



THE EFFECT OF HATH YOGA ON BALANCE, FEAR OF FALL IN POST STROKE HEMIPARESIS SUBJECTS.

¹Dr. Kalpana Amaliyar, ²Dr. Nensi Gandhi, ³Dr. Sweta Rathod

^{1,3}MPT Scholar, ²Associate Professor,

¹Parul Institute of physiotherapy

¹Parul University, Gujarat, India

ABSTRACT

Introduction: Balance impairment is common after stroke; yoga may be able to improve balance and other important post stroke variables. Scientific-evidence is needed to support such treatment interventions. The purpose of this study was to assess the impact of a yoga-based therapy on balance, fear of fall after stroke.

Methodology: A pilot study of yoga therapy on 20 Subject, occurred twice per week for 4 weeks and included 6 Aasana with relaxation. Balance was assessed with the Berg Balance Scale, and fear of fall was assessed with a fall efficacy scale.

Results: : 20 patients were enrolled in the study, Table shows post BBS and FOF mean is increase so improve balance and reduce fear of fall. Mean BBS pre –test was 39.10 which have increased to 51.5 and the p- value is 0.000 which is statistically significant, thus the treatment is effective and pre FOF mean 4.5 which have increased to 7.8 and P - value is 0.000 which is statistically significant, thus the treatment is effective.

Conclusions: Yoga therapy is effective on balance and fear of fall after stroke. Improve balance and reduce fear fall

Key word: stroke, Yoga therapy, BBS. FOF

INTRODUCTION

Stroke is the common reason of long-term disability.^{1,2} Stroke is the most prevalent cause of ambulatory disability and reduced activities of daily living (ADL). Neurological signs after stroke vary according to the location and extent of the brain injury, motor weakness and sensory and cognitive weakening are the symptoms reported most frequently.^{3,4} The higher incidence of falls in the stroke population may be accounted for by the addition of stroke-specific impairments. These impairments contain deficits in motor function, sensation, vision, and cognitive factors, including depression and attention impairments.^{5,6} Balance deficiency can be a straight Effect of CVA as well as strength deficits post CVA. These deficits often lead to significant difficulty completing ADLS.^{7,8} Yoga is one of India's oldest and most wide psychospiritual traditions. It has evolved over 5,000 years to encompass a vast body of moral and ethical precepts, mental attitudes, and physical practices.^{9,10} The word “yoga” is derivative from the Sanskrit verb “YUJ” meaning to yoke or unite. Commonly, yoga is translated to imply the union of body, mind, and spirit. There are 8 main forms of yoga. Hatha yoga is the most recognized and practiced form of yoga in the Western world.¹⁰ Many forms of yoga encompass 8 elements, known as the “eight-foldpath” of yoga, which include Yamas (moral disciplines), niyamas (self-restraint), pranayama (breath control), asanas (physical poses), Pratyahara (sensory inhibition) dharana (concentration) Dhyana (meditation), samadhi (blissful state). All forms seek to achieve the aim of enlightenment, or the realization of one's true self.^{10,11}

The aims of yoga therapy are to stimulate health benefits and to promote self-awareness for the purpose of enlightenment. Yoga therapy offers an alternative approach to conventional exercise training, and it also can be adapted to meet the requirements of people with physical limitations^{10,12}

The scale needs 10 to 20 minutes to complete and measures the patient's ability to maintain balance either statically or while acting various functional movements for a specified duration of time. The items are scored from 0 to 4, with a score of 0 expressive an inability to complete the task and a score of 4 expressive independent item completion. A global score is calculated out of 56 possible points. Scores of 0 to 20 characterize balance impairment, 21 to 40 characterize acceptable balance, and 41 to 56 represent good balance. The BBS measures both static and dynamic aspects of balance. The ease with which the BBS can be administered makes it an attractive measure for clinicians; it involves minimal equipment (chair, stopwatch, ruler, step) and space and requires no specialized training. It is noted, however, that the BBS should only be administered by health care professionals with knowledge of how to safely mobilize patients with stroke.^{13,14.}

Fear of Fall (FOF) is considered as a “disturbing factor” resulting in the loss of confidence, low physical activity, and increase dependency. Patients may also experience symptoms like social isolation, environmental inflexibility, low functional flexibility, and balance problems. FOF was reported from 12% to 92% among post-stroke patients and 12% to 65% in patients with and without a fall.^{15,16} In 16-item FES-I, face to face interviews provide information on FOF on different activities of daily life. A low cut point was considered from 16 to 22 and a high cut point was between 23 and 64 out of 64^{15,17}. Four point scale was used to score each item (Each item in the questionnaire has four scores 1- not at all concerned, 2 - somewhat concerned, 3-fairly concerned and 4-very concerned. A total of scores was calculated by adding the scores of each item, giving a scale ranging from 16 to 64 for the 16-item FES-I [6]. Reliability, validity, and responsiveness of the Persian FES-I in stroke patients had already been examined and demonstrated an adequate and acceptable assessment of FOF in these patients.^{15,18}

AIMS: The effect of yoga therapy on balance, fear of fall in post stroke patients.

OBJECTIVE:

To determine the Effect of Yoga Therapy on Balance.

To determine the Effect of Yoga Therapy on Fear of fall.

METHODOLOGY

SOURCE OF DATA : Parul Sevasram Hospital, Neuro-physiotherapy OPD

METHODS OF COLLECTION OF DATA

Study design: An Experimental study

Study duration: 6 months

OUTCOME MEASURE

1. Bergs balance scale
2. Fall efficiency scale

INCLUSION CRITERIA

1. Age between 40-70 years.
2. Participants will be given written informed consent.
3. Participants of both male and female will be included.
4. .Clinically and radio logically diagnosed as stroke by physicians and neurologist
5. Able to stand with or without device
6. A score of 70 or higher on the modified Mini mental status examination.

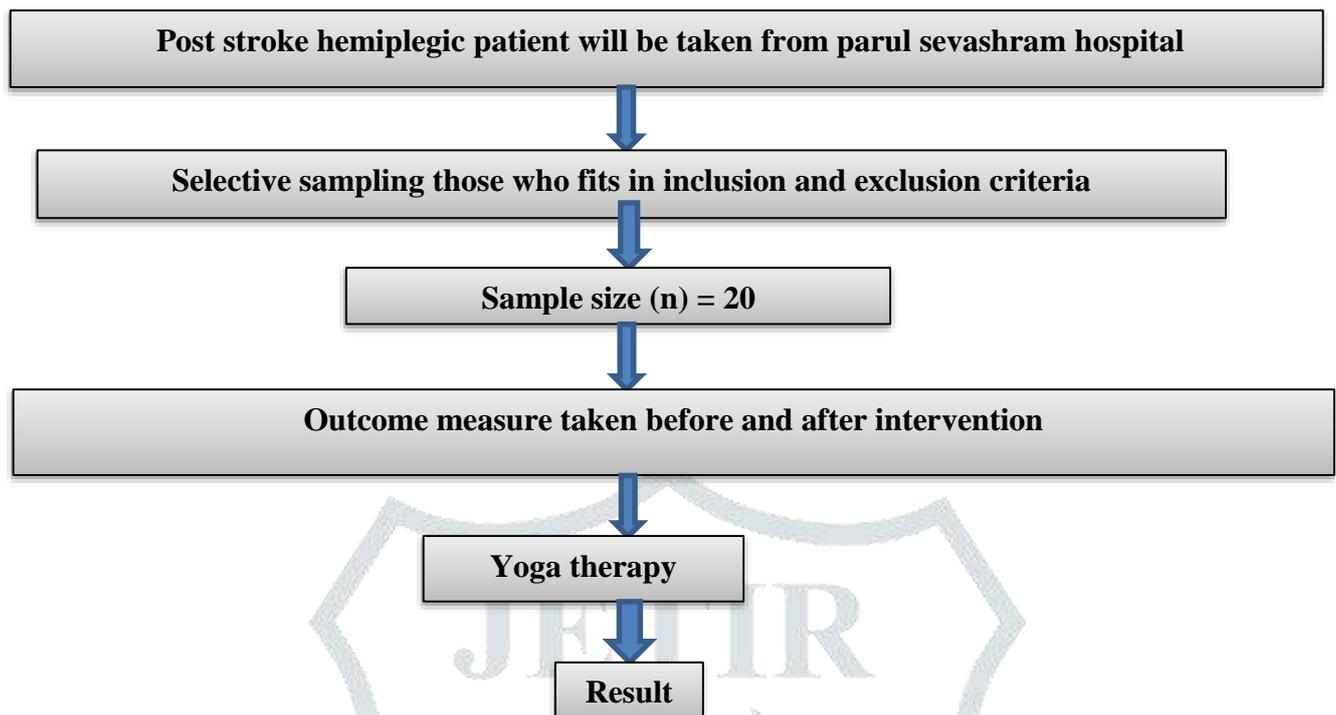
EXCLUSION CRITERIA

1. Serious cardiac condition
2. Psychiatric illness
3. Uncontrollable diabetes
4. Serious chronic obstructive pulmonary disease

MATERIAL USE

1. Pencil
2. Rubber

3. Patient consent form

PROCEDURE**EXERCISE PROTOCOL**

- Subjects will be selected by using randomized method after all inclusive criteria added.
- Before starting exercises, introduction about all exercise will be given.
- Subjects will have 12 treatment sessions for 4 weeks.
- Before starting treatment program there will be a specific warm up (5-10 minutes) for subjects, after warm up the treatment training for 30 minutes, and end of training there will be a cool down for 5-10 minutes.

1	Uttakasana
2	Tadasana
3	Sarpasana
4	Kattiustanasana
5	Salbhasana
6	Utanapadasana



STATISTICAL ANALYSIS

Statistical Method:

Descriptive statistical analysis was carried out in the present study. Outcome measurements were measured using BBS and FOF, \pm SD. Significance was assessed at 5% level of significant $p > 0.005$. (2-tailed hypothesis test considered)

Statistical tests

Shapiro Wilk test was used to analyze data whether data is parametric or non-parametric.

Paired t-test was used as data parametric for analysis of BBS, FOF

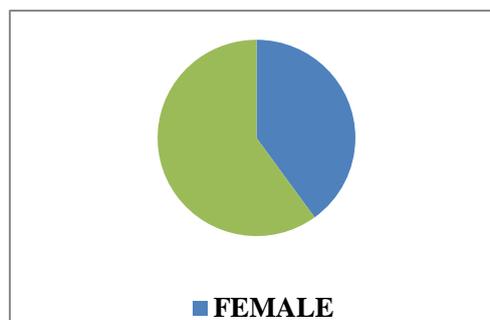
Statistical Software:

The Statistical software namely SPSS 20 was used for the analysis of the data and Microsoft Word and Excel had used to Generate Graph, Tables etc.

RESULTS: 20 patients were enrolled in the study, Table shows post BBS and FOF mean is increase so improve balance and reduce fear of fall. Mean BBS pre-test was 39.10 which have increased to 51.5 and the p-value is 0.000 which is statistically significant, thus the treatment is effective and pre FOF mean 4.5 which have increased to 7.8 and P-value is 0.000 which is statistically significant, thus the treatment is effective

table no.1 gender distribution

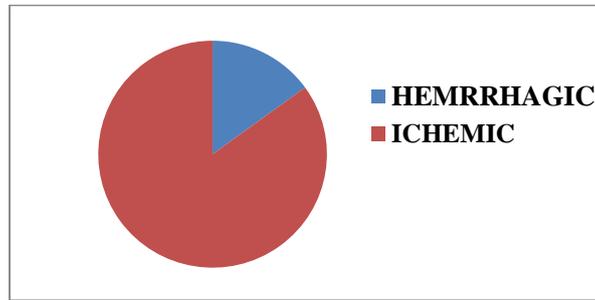
Female	8
Male	12
Total	20



graph no.1 gender distribution

table no. 2 types of stroke

Haemorrhagic	3
Ischemic	17
Total	20



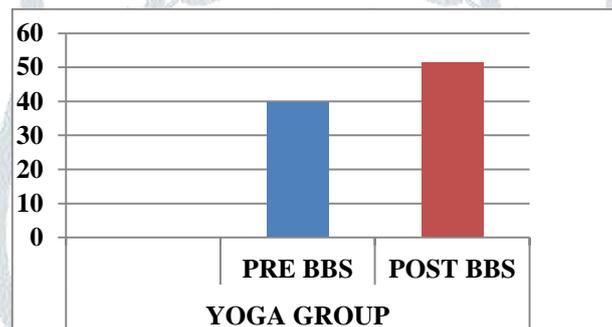
graph no.2 types of stroke

table no. 3 side of paralysis

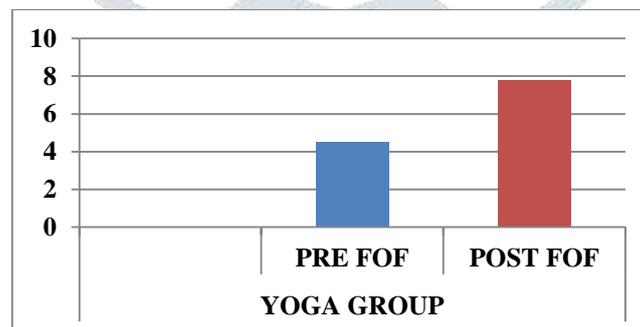
Right side	8
Left side	12

table no .4 descriptive analysis

OUTCOME MEASURES	N	MEAN	SD
PRE BBS	20	39.7	2.6
POST BBS	20	51.5	1.7
PRE FOF	20	4.5	1.31
POST FOF	20	7.8	1.30



graph no. 3 intrarater analysis of bbs



graph no .3 intrarater analysis of fof

table no.5 one sample t test

OUTCOME MEASURES	t - value	p- value
PRE BBS	67.82	.00
POST BBS	133.1	.00
PRE FOF	15.27	.00
POST FOF	26.82	.00

DISCUSSION

Balance is the ability to maintain body equilibrium and influences most motions performed in daily living.^{19,21} Balance can be defined as the ability to maintain the body's center of mass over its base of support and maintain equilibrium constantly during body movements^{20, 21}

20 patients were enrolled in the study, Post BBS and FOF score Mean is increase so improve balance and reduce fear of fall. Mean BBS pre mean score was 39.10 which have increased to 51.5 and the p-value is 0.000 which is statistically significant, thus the treatment is effective and pre FOF mean score 4.5 which have increased to 7.8 and P-value is 0.000 which is statistically significant, thus the treatment is effective. Its relatively small size, we found significantly improved scores for balance and other variables for a yoga intervention. There was a clinically meaningful improvement in balance among yoga participants. We found improve in post BBS score compare to pre BBS score and self-efficacy scale sore improve in post score compare to pre score so its indicate reduce fear of fall.

The position of the Asana causes a squeezing action on a specific organ or gland, resulting in the stimulation of that part of the body. This causes an increase in blood supply to the muscles and ligaments as well as relaxing them. It also takes pressure off nerves in the area. This stretching is involved in all the Asanas, since it has such a beneficial effect on the body. While holding the yoga posture we breathe slowly and deeply, moving the abdomen only (abdominal or low breathing). This increases the oxygen supply to the target organ or gland, thereby enhancing the effect of the Asana. When exercise is done in combination with Asanas than alternate contraction and passive stretching is administered to muscles which along with increasing strength, add new sarcomere to the endings of the muscle²².

CONCLUSION: In present study conclude yoga therapy were effective to improving balance, reduce fear of fall. Aasana is improve muscle strength so improve balance and reduce fear of fall

FURTHER RECOMMENDATION

- Further studies should be done on larger sample size in both the groups.
- The duration of study of study should be elongated for better of both exercise interventions.
- Further study can be done to determine the clinical application of these yoga therapy regime for different age group with different deficient disorder. E.g. parkinsonism, MND

REFERENCE:

1. Wolfe cd. the impact of stroke. British medical bulletin. 2000 jan 1;56(2):275-86.
2. Lubetzky-vilnai, anat pt, msc; kartin, deborah pt, phd the effect of balance training on balance performance in individuals poststroke, journal of neurologic physical therapy: september 2010 - volume 34 - issue 3 - p 127-137
3. Balami js, chen rl, buchan am. Stroke syndromes and clinical management. Qjm: an international journal of medicine. 2013 jul 1;106(7):607-15.
4. Choi jh, kim br, han ey, kim sm. The effect of dual-task training on balance and cognition in patients with subacute post-stroke. Annals of rehabilitation medicine. 2015 feb;39(1):81.
5. Hyndman d, ashburn a. People with stroke living in the community: attention deficits, balance, adl ability and falls. Disability and rehabilitation. 2003 jan 1;25(15):817-22.
6. Belgen b, beninato m, sullivan pe, narielwalla k. The association of balance capacity and falls self-efficacy with history of falling in community-dwelling people with chronic stroke. Arch phys med rehabil. 2006 apr;87(4):554-61. Doi: 10.1016/j.apmr.2005.12.027. Pmid: 16571397.
7. Lim hs, kim yl, lee sm. The effects of pilates exercise training on static and dynamic balance in chronic stroke patients: a randomized controlled trial. Journal of physical therapy science. 2016;28(6):1819-24.
8. Sathe p, chitre p, ghodey s. Added effect of pilates mat exercises on balance and limits of stability in chronic stroke patients: a pilot study. Int j physiother res. 2018;6(3):2732-39.
9. Feuerstein g. Toward a definition of yoga therapy. International journal of yoga therapy. 2000;10:5-10.
10. Julie v bastille, kathleen m gill-body, a yoga-based exercise program for people with chronic poststroke hemiparesis, *physical therapy*, volume 84, issue 1, 1 january 2004, pages 33–48,
11. Lepage j. Integrative yoga therapy training manual. Aptos: print smith. 1999.
12. Ross.r.yoga as a therapeutic modality. In:weintraumi, eds.alternative and complimentary treatment in neurological illness.philadelphia, pa:churchill livingstone inc;2001:75–92

13. Zwick d, rochelle a, choksi a, domowicz j. Evaluation and treatment of balance in the elderly: a review of the efficacy of the berg balance test and tai chi quan. *Neurorehabilitation*. 2000 jan 1;15(1):49-56.
14. Lisa blum, nicol korner-bitensky, usefulness of the berg balance scale in stroke rehabilitation: a systematic review, *physical therapy*, volume 88, issue 5, 1 may 2008, pages 559–566,
15. Khan s, hadian mr, olyaei g, arslan sa, yekaninejad s, tafakhori a. Comparing falls efficacy scale-international and berg balance scale in predicting recurrent risk of fall in stroke patients. *Journal of modern rehabilitation*. 2017 apr 1;11(2):103-8.
16. Schmid aa, acuff m, doster k, gwaltney-duiser a, whitaker a, damush t, williams l, hendrie h. Poststroke fear of falling in the hospital setting. *Topics in stroke rehabilitation*. 2009 sep 1;16(5):357-66.
17. Delbaere k, close jc, mikolaizak as, sachdev ps, brodaty h, lord sr. The falls efficacy scale international (fes-i). A comprehensive longitudinal validation study. *Age and ageing*. 2010 mar 1;39(2):210-6.
18. Mosallanezhad z, salavati m, hellström k, reza sotoudeh g, nilsson wikmar l, frändin k. Cross-cultural adaptation, reliability and validity of the persian version of the modified falls efficacy scale. *Disability and rehabilitation*. 2011 jan 1;33(25-26):2446-53.
19. Cohen h, blatchly ca, gombash ll. A study of the clinical test of sensory interaction and balance. *Physical therapy*. 1993 jun 1;73(6):346-51.
20. Nashner lm. Sensory, neuromuscular, and biomechanical contributions to human balance. *Inproceeding of apta forum, tennessee, 1989* 1989 (pp. 5-12).
21. Song gb, heo jy. The effect of modified bridge exercise on balance ability of stroke patients. *Journal of physical therapy science*. 2015;27(12):3807-10.
22. Arya v, singh kn. A clinical study on the effect of asanas on muscle strength in patients of post stroke hemiplegia (pakshaghata).

