentary lifestyle. Sedentary men due to bad posture or physical inactivity becomes prone to injuries (Williams KA, Petronis J, *et al*., 2011).

Intake of unhealthy food or physical inactivity etc. becomes prone to many diseases over period of time, they lose the natural flexibility of the body, due to which they suffer from joints related problems, knee pain, ankle pain, back pain are the most common complaints found in sedentary men (Nagarathna R, Nagendra HR, 2001) [10]. Moreover, being flexible helps one to get fewer injuries, less likely to get muscle related aches, improved body posture and balance, greater strength, improved physical performance, and a positive state of mind. Therefore, it is essential to be active and indulge oneself in Yoga practices to get a healthy living. This study was aiming at effect of modified series of pawanmuktasana on back and leg flexibility of sedentary men. It was hypothesised that there would be a significant effect found of pawanmuktasana series on leg and back flexibility.

Methods and Material

Subjects

20 male candidates were selected randomly, age ranging between 45-55 years with mean and SD (50.65±2.83) respectively from Gwalior who regularly come for morning walk inside the campus of LNIPE, Gwalior. Subjects were randomly and equally divided into Control and Experimental Group i.e., 10 in each groups.

Training protocol

For the purpose of the study modified series of Pawanmuktasana was administered to the experimental group for 6 weeks and no training given to the control group. They acted as passive control group. The training protocol of 6 weeks is scheduled below:

1st and 2nd week

S. No.	Main Practices	Duration
1.	Janu Naman (Knee bending)	3 mins
2.	Shroni Chakra (Hip rotation)	3 mins
3.	Poorna Titali (Full butterfly)	3 mins
4.	Rajju Karshanasana (Pulling the rope)	3 mins
5.	Chakki Chalanasana (Churning the mill)	3 mins
	Total	15 mins
	3rd and 4th week:	**Duration**
1.	Gatyatmak Meru Vakrasana (Dynamic spinal twist)	4 mins
2.	Kashtha Takshanasana(Chopping wood)	4 mins
3.	Vayu Nishkasana (Wind releasing pose)	4 mins
4.	Kauva Chalanasana (Crow waliking)	4 mins
5.	Sanchalanasana (Rowing the boat)	4 mins
	Total	20 mins
	5th and 6th week	**Duration**
1.	Pada Chakrasana (Leg rotation)	5 mins
2.	Supta Pawanmuktasana (Leg lock pose)	5 mins
3.	Jhulanasana Lurkhakanasana (Rocking and rolling)	5 mins
4.	Supta Udarakarshanasana (Slpeeping abdominal stretch)	5 mins
5.	Shava Udarakarshanasana (Universal spinal twist)	5 mins
	Total	25 mins

Variables and design of the study

Two groups were designed (10 participants on each group). Training was given to the experimental group for 5 days by the research scholar in a week for weeks. The duration of the practice was increased by 5 minutes after every two weeks. Both the experimental and control groups were tested before and after the training on leg and back flexibility.

Test administration and Criterion measures

Subjects were called for measurement of flexibility of leg and back after taking ethical consideration from Head of the department of Biomechanics. The subject's consent was taken prior- to the test. First, the measurement of knee flexion or knee flexibility was taken using Digital Goniometer followed by Sit and Reach Test for back flexibility measurement. Measurements for both back and leg were taken for three times from each subject ensuring that correct data was collected and the best of three scores was recorded. The leg and back flexibility was recorded in degrees and centimeters respectively.

Statistical Analysis

To determine the significant difference in means of leg and back flexibility between the control and experimental group ANCOVA test was employed at 5% level of significance as control and experimental group underwent both pre-test and post-test.

Results

Table 1. The pre mean and standard deviation, post mean and standard deviation and adjusted post mean of both the group (experimental and control group) in respect to this. The results for leg flexibility pre mean and standard deviation for experimental group was 102.08±6.59 and post mean and standard deviation was 101.02±6.29 with adjusted post mean 100.20. For the control group pre mean and standard deviation was 89.65±6.69, post mean and standard deviation was 88.50 ±7.29.

The results for back flexibility pre mean and standard deviation for experimental group was 4.00 ± 4.08 and post mean and standard deviation was 3.85±4.24 with adjusted post mean 3.40. For the control group pre mean and standard deviation was 0.8 ± 4.52 and post mean and standard deviation was 1.00±4.35 with adjusted post mean 1.00.

Table 1: Descriptive statistics of Leg and Back Flexibility

Variables	Groups	Pre-Mean ±SD	Post Mean ±SD	Adjusted post Mean
Leg flexibility	Experimental group	102.08 ± 6.59	101.02 ± 6.29	100.20
	control group	89.65 ± 6.69	88.50 ± 7.29	88.56
Back flexibility	Experimental group	4.00 ± 4.08	3.85 ± 4.24	3.40
	control group	-0.8 ± 4.52	1.00±4.35	1.00

In Table 2. The *F*-value for comparing the adjusted means of the two groups (Experimental and control group) during post testing show that there was significant difference found in the effect of modified series of pawanmuktasana on leg (p<0.000) and back flexibility (p<0.000) among sedentary men. The results of the data revealed that practising modified pawanmuktasana did had a positive impact in improving the leg flexibility of the sedentary men.

Table 2: ANCOVA table for Leg and Back flexibility

Source	df	Mean Square	F	Sig.
Leg flexibility	19	727.899	5.578	.000*
Back flexibility Group	19	207.13	34.47	.000*

*Significant at 0.05

Discussion

The results shows that the experimental group is significantly higher than the control group. Therefore, the data revealed that practising modified series of pawanmuktasana did had a positive impact in improving the back and leg flexibility of the sedentary men. The control group on the other hand, did not show any improvement in the leg and back flexibility.

The following reasons based on different literature may be attributed to the results. Research shows that four weeks of Pawanmuktasana yogic training was effective in improving abdominal strength, back strength, and flexibility of physical education students. The study was carried out by keeping the Pawanmuktasana yogic training as independent variable, and abdomen strength, back strength, flexibility as dependent variable. The study concluded that significant effect of Pawanmuktasana were seen on Abdomen strength, back strength and flexibility (Kunvar. S *et al*., 2016).

Also, with the practice of Pawanmuktasana Anti- Rheumatic Series, early Arthritis Symptoms i.e., common joint inflammation was improved. The researcher wrote about different types of Arthritis and Discomfort related to it. She also mentioned how the management of these discomforts can be done. The researcher in her work found out that Pawanmuktasana if practised under supervision can significantly help in managing the pain, disability, and well-being (Komathi Selvarajah, 2017). The pawanmuktasana series enhance the blood circulation and prana flow energy in the joints. Thus, it increases the flexibility. This also helps to remove the composition of vata in the joints and make balance between three doshas (Nagarathna R, Nagendra HR, 2006) [9].

Conclusion

The Modified Pawanmuktasana Series have been proven effective in improving the back and leg flexibility of sedentary men. The practice also has increased the mobility of the body. The lifestyle has been changed and modified through the yogic practice for good and healthy attitude towards life.

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Conflicts of Interest: The researcher has not any conflict of interest with any Institute, Organization, and person.

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