

Influence of Twelve Week Pawanmuktasana Series Training on Back and Leg Flexibility of Sedentary Women

Nibu R Krishna*

Lakshmbai national Institute of Physical Education, Gwalior, Madhya Pradesh, India*

Article Info

Abstract

Key Words:

pawanmuktasana series, flexibility

*Correspondence Author.

Nibu R Krishna

Associate Professor

Lakshmbai National Institute of
physical Education, Gwalior, India

Email address:

nrkrishna@lnipe.edu.in

Article Received: 16.07.2021

Article Accepted: 26.08.2021

Article E-Published: 24.09.2021

The study was to investigate the influence of modified series of Pawanmuktasana in improving back and leg flexibility of sedentary women. For the study, 20 sedentary women ranging between 45 to 55 years of age, and residents of Gwalior, M.P (India) were selected randomly. These 20 participants were then divided equally into two groups i.e., experimental group and control group. Experimental group underwent the training programme for twelve weeks (five 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. Also, post-test was conducted for both the groups after twelve weeks. The study results indicated no significant difference in the control group in terms of leg and back flexibility. But significant difference in the leg and back flexibility of sedentary women in the experimental group was observed. The study results indicate that daily practice of modified series of Pawanmuktasana is beneficial for sedentary women.

Introduction

Yogasana and exercise are both part of that process of the development of good physical health. Yogasana benefits health by stretching and massaging the body and it improves the ability of the body to meet the physical demands of the sudden activity. Without proper exercise and stretching muscles may become weak; there can be muscle wastage; bones become weaker, and the capacity of the body for oxygen absorption can decrease. Among them yogasana also stimulate the pranic channels and internal organs, so asanas are complementary to exercise.

Certain asanas have specific effects on the glands and internal organs, and few asanas also help in altering electrochemical activity in the nervous system. Asanas are different from other exercises as yogic posture is synchronous posture requiring minimum energy consumption and maximum rehabilitative effect on physiological organs and system and cultivate awareness, relaxation, concentration and meditation. This leads to an enhancement of physiological efficiency without undue muscular development alone, while in simple physical exercise is beneficial stress on the body causes vigorous unstable muscular action so the disproportionate

loss of energy, in brief it causes maximum energy consumption, minimum rehabilitative effect on physiology and only skeletal muscle affected. In the yogasana process respiration and metabolic rate slow down, consumption of oxygen drops and body temperature decreases. That's why yogasana tend to arrest catabolism whereas exercise promotes it. So, this takes some time to achieve beneficial stage of yoga when it is practiced in right posture and right sequence of breathing.

Pavanamuktasana as the name suggests pavan-air, mukta-release, and asana-pose regulate and release unwanted vayu (air) from the whole body, especially gastrointestinal tract and joints. Practice of pawanmuktasana series of exercises, affects the different components of the body. However, the Pawanmuktasana exercise is not only meant for the physical body, but also imbibe positive impact on the psychic centres.

In ayurveda word 'Vata', helps us understand the meaning enables us to get a complete idea of how this series of asanas affects the body. 'Vata' is one of the three Humors or Tridosha in Ayurveda System of Medicine. "These humours originated from the different elements, and they constitute the basis of human existence and our Bio-Psycho-Social environment. 'Vata' can be translated as 'that which moves things'. It is composed of the ether and air elements, and it is related to the energy or life-force. Vata is the motivator of the three humor and is considered to be the principle of movement or air principle. Its main site is in the large intestine".

Pawanamuktasana is described among 84 asanas by all yoga literature (Hatha yoga pradipika, Patanjali yoga sutra, Gheranda samhita, Goraksha samhita etc) but not many scriptures described Pawanmuktasana in detail. In Asana Pranayama Mudra Bandha by Swami Satyanand Saraswati described 3 types of pawanmuktasana, 1st pawanmuktasana for joints, 2nd type for digestive system known as supta pawanamuktasana and jhulana pawanmuktasana, 3rd type for improving the energy flow within the body and breaking down neuro-muscular knots known as Shakti Bandhasana.

Yoga teaches the way of Right Living which is intended to be incorporated in everyday schedules. Yoga tends to work on every aspect of the human body as it works on the five sheaths i.e Annamaya Kosha, Manomaya Kosha, Pranamaya Kosha, Vijnanmaykosha and Anandamaya Kosha. Yoga works on Physical,

Mental, Vital, Emotional, Spiritual and Psychic aspects of human beings.

The practices in yoga include Asana, Pranayama, Mudra, Bandha which helps the body to coordinate with one another on Physical level. It works by balancing and harmonizing the body, mind and emotions. These practices balances and harmonizes the coordination of head, hand and heart which is mandatory to achieve if one has to attain union with the Higher Reality.

Physical body is where one can start to work on because when disharmony and imbalances is experienced at this level, the other systems of the body start malfunctioning as well. The vital organs, muscles, nerves etc. start working in opposition to one another which results in the manifestation of diseases. The aim of Yoga is to bring the functions of the whole body into perfect coordination.

Some modern yoga practitioners also termed pavanamuktasana as joint freeing asana. This asana is a dynamic series for the purpose of limbering the joint, evaluating normal range of motion learning musculoskeletal anatomy, with regular practice freeing subtle energy flow called nadis to permit the experience of meditation. In regular practice asana stimulates "manipura chakra". As the adhithana of this chakra nabhi and peripheral anatomical structure related to it, are main pressing points by this asana and this chakra is sthana of agni which regulate all the gastrointestinal functioning. Observation by many researchers proved this asana to be effective in constipation, flatulence and other gastrointestinal trouble.

Methods

20 female candidates were selected randomly, ages ranging between 45 to 55 with mean and SD 50.65 ± 2.83 respectively from Gwalior who regularly come for evening walks inside the campus of LNIPE, Gwalior. Subjects were randomly and equally divided into Control and Experimental Group i.e., 10 in each group. **Selection of Variables:** On the basis of review of literature and expert's opinion following variables were selected for the purpose of the study:

- Dependent Variable: Back Flexibility, Leg Flexibility
- Independent Variable: Modified Series of Pawanmuktasana

Criterion Measures: Digital Goniometer, a scientific instrument, was used to measure the

range of motion. Testing was done by placing the axis on the lateral epicondyle of the femur, and lining the stationary arm with greater trochanter of the femur.

Sit and Reach Box is another scientific equipment used in the study to measure the back flexibility. Testing was done by locking the knees flat on a uniformed floor, with palm facing downwards, and the hands-on top of each participant, the subject reaching forward along the measuring line as far as possible.

Administration of Test

Subjects were called for measurement of leg and back flexibility after taking ethical consideration from the Head of the department of

Biomechanics. The subject's consent was taken prior- to the test. First of all, the measurement of knee flexion was taken using Digital Goniometer followed by Sit and Reach Test for back flexibility measurement. Measurements for both back and leg were taken three times per subject ensuring that correct data was collected.

Statistical Technique: 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.

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

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 the experimental group was 102.08 ± 6.59 and post mean and standard deviation was 101.02 ± 6.29 and adjusted post mean was 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 and adjusted post mean was 88.56. The results for back flexibility pre mean and standard deviation for the experimental group was 4.00 ± 4.08 and post mean and standard deviation was 3.85 ± 4.24 and adjusted post mean was 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 and adjusted post mean was 1.00

Table 2
ANCOVA table for the post test data for leg flexibility

Source	Type I Sum of Squares	df	Mean Square	F	Sig.
Leg flexibility	727.899	1	727.899	5.578	.000
Group	135.07	1	135.07	34.47	0.00
Error	66.62	17	3.919		
Corrected Total	1567.05				

*Significant at 0.05 level

Table 2 of Ancova indicates that 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 flexibility among sedentary women. There was significant difference found in Experimental group

and Control group in the Pre- Test and Post -Test as the Calculated F value i.e., 34.47 for pre-test was found to be greater than the Tabulated F value i.e., 4.54 with (1,7) df at 0.05 level of significance. The results of the data revealed that practising modified pawanmuktasana did have a positive impact in improving the leg flexibility of the sedentary women

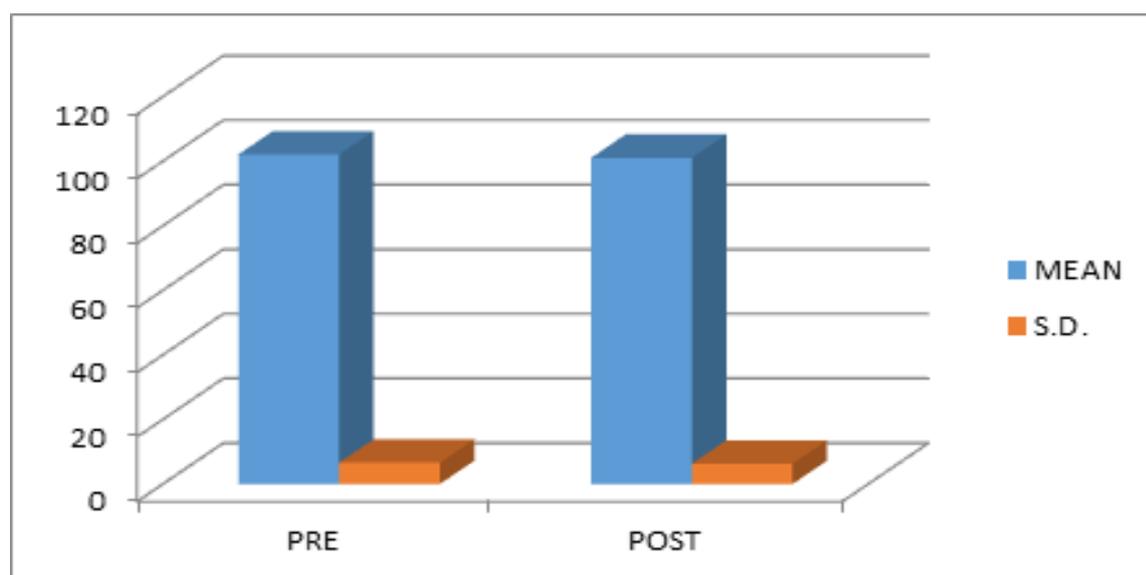
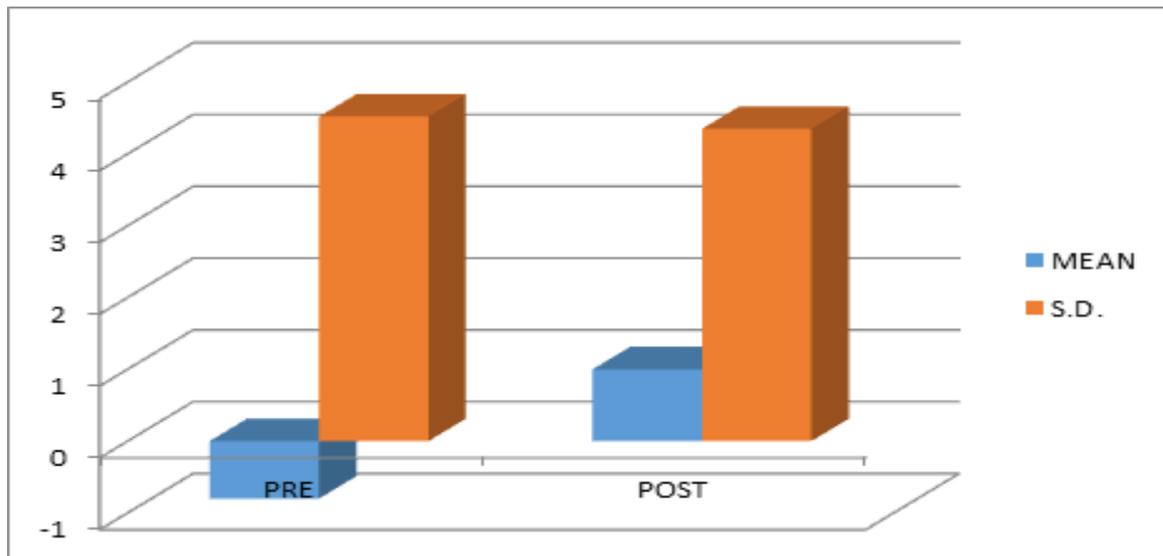


Table 3
ANCOVA table for the post test data for back flexibility

Source	Type I Sum of Squares	df	Mean Square	F	Sig.
Back flexibility	298.826	1	207.013	101.202	.000
Group	82.99	1	82.99	40.57	.000
Error	34.77	17	2.046		
Corrected Total	448.8	19			

Table 3: It shows the f-value for comparing the adjusted means of the two groups (Experimental and control group) during post testing. There was a significant difference found in the effect of modified series of pawanmuktasana on back flexibility among sedentary women. There was

significant difference found in the experimental group and control group in the pre-test and post-test as the cal. F value i.e., 40.57 for posttest was found to be greater than the tabulated F value 4.54 with (1,7) df at 0.05 level of significance.



Discussion of Findings

Influence of the kriya Pawanmuktasana on the musculoskeletal system is vital and effective. In the first part of the pavanamuktasana Kriya series or anti-rheumatic exercises, we can see that the muscles which are used are stimulated in a very systematic and relaxed way. There is minimum contraction (without tension) to tone up the lengthening reflex the muscle, and as and when a group of muscles is contracting, the antagonists or opposite/ supportive are stretching to stimulate the stretching reflexes. Optimum stretching which enhances the flexibility also affects then tone of the muscles, reducing them to the lowest possible state of contraction also releasing physical tension that is reflected in a very high muscular tone. In the Pawanmuktasana series the joints are mobilized safely to stimulate the circulation of synovial fluid, its secretion and absorption. This improves the process of lubrication and also enhances the suppleness in the cartilages and, at the same time, rejuvenates the tissues, revitalizes nutrition and elimination of waste products and protects them from degenerative changes due to normal, abnormal activity or no activity at all.

The results show that the experimental group is significantly higher than the control group. Therefore, the data revealed that practising modified series of Pawanmuktasana did have a positive impact in improving the back and leg flexibility of the sedentary women. The control group, on the other hand, did not show any improvement in leg and back flexibility. The following reasons on the basis of 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 effects of Pawanmuktasana were seen on Abdomen strength, back strength and flexibility. (Kunvar et.al., 2016).

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 Modified Pawanmuktasana Series have been proven effective in improving the back and leg flexibility of sedentary women. The practice also has increased the mobility of the body. The lifestyle has been changed and modified through the yogic practice for a good and healthy attitude towards life. These beneficial effects are particular with specific asanas utilized with concentrated glottal breathing. It was with this understanding that the early writers of yoga advocated the mastery of one asana. Further research is needed to understand the exact mechanism of these asanas.

Bibliography

- Brown. M., & Rose, D.J. (2005) Flexibility training. In: Jones CJ, Rose DJ, editors. *Physical Activity Instruction of Older Adults*. USA: Human Kinetics.
- Cox, H. Tilbrook., Aplin, J. Semlyen., A. Torgerson, & D. Trehwela (2010). A randomised controlled trial of yoga for the treatment of chronic low back pain: Results of a pilot study. *Complement Ther Clin Pract*, 16:187–93.
- Galantino, M.L., Bzdewka, T.M., Eissler, Russo, J.L., Holbrook, M.L., Mogck, E.P, Geigle, P., & Farrar, F.T. (2004). The impact of modified Hatha yoga on chronic low back pain: a pilot study. *Altern Ther Health Med*, 10(2):56-59
- Hui, S.S., Yuen, P.Y. (200). Validity of the modified back-saver sit-and-reach test: A comparison with other protocols. *Med Sci Sports Exercise*, 32:1655–9.
- Karppinen, J. Shen, F.H., Luk, K.D., Andersson, G.B., Cheung, K.M., & Samartzis, D. (2011). Management of degenerative disk disease and chronic low back pain. *Orthop Clin North Am*. 42:513–28, viii.
- Jacobs, B.P., Mehling, W. Goldberg, H.A., Eppel, E. Acree, M., & Lasater, J.H. (2004). Feasibility of conducting a clinical trial on Hatha yoga for chronic low back pain: methodological lessons. *Altern Ther Health Med*. 10:80–3
- J. W. S. Vlaeyen., A. M. J. Kole, Snijders., R. G. B. Boeren., & H. Van, Eek. (1995). Fear of movement/(re)injury in chronic low back pain and its relation to behavioral performance, *Pain*, vol. 62, no. 3, pp. 363–372, 1995.
- K. J. Sherman, D. C. Cherkin., &A. J. Cook. (2010). Comparison of yoga versus stretching for chronic low back pain: protocol for the Yoga Exercise Self-care (YES) trial, *Trials* 11(36). Tekur, P., Singphowm C., Nagendram H.R., & Raghuram, N.(2008). Effect of short-term intensive yoga program on pain, functional disability and spinal flexibility in chronic low back pain: A randomized control study. *J Altern Complement Med*, 14:637–44.
- Williams, K., Abildso, C., Steinberg, L., Doyle, E., Epstein, B., & Smith, D.(1976). Evaluation of the effectiveness and efficacy of Iyengar yoga therapy on chronic low back pain. 34:2066–76.
- Satyananadasaraswati S. (2004). Four Chapters on Freedom. 3rd ed. Munger, Bihar, (India): Yoga Publication Trust, 25–28