International Journal of Academic Research and Development
ISSN: 2455-4197, Impact Factor: RJIF 5.22
www.academicsjournal.com
Volume 1; Issue 10; October 2016; Page No. 41-43

Yoga as remedy in post cerebral stroke disabilities

[1] Rajandeep Kaur, [2] Preeti dahiya, [*1] Govind Singh

[1] Department of Pharmaceutical Sciences, Maharshi Dayanand University, Rohtak, Haryana, India
[2] Vaish College of Education, Rohtak, Haryana, India

Abstract
Cerebral stroke patients have highest risk of developing post cerebral stroke neurological disabilities. Cerebral stroke is the leading cause of physical disabilities, dementia and mortality. Yoga therapy is empowering the moral and ethical precepts, mental attitude and physical practices. Mindfulness by yoga show significant effects in post cerebral stroke disables. After meditation density of grey matter observed to be increased in amygdala which is helpful in encompasses the fear and stress in cerebral stroke disables.

Keywords: post cerebral stroke, Yoga

Introduction
Cerebral stroke is the second leading cause of death worldwide [1]. Approximately 15 million cases of cerebral stroke occur worldwide in each year [2]. As per the Indian fact sheet on cerebral stroke renovated in 2012 the estimated prevalence rate for cerebral stroke is 90-220/100,000 [3]. Approximately 1.44-1.64 million people suffering from cerebral stroke in India in every year [4]. The world health organization (WHO) define cerebral stroke as "rapidly developing clinical signs of focal disturbance of cerebral function, lasting more than 24 hours and leading to death, with no apparent cause other than vascular origin". Cerebral stroke is clinical condition cause loss of brain function due to interruption in blood supply to all or parts of brain [5]. There are two main types of cerebral stroke according to its aetiology as either ischemic (87%) or haemorrhagic (13%).

Epidemiology of post cerebral stroke disabilities
Cerebral stroke is the underlying cause of disability in United States. Beyond 4.7 million people suffering from cerebral stroke live in the United State today [6]. Cerebral stroke is the leading cause of several physical disabilities in the elderly, the second common cause of dementia and third most common cause of mortality after cardiovascular diseases [7]. Cognitive impairment occurs frequently in stroke survivors [8]. The prevalence of post cerebral stroke cognitive impairment is reported 20.4% in 2010 [9]. The incidence of cognitive deficits increased after cerebral stroke. Approximately 25% of stroke survivors are suffering from dementia. Some patients recover completely from post cerebral stroke impairments but they are unable to deal with daily life activities because of cognitive impairment [7]. Age, ethnicity, socioeconomic characteristics are some of primary factors associated with post stroke cognitive impairment [10]. Two third of stroke survivors have residual deficits that impair their day to day activities. Approximately 50% stroke survivors have disabilities making them dependent on others for their daily routine activities [11]. Post cerebral stroke motor and sensory deficits are directly associated with balance impairment. Balance impairment further continuous into the chronic phase of cerebral stroke. For e.g. Tyson *et al*, observed balance deficits related to worse physical impairments and disability in 83% of individuals with stroke. Balance impairment is further linked with post stroke falls. Rate of fall increased because of post stroke mobility deficits, balance impairments, residual functional deficits, motor and sensory impairments, cognitive and emotional deficits [12]. Among the physical disabilities the more common is upper limb dysfunction and impairment in functional walking. Only 5% of adult stroke survivors regain full upper limb activity and 20% loss the functional use [11]. Stroke survivors often left with cognition, sensory motor and balance impairments that in turns abnormally affect the functional mobility and other daily living activities. The most common problem after stroke is falls [12]. Stroke is the most common risk factor for falls. Stroke patients are at high risk of falling when they are in acute care and remain a high risk group for few months after discharged to home. Long term stroke survivors have increased risk of fracture especially hip fracture due to increased risk of falling [13]. Change in membrane potential and neuronal death during cerebral stroke cause hyperexcitability which further result in epileptic seizures [14]. Depression is other more common serious complication observed in stroke survivors. Depression is main predictor of quality of life (QoL) in stroke survivors. Post stroke depression is strongly associated with increased cognitive impairment, increased disability, increased mortality, and increased risk of falls [15].

Yoga an introduction
"Yoga" is an ancient tradition word from Sanskrit meaning union or one pointed awareness. In the yoga sutras, Patanjali defined the word "Yoga" in the first sutras as Atha yoga anushasanam which means "Yoga" is a form of discipline [16]. According to International Association of Yoga Therapists (IAYT) yoga therapy is the process of empowering individuals to progress toward improved health and well being through the application of the teachings and practices of yoga. Yoga therapy is introduced by its sister science, Ayurveda [17]. Yoga started roughly 5,000 year ago in India.

Maharishi Patanjali is rightly known as "Father of Yoga". According to Maharishi Patanjali in his yoga sutras there is eight fold path known as "Ashtangr yoga" these include yama, niyama (self-purification and study), asana (posture), pranayama (breath control), pratyahara (sence control), dharana (concentration), dhyana (meditation), Samadhi (super contemplation) [18]. Yoga is self-empowering; the participant is his/her own healer. The teacher can only give the direction and practice but it is up to the participant to perform the practice [19]. The use of movement and postures are collectively called asnas, when combined with pranayama, a breathing technique, form the most popular style of yoga called hatha yoga. Practitioners usually combine hatha yoga with meditation to achieve the aims of yoga, which is complete mind body approach.

Role of yoga in post cerebral stroke disabilities:

Several investigators have found that improvements in balance, aerobic capacity, muscle force and timed mobility in patients with chronic post stroke disabilities can be achieved by exercise training [6].

1. Yoga in post cerebral stroke balance impairments

Improvements in motor function, muscle contraction, shoulder flexibility and spinal flexibility were observed in 2 month hatha yoga program. A 12 weeks pilot study of kundalini yoga practice show improvements in motor coordination in stroke survivors [18]. Now a day's multiple research studies are carried out on therapeutic use of yoga as a complementary procedure for neurological disorders [20]. The study demonstrated that, even patients with chronic stroke having significant paralysis on one side can manage to do modify yoga poses. Yoga participants told to the researchers that they were feel more confident saying they can do daily activities and can also visit with friends outside. Yoga might be better than exercise because yoga is combination of poses, breathing and meditation which made the brain work harder [21]. As yoga is helping in balance and movement difficulties, it can also help the stroke survivors to revive with society and live back in normal life. According to new study, the yoga postures like downward-facing dog, tree pose and child pose as well as other yoga movements can restore balance and significantly reduce the risk of falling in stroke survivors with stroke related disabilities. The research from Massachusets General Hospital and Harvard School support previous studies that stroke survivors can significantly restore their balance, confidence to handle their routine activities and also risk of falling, by yoga practice. Various case studies regarding recovery have been indicated that stroke survivors can bear physical and cognitive demand of yoga and it can be used as useful exercise [22].

2. Yoga in post cerebral stroke cognitive impairments

Recent studies suggest that relaxation technique of yoga seems to affect the genes incorporated in controlling the mechanism of body to control the free radicals, inflammation processes and cell death. Mindfulness training may improve attention related behavioral responses by increasing activity of specific subcomponent of attention. This mindfulness could have dramatic effects for post stroke disable patients because cognitive skills are mainly affected in these patients [16].

3. Yoga in post cerebral stroke depression

Streeter *et al* have shown that yoga asanas enhances the level of gamma-aminobutyric acid, neurotransmitter in brain, as low levels of gamma-aminobutyric acid have been associated with depression and anxiety, so yoga asanas show potential benefits in improving mental health conditions [23]. After meditation, density of grey matter was found to be increased in different regions governing different activities as self-awareness, compassion and memory. Grey matter also got decreases in amygdala, the part of brain deals with fear and stress, after meditation. This low level of grey matter is associated with decreased levels of stress-signaling molecules and increased level of dopamine [16].

4. Yoga in post cerebral stroke epilepsy

In ayurveda epilepsy is called apasmara (loss of consciousness of body). A study in 1996 in Europe and North America on epileptic patients shows that 'sahaja' yoga for 6 months results in 86% decrease in seizure frequency [24]. According to a research conducted in All India Institute of Medical Sciences (New Delhi), meditation improves the brain activity of epileptic patients and reduces the seizures [25]. Yoga is beneficial in managing epilepsy it reduces frequency of seizures [26]. Pranayama, asanas, dhyana are some poses of yoga helpful for peoples with epileptic seizures [24].

There are some initial four therapies for stroke survivors to improve their day to day activities these are: Physical therapy, which include walking, sitting, lying down, switching from one movement to another. This therapy should start immediately after stroke. Occupational therapy, include learning of routine activities related to eating, drinking bathing, swallowing, cooking, reading, writing etc. Speech therapy, include relearning of speech and communication skills.

Some yoga postures for balance recovery in stroke survivors are: [27]

- **Paranayama:** This posture helps the stroke survivors to calm their mind and also balance the oxygen and carbon dioxide balance in their body. Nadi sudhana is best paranayama use for right and left side breathing and slowly balanced the paralyzed side of the body.
- **Mudras:** Vayu and Hridaya/Apanvayu mudras are particularly good for people suffering from stroke disabilities. Mind should be in peace during performing these mudras.
- **Chanting:** This posture is more effective to improve speech functions and body balance in stroke survivors by feeling the vibrations throughout the body.
- **Mediataion:** Meditation is helpful in stroke survivors to relax their mind. As there is no definitive prediction of recovery in stroke patients, meditation practice can be quite helpful in stroke survivors.

Chair yoga [28]

a) **Forward bend:** This pose gives stretch to back and neck.
b) **Spiral twist:** This pose enhances the flexibility and circulation in the spinal cord.
c) **Side stretch:** The side stretch pose improves respiration and also enhances the flexibility of spinal cord.

d) Knee squeeze: This pose promotes digestion and respiration and also helpful in relaxation of lower back.
e) Leg lift: Increases circulation in lower limbs and lower back.
f) Sun pose: Increase circulation to head and provide elasticity to spine and hip region.

References

1. Mathers CD, Boerma T, Fat DM. Global and regional causes of death. Brit Med Bull. 2009; 92:7-32.
2. WHO The Atlas of heart disease and stroke section 15: Global burden of strokehttp://www.who.int/cardiovascular_diseases/en/cvd_atlas_15_burden_ stroke.pdf Mackay. J and Mensah G. 2004.
3. Dalal P, Bhattacharjee M, Vairale J, Bhat P. UN millennium development goals: can we halt the stroke epidemic in india? Ann Indian Acad Neurol. 2007; 10:130-136.
4. World Health Organisation. Preventing chronic diseases: A vital investment. Geneva, Switzerland. 2005.
5. Gupta SK, Gupa A, Gondhotra D, Gupta A, Gupta S. Role of citicoline in ischemic stroke. JK Science. 2008; 10:160-162.
6. Bastille JV, Gill Body KM. A yoga-based exercise program for people with chronic post stroke hemiparesis. Phys Ther. 2004; 84:33-48.
7. Danovaska M, Stamenov B, Alexandrova M, Peychinska D. Post stroke cognitive impairment phenomenology and prognostic factors. Jimab. 2012; 18:290-297.
8. Sun JH, Tan L, Yu JT. Post stroke cognitive impairments: epidemiology, mechanisms and management. Ann Transl Med. 2014; 2:1-16.
9. Mukhopadhyay A, Sundar U, Adwani S, Pandit D. prevalence of stroke and post stroke cognitive impairment in elderly in Dharavi, Mumbai. JAPI. 2012; 60:29-32.
10. Douiri A, Rudd AG, Wolfe CDA. Prevalence of post stroke impairment. J Am Heart Assoc. 2013; 44:138-145.
11. Marzolini S, Tang A, Brooks D, Strong M, Oh P. exercise and risk factor modification following stroke. CACRC. 2009; 17:1-4.
12. Schmid AA, Puymbroeck MV, Altenburger PA, Schalk NL, Dierks TA, Miller KK, damush TM *et al*. Post stroke balance improves with yoga: a pilot study. J Amm Heart Assoc. 2012; 43:2402-2407.
13. Jorgensen L, Engstand T, Jacobsen BK. Higher incidence of falls in long term stroke survivors than in population controls. J Amm Heart Assoc. 2002; 33:542-547.
14. Camilo O, Goldstein LB. Seizures and epilepsy after ischemic stroke. J Amm Heart Assoc. 2004; 35:1769-1775.
15. Paolucci S. epidemiology and treatment of post stroke depression. Neuropsychiatr Dis Treat. 2008; 4:145-154.
16. Lazaridou A, Philbrook P, Tzika AA. Yoga and mindfulness as therapeutic interventions for stroke rehabilitations: A systematic Review. J Evid Based Complementary Altern Med. 2013, 1-10.
17. Collins C, Kenny ML. educational standards for the training of yoga therapists. IAYT. 2012, 1-19.
18. Mishra SK, Singh Parampreet, Zhang R. The therapeutic value of yoga in neurological disorders. Ann Indian Acd Neurol. 2012; 15:247-254.
19. Kausthub D. The yoga of healing: Exploring yoga's holistic model for health and well being: An introduction. Int J Yoga Therap. 2005; 15:1-41.
20. Muhammad CM, Moonaz SH. Yoga as therapy for neurodegenerative disorders: A case report of therapeutic yoga for adrenomyeloneuropathy. J Integr Med. 2014; 13:33-39.
21. www.telegraph.co.uk/news/health/news/9430292/yoga-helps-stroke-patients-recover-balance.html accessed on 12 June 2015.
22. http://www.yogauonline.com/yogau-wellness-blog./study-yoga-can-restore-balance-for-stroke-survivors accessed on 12 June 2015.
23. Chan W, Immink MA, Hillier S. Yoga and exercise for symptoms of depression and anxiety in people with post stroke disability: A randomized controlled pilot trial. Altern Ther. 2012; 18:1-9.
24. Saxena VS, Nadkarni VV. Nonpharmacological treatment of epilepsy. Amm Indian Acad Neurol. 2011; 14:148-152.
25. http://hinduism.about.com/od/meditationyoga/a/Yoga-For-Epileptic Seizure-Control.htm accessed on 14 June 2015.
26. Naveen GH, Sinha S and Gangadhar BN. Yoga and epilepsy: What do patients perceive? Indian J Psychiatry 2013; 55: 390-393.
27. http://www.theyogablog.com/how-yoga-helped-me-recover-from-a-stroke/ accessed on 14 June 2015.
28. http://www.strokenetwork.org/newsletter/therapies/yoga.htm accessed on 14 June 2015