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## Effectiveness of Shavasana on anxiety, aggression and attention in patients with stroke

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### Abstract

**Background:** Stroke remains a major healthcare problem. It has the greatest disabling impact of any chronic disease and is one of the most common diseases to cause cognitive disorders in adults. Psychological changes including emotional, behavioral and cognitive changes can be common after stroke. Recently more attention has been given to these concerns. Yoga contends that it offers a gentle alternative exercise program that can be easily adapted for people who have had a stroke. Yoga has been known for its physical and mental benefits. It is a combination of asana, pranayama and meditation. Yogic asanas are gaining importance now a day by the way they train and discipline the mind.

**Objective:** To find out the effect of shavasana along with conventional physiotherapy on anxiety, aggression and attention in stroke patients.

**Methodology:** Thirty patients between the age of 50 to 60 years with the diagnosis of stroke were selected. Patients were divided into Group (A), which received conventional Physiotherapy and Group (B), receiving shavasana along with conventional Physiotherapy for 4 weeks of duration under the guidance of therapist. Pre and post intervention assessments were done by using Hamilton Anxiety Rating Scale (HAM-A), Aggression Questionnaire, Mindful Attention Awareness Scale (MAAS).

**Result:** Result of this study showed that there is significant difference in pre and post values of all the three scales with Conventional Physiotherapy and Shavasana along with Conventional Physiotherapy. But when comparing Group and Group B, group B is improved more on (HAM-A), Aggression Questionnaire, (MAAS) score than group A.

**Conclusion:** The result shows that shavasana posture or shavasana relaxation positioned combined with conventional physiotherapy than the traditional method of relaxation is more effective in treating symptoms of anxiety, aggression and attention in stroke patients.

**Keywords:** cognitive impairment, anxiety, aggression, attention, stroke, shavasana

### Introduction

Stroke is now often referred to as a "brain attack" to denote the fact that it is caused by lack of blood supply to the brain [1]. The World Health Organization (WHO) defines stroke (introduced in 1970 and still used) as "rapidly developing clinical signs of focal (or global) disturbance of cerebral function, lasting more than 24 hours or leading to death, with no apparent cause other than that of vascular origin [2]." It is a life changing event and a frightening experience for the disabled person as well as his/her family and caregivers. It may be accompanied by feeling of despair, depression, aggression as they have a fear of eventual dependency on others in the future [1]. According to the WHO, each year 15 million people worldwide suffer from stroke [3]. Current evidence indicates that vascular risk factors and disturbance in Cerebrovascular hemodynamic are associated with cognitive impairment [4]. Cognitive-behavioral disorders are frequent sequelae of stroke. Cognitive symptoms can occur along with physical disabilities or as isolated deficits [4]. The risk of cognitive impairment in stroke patients increases with age and reaches peak after age of 75 [5]. The emotional-processing brain structures are limbic system and amygdala [6]. Other neurotransmitter systems such as serotonin, dopamine, GABA, and noradrenaline also play a major role [7]. Emotional disturbance after stroke can have an impact on rehabilitation outcome associated with longer hospital stays, reduced participation in rehabilitation, increased physical impairment and handicap, as well as increased mortality [8]. Common emotional reactions include: frustration, anxiety, anger, apathy, lack of motivation, depression or sadness [6].

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The majority of people who have had a stroke plateau in neurological and functional recovery and are not expected to make improvements more than 5 months after the stroke. Common conventional therapy focused more on physical aspects. Yoga therapy offers an alternative approach to conventional exercise training. Yoga is one of India's oldest and most extensive psycho-spiritual traditions. It has evolved over 5,000 years to encompass a vast body of moral and ethical precepts, mental attitudes, and physical practices [9]. The use of yoga for health purposes can be understood through a biopsychosocial model. This model focuses on the physiology, psychology and environment of an individual to understand how social and psychological factors interact with biology to influence pain, illness and health [10]. Yoga practices enhance the activity of brain and reduce cortisol levels. These physical and chemical changes can help reduce anxiety. Yoga therapy modifies the central nervous system function and therefore reduces sympathetic activities and causes neuromuscular relaxation [11], among various yoga asanas shavasana helps in relaxation. Shavasana is also known as corpse posture. Shavasana decreases heart rate, blood pressure, muscle tension and general levels of anxiety. It also brings the body, mind, and spirit into balance [12]. Yoga promotes relaxation in the practitioners but at the same time helps them in increasing their attention and other cognitive abilities [13]. Shavasana is known for its ability to

reduce stress and promote a calm relaxed state helping to control and prevent cardiovascular disease. Shavasana is a pose of total relaxation of both body and mind helping psychosomatic relaxation [14].

**2. Methodology**

Thirty participants diagnosed with stroke during a twelve months period, were randomly divided into two groups (Group A and Group B) of fifteen participants each. The study variables like Anxiety, Aggression and Attention were assessed with the Hamilton Anxiety Rating Scale, Aggression Questionnaire, and Mindful Attention Awareness Scale. After allocation, Group A received conventional physiotherapy treatment as follows: The patient were comfortably made to sit or laid down on a couch with the therapist standing on affected side. Cueing (verbal, motor) was used to direct the movement. Physical exercises for upper limb and lower limb involves Proprioceptive Neuromuscular Facilitation (PNF), resisted exercises with weight cuff / therbands, stretching. For improving postural control and functional mobility strategies like rolling, supine to sit, sit to supine, sit to stand, standing, bridging, transfers, walking were done and mat activities such as prone on elbow, prone on hand, quadripod were given.

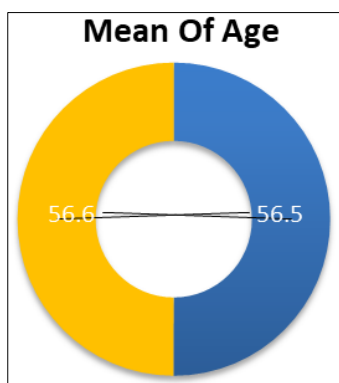


**Group 1: B** received Shavasana as follows. Lie down on your back with feet about 18 inches apart and allow them to fall out to the sides. Place your hands about a foot away from torso palm facing upward. Allow the eyes to close and feel completely relaxed. Slowly inhale and exhale while releasing the tension. Hold this position for twenty minutes.

**Results and Discussion**

**Table 1:** Age Distribution

Groups	Mean (Age In Years)	Sd (Age In Years)
Group A	56.6	3.942
Group B	56.5	3.270



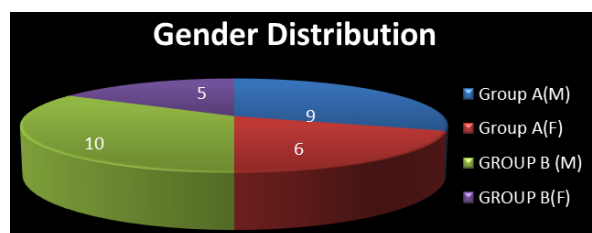
**Graph 1.1:** Mean of age in group A and group B

The average age of Group A (conventional physiotherapy) was 56.6 +\_ 3.942 years and in Group B (conventional physiotherapy with shavasana) was 56.5+\_ 3.270 years.

**1.2 Comparison of male and female ratio in percentage in both the groups**

**Table 1.2:** Male and Female Ratio in percentage

Groups	Male	Percentage	Female	Percentage
Group A	9	60%	6	40%
Group B	10	66%	5	33.3%



**Graph 1.2:** Percentage of Male and Female in the groups

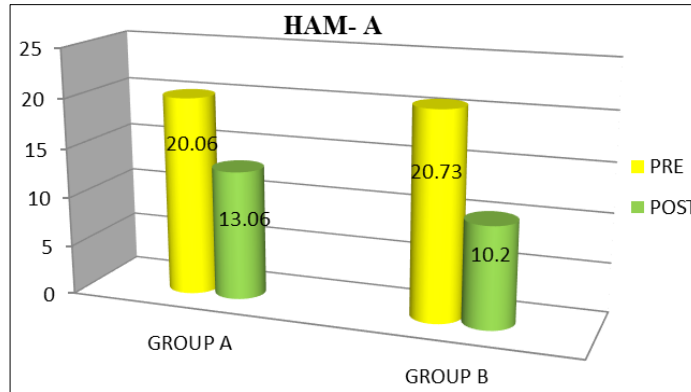
There were 9 (60%) male and 6 (40%) female in group A receiving Conventional physiotherapy treatment. There were 10(66%) male and 5 (33.3%) female in group B receiving Conventional physiotherapy treatment with shavasana. The

duration of treatment in both the groups was for 4 weeks.

**1.3 Comparison of Pre-Intervention and Post-Intervention HAM-A score in both the Groups**

**Table 1.3:** HAM-A Score of Patients

Groups	Intervention	Mean	SD	't' value	'P' value	Result
Group A	Pre	20.06	2.314	11.722	<0.0001	Extremely Significant
	POST	13.06	4.317			
Group B	Pre	20.73	2.604	14.197	<0.0001	Extremely Significant
	POST	10.2	2.783			



**Graph 1.3:** Comparison of Pre-Post HAM-A score in both the Groups

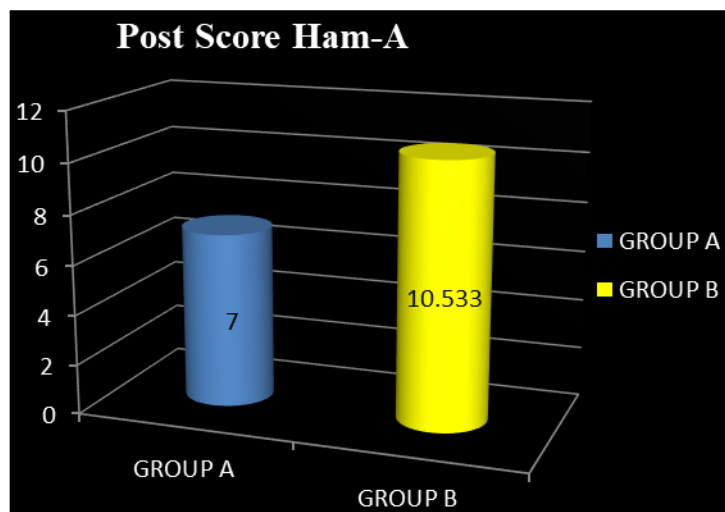
Comparison of pre and post Hamilton Anxiety Rating Scale in group A and B by using paired t test in which 'p' values for group A is <0.0001 and 't' value is 11.722, is considered extremely significant and for Group B 'p' value is <0.0001,

't' value is 14.197 which is extremely significant.

**1.4 Comparison of Post- Intervention HAM-A score in both the Groups**

**Table 1.4:** HAM-A score of patients

Scale	Groups	Mean	SD	t value	p value	Results
Ham-A	Group A	7	2.98	2.977	0.0059	Very Significant
	Group B	10.533	3.543			



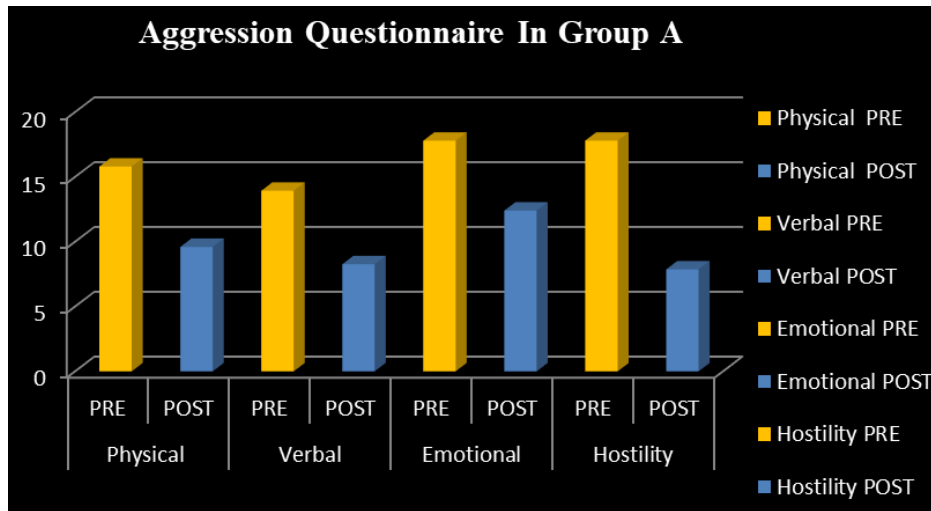
**Graph 1.4:** Comparison of post-intervention score between group A and Group B

Comparison of post Hamilton Anxiety Rating Scale in group A and B by using unpaired t test in which 'p' values for group A is <0.0059 and 't' value is 2.977, is considered very significant.

**1.5 Comparison of Pre-Intervention and Post-Intervention Aggression Questionnaire score in group A:**

**Table 1.5:** Aggression Questionnaire Score of Patients (Group A)

Group A	Intervention	Mean	SD	't' value	'p' value	Results
Physical	Pre	14.066	3.634	4.246	0.0008	Extremely Significant
	Post	11.2	2.111			
Verbal	Pre	12.266	2.644	7.407	<0.0001	Extremely Significant
	Post	9.333	2.054			
Emotional	Pre	16	1.966	8.147	<0.0001	Extremely Significant
	Post	12.8	2.561			
Hostility	Pre	12.133	2.669	4.549	0.0005	Extremely Significant
	Post	9.666	2.320			



**Graph 1.5:** Comparison of pre and post Aggression Questionnaire score in Group A

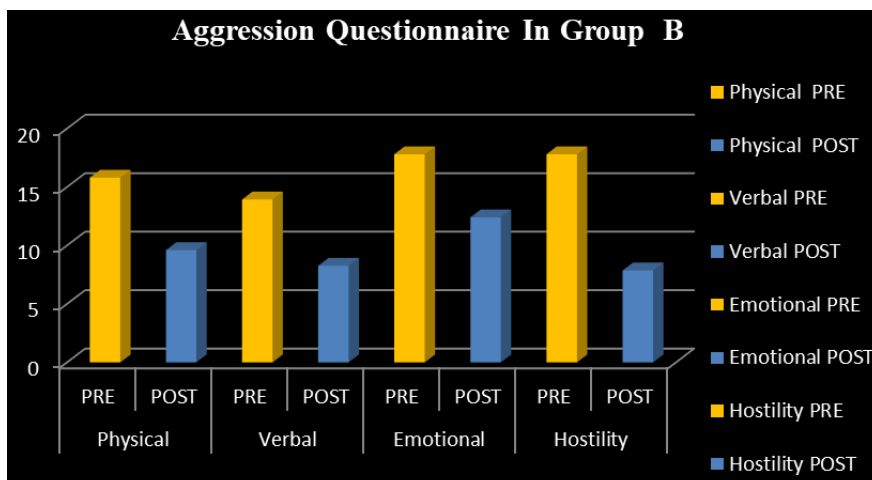
Comparison of pre and post Aggression questionnaire Scale in group A by using paired t test in which for domain physical 'p' values is 0.0008 and 't' value is 4.246, for domain verbal 'p' value is <0.0001 and 't' value is 7.407, for domain emotional 'p' <0.0001 and 't' value is 8.147, for

domain hostility 'p' value is 0.0005, 't' value is 4.549 which is considered extremely significant.

**1.6 Comparison of Pre-Intervention and Post-Intervention Aggression Questionnaire score in group B:**

**Table 1.6:** Aggression Questionnaire Score of Patients

Group B	Intervention	Mean	SD	't' value	'p' value	Results
Physical	Pre	15.8	4.280	7.326	<0.0001	Extremely Significant
	POST	9.6	1.404			
Verbal	Pre	13.933	3.105	7.221	<0.0001	Extremely Significant
	POST	8.266	1.438			
Emotional	Pre	17.8	4.763	6.356	<0.0001	Extremely Significant
	POST	12.4	2.893			
Hostility	Pre	13.866	2.997	6.336	<0.0001	Extremely Significant
	POST	7.866	1.457			



**Graph 1.6:** Comparison of pre and post Aggression Questionnaire score in Group B

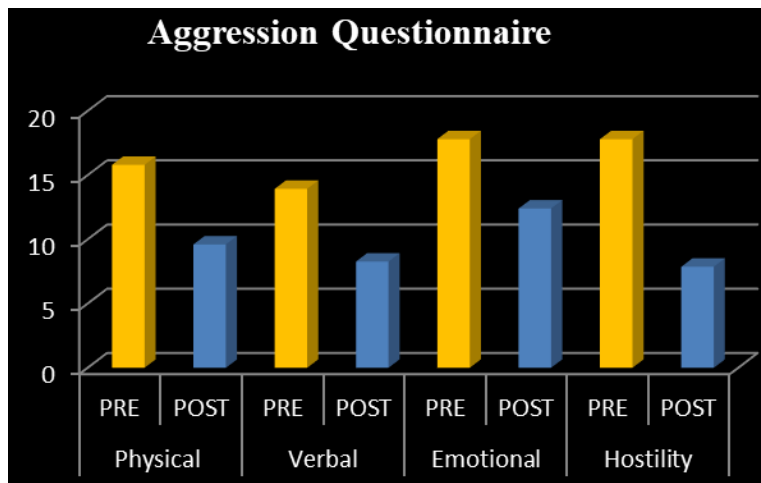
Comparison of pre and post Aggression questionnaire Scale in group B by using paired t test in which for domain physical 'p' values is <0.0001 and 't' value is 7.326, for domain verbal 'p' value is <0.0001 and 't' value is 7.221, for domain emotional 'p' <0.0001 and 't' value is 6.356, for

domain hostility 'p' value is 0.0005, 't' value is 6.336 which is considered extremely significant.

**1.7 Comparison of Post- Intervention Aggression Questionnaire score in group A and group B**

**Table 1.7:** Aggression Questionnaire Score of Patients

Scale	Groups	Mean	SD	't' value	'p' value	Results
Physical	A	2.866	2.165	3.079	0.0046	Very Significant
	B	6.2	3.278			
Verbal	A	2.933	1.534	3.109	0.043	Very Significant
	B	5.666	3.039			
Emotional	A	3.2	5.4	2.350	0.0260	Significant
	B	1.521	3.291			
Hostility	A	2.466	2.100	1.779	0.0860	Not Quite Significant
	B	3.933	2.404			



**Graph 1.7:** Comparison of post Aggression Questionnaire score in Group A and Group B

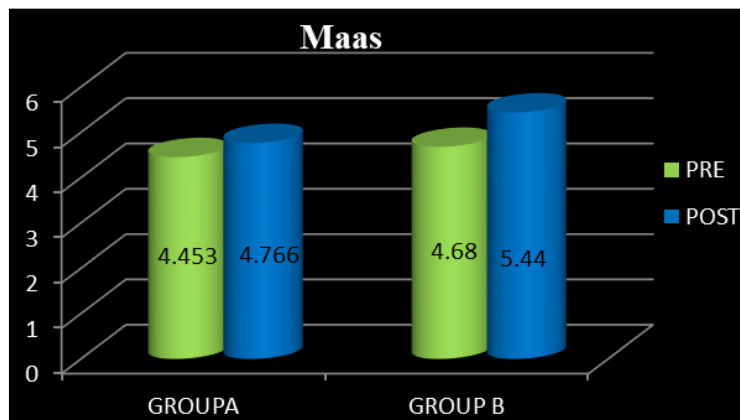
Comparison of post Aggression questionnaire Scale in group A and group B by using unpaired t test in which for domain physical 'p' values is 0.0046 and 't' value is 3.079 considered very significant, for domain verbal 'p' value is 0.043 and 't' value is 3.109 considered very significant, for domain emotional 'p' 0.0260 and 't' value is 2.350

considered significant, for domain hostility 'p' value is 0.0860, 't' value is 1.779 which is considered not quite significant.

**1.8 Comparison of Pre-Intervention and Post- Intervention MAAS score in Group A and Group B**

**Table 1.8:** Maas Score of Patients

Groups	Intervention	Mean	SD	t value	p value	Results
Group A	Pre	4.453	0.566	3.406	0.0043	Extremely Significant
	POST	4.766	0.5703			
Group B	Pre	4.68	0.5519	4.923	0.002	Extremely Significant
	POST	5.44	0.6185			



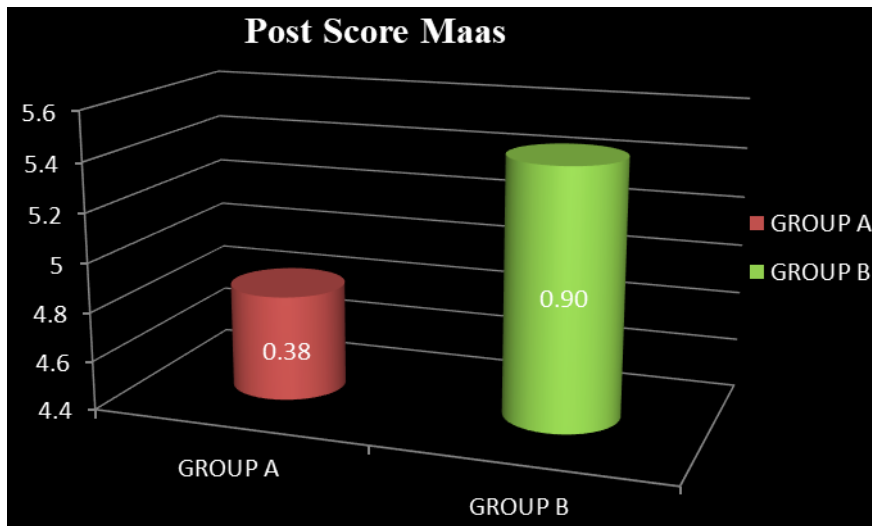
**Graph 1.8:** Comparison of pre and post MAAS score in Group A and Group B

Comparison of pre and post Mindful Attention Rating Scale in group A and B by using paired t test in which ‘p’ values for group A is 0.0043 and ‘t’ value is 3.406 and for group B ‘p’ value is 0.002 and ‘t’ value is 14.197, considered very significant.

**1.9 Comparison of MAAS score after Intervention between Group A and Group B.**

**Table 1.9:** Maas Score of Patients

Scale	Groups	Mean	SD	‘t’ value	‘p’ value	Results
Maas	Group A	0.38	0.1424	5.300	<0.0001	Extremely Significant
	Group B	0.9066	0.3575			



**Graph 1.9:** Comparison of post-intervention MAAS score between group A and group B

Comparison of post Mindful Attention Rating Scale in group A and B by using unpaired t test in which ‘p’ values for group A and B is <0.0001 and ‘t’ value is 5.300, considered extremely significant.

**Discussion**

Stroke is one of the most prevalent diseases worldwide causing devastating impairments and negative consequences for survivors. Poststroke therapy may improve recovery and reduce long-term disability, but more psychological therapies for evaluating the specific effects of rehabilitation are needed. Given that many rehabilitation programs currently offer yoga as an option to patients, and yoga is included as a therapeutic option in a number of rehabilitation. Yoga practice acts on both the psychological and physical levels, and improvements have been noticed in patients.<sup>16</sup> In the present study we aimed to find out the importance of shavasana along with conventional physiotherapy and conventional physiotherapy alone on anxiety, aggression, and attention in patients with stroke for a period of 4 weeks by using HAM-A, Aggression Questionnaire and MAAS scores were obtained from the patients with stroke in both groups.

**Improvement in HAM-A:** The relaxation training intervention appeared to be effective in ameliorating anxiety<sup>[15]</sup>. Yoga-based practices may serve to regulate the autonomic nervous system. Autonomic nervous system dysfunction is associated with anxiety. Yoga practices may modify underactivity of the parasympathetic nervous system (PNS) and GABA systems in part through stimulation of the vagus nerves, which are the primary peripheral pathway of the PNS. Yoga may reduce hypothalamic-pituitary-adrenal axis activation, although evidence to date is inconsistent.

Change in these biologic pathways may affect the underlying pathophysiology of anxiety<sup>[16]</sup>.

**Improvement in Aggression questionnaire:** Shavasana helps in reducing aggression and inducing relaxation which is done by serotonin, and dopamine because aggression and its comorbid disorders may come from an underlying neurobiology, specifically serotonin, and dopamine interaction in the pre frontal cortex. Other biological factors such as nor epinephrine, and testosterone may also contribute aggression. The neurotransmitter serotonin has an inhibitory action in the brain and that it is deeply involved in the regulation of emotion and behavior, including the inhibition of aggression. In humans, a low concentration of 5-HIAA has been associated with lifetime aggression. Interactions of this kind between the serotonin and dopamine systems provide a framework for understanding mechanisms underlying impulsive aggression<sup>[17]</sup>.

**Improvement in MAAS:** Yogic techniques especially shavasana improve attentiveness. Increased attentiveness decreases response time or reaction time. Reaction time is an index of the processing ability of central nervous system and a simple means of determining sensory-motor performance. A decrease in reaction time indicates an improved sensory-motor performance and enhanced processing ability of central nervous system. This may be due to greater arousal, faster rate of information processing, improved concentration and an ability to ignore extraneous stimuli<sup>[18]</sup>.

**Conclusion**

The result of the study shows that both these exercises helps in reducing anxiety, aggression and improving attention than the traditional method of physical therapy exercises. Hence,

null hypothesis is rejected and alternative hypothesis is accepted which states that shavasana is effective in improvement of cognitive impairments like attentional deficit and emotional problem like anxiety and aggression for period of 4 weeks.

#### Limitation

- In this study there is no follow up after 4 weeks so long term effect of intervention could not be suggested.
- No equal distribution of males and females

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