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Effect of Yoga Asana with Physiotherapy Rehabilitation to Improve Overall Independence in Spinal Cord Injury Patients: A Case Series

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Abstract

Background: Injury to the spinal cord that is caused by trauma or damage resulting from the application of an external force of any magnitude, e.g., in the event of road traffic crashes, falls or acts of violence, is known as Traumatic Spinal Cord Injury (TSCI). Nowadays yoga asana gives the powerful impact on the person mind and body. Many studies suggest that physiotherapy rehabilitation help to improve the independence but there is limited study which suggest with the combination of both yoga and physiotherapy the patient improve independence hence my need of the study is to evaluate the effect of Yoga Asana with physiotherapy rehabilitation to improve trunk stability in Spinal Cord Injury Patients.

Aim: To Find out the effect of Yoga Asana with physiotherapy rehabilitation to overall independence in Spinal Cord Injury Patients.

Methodology: Patient consent was taken and Patient was explained about the intervention.

Four participants completed the study. All participants were diagnosed with spinal cord injury. Participants were excluded like Orthopedic conditions (Fracture), Other Neurological condition (Multiple sclerosis, Parkinson disease, etc.), Hemodynamically unstable. Physiotherapy assessment was taken. Outcome measure is Spinal cord independence Measure, Spinal cord injury lifestyle changes and ASIA Scale.

Intervention: Yoga asana with physiotherapy treatment was given for 5 days per week for 4 weeks.

Results:

A. Spinal Cord Independence Measure (SCIM)

Participant 1 – Pre-Score (48/100) to Post Score (56/100)
Participant 2 – Pre-Score (50/100) to Post Score (58/100)
Participant 3 – Pre-Score (44/100) to Post Score (54/100)
Participant 4 – Pre-Score (60/100) to Post Score (68/100)

B. Spinal Cord Independence Lifestyle Scale (SCILS)

Participant 1 – Pre-Score (40/100) to Post Score (57/100)
Participant 2 – Pre-Score (52/100) to Post Score (60/100)
Participant 3 – Pre-Score (47/100) to Post Score (54/100)
Participant 4 – Pre-Score (58/100) to Post Score (69/100)

C. American Spinal Impairment Scale ASIA Scale

No changes

Conclusion: Study concluded that there is a significant improvement in patient after the yoga asana with physiotherapy treatment in spinal cord injury patients.

INTRODUCTION:

WHO defines Spinal Cord Injury (SCI) as: "Any injury to the spinal cord from traumatic and non-traumatic causes. Injury to the spinal cord that is caused by trauma or damage resulting from the application of an external force of any magnitude, e.g., in the event of road traffic crashes, falls or acts of violence, is known as Traumatic Spinal Cord Injury (TSCI)". Damage to the spinal cord from a non-traumatic cause, e.g., congenital/genetic malformation such as spina bifida or acquired damage caused by infection, loss of blood supply (infarction), compression by a cancer or tumor, or by slow degeneration of the vertebrae because of osteoarthritis, is known as Non-traumatic Spinal Cord Injury (NTSCI). Damage or trauma to the spinal cord results in an impairment or loss of function.[1]

SCI is an insult to the spinal cord resulting in a change, either temporary or permanent, in its motor, sensory, or autonomic functions affects conduction of sensory and motor signals across the site(s) of lesion(s), as well as the autonomic nervous system. By systematically examining the dermatomes and myotomes, one can determine the cord segments affected by the SCI. The following terminology has developed around the classification of SCI:

Tetraplegia (replaces the term Quadriplegia) - Injury to the spinal cord at the cervical region with associated loss of muscle strength in all 4 extremities.

Paraplegia – Injury in the spinal cord in the thoracic, lumbar, or sacral segments, including the cauda equine and conus medullaris.

Spinal Cord Injury (SCI) is a catastrophic event which is sudden and unexpected that can affect the patient's normal sensory, motor and autonomic function, leading to dependency, morbidity and deterioration in mental health and QOF. SCI leads to immense economic burden on the country's health care system. The true impact of SCI can be reflected through the average prevalence rate of 1:1000, and the mean incidence estimated to be between 4-9 cases per 100,000 populations per year, worldwide. It was also reported that the gender ratio in traumatic SCI is 3:1 (men: women), whereas gender is equally distributed in non-traumatic SCI.[2]Yoga is an ancient Indian practice for bodily, mental, and spiritual communion. It was introduced by Swami Vivekananda in the United States in 1893, and from then on, yoga practice shifted toward the aims of attaining health, beauty, and body therapy, thus initiating the modern yoga age. As modern yoga increased in popularity, its use shifted to mind and body practices.

Standard yoga usually combines *asana* (posture), *pranayama* (breathing), and meditation, with 89.9% of yogis using *pranayama* and about half (54.9%) using meditation combined with *asana. Asana* involves whole body movement, which consists of multi-joint stretching and strength-building motions of varying degrees of difficulty and other fitness-based exercises.[3]

Need for the study:

Injury to the spinal cord that is damage by the trauma or external force to the spine. e.g., road traffic crashes, falls or acts of violence. After Spinal Cord injury patients develop weakness in limb, trunk instability, balance and gait impairment, for which exercise is mandatory to improve quality of life and activity of daily living and physical dependence. Nowadays yoga asana gives the powerful impact on the

person mind and body. Many studies suggest that physiotherapy rehabilitation helps to improve the quality of life and independence but there is limited study which suggest that the combination of both yoga and physiotherapy improved patients. Overall independence hence the need of my study is to evaluate the effect of Yoga Asana along with physiotherapy rehabilitation to improve overall independence in Spinal Cord Injury Patients.

Research Question?

Will there be any effect of Yoga Asana along with physiotherapy rehabilitation to improve overall independence in Spinal Cord Injury Patients.

Aim and Objectives of the study:

Aim:

The aim of this study is to investigate the effect of Yoga Asana along with physiotherapy rehabilitation to improve overall independence in Spinal Cord Injury Patients.

Objective:

To find out the effect of Yoga Asana along with physiotherapy rehabilitation to improve overall independence in Spinal Cord Injury Patients by using Spinal cord independence scale.

MATERIAL AND METHODOLOGY:

Source of Data: Smt. Sindhutai E. Vikhe Patil Pravara Spinal Cord Center, loni

Method of collection of data: (Including sampling procedure if any)

Type of Data: Quantitative

Study Design: Case Series

Study Setting- Smt. Sindhutai E. Vikhe Patil Pravara Spinal Cord Center, Department of Neuro Physiotherapy at Dr. APJAK College of Physiotherapy, PIMS, LONI.

Sample size: 4

Participants: Traumatic Spinal Cord Injury.

Material to be used:

1. Consent form
2. Spinal Cord Independence Measure Scale.
3. American Spinal Injury Association (ASIA)

SELECTION CRITERIA:

Inclusion criteria:

Participants included will be:

Traumatic Spinal Cord Injury

Age between 18 – 60 years

Gender - Both Male and Female

ASIA Scale (C and D)

Neurological level (T10 – L2)

Participants willing to participate.

Exclusion criteria:

Participants excluded will be:

1. Participants of previous stroke.
2. Other neurological conditions (Parkinson's disease, multiple sclerosis etc.)
3. Hemodynamically unstable.

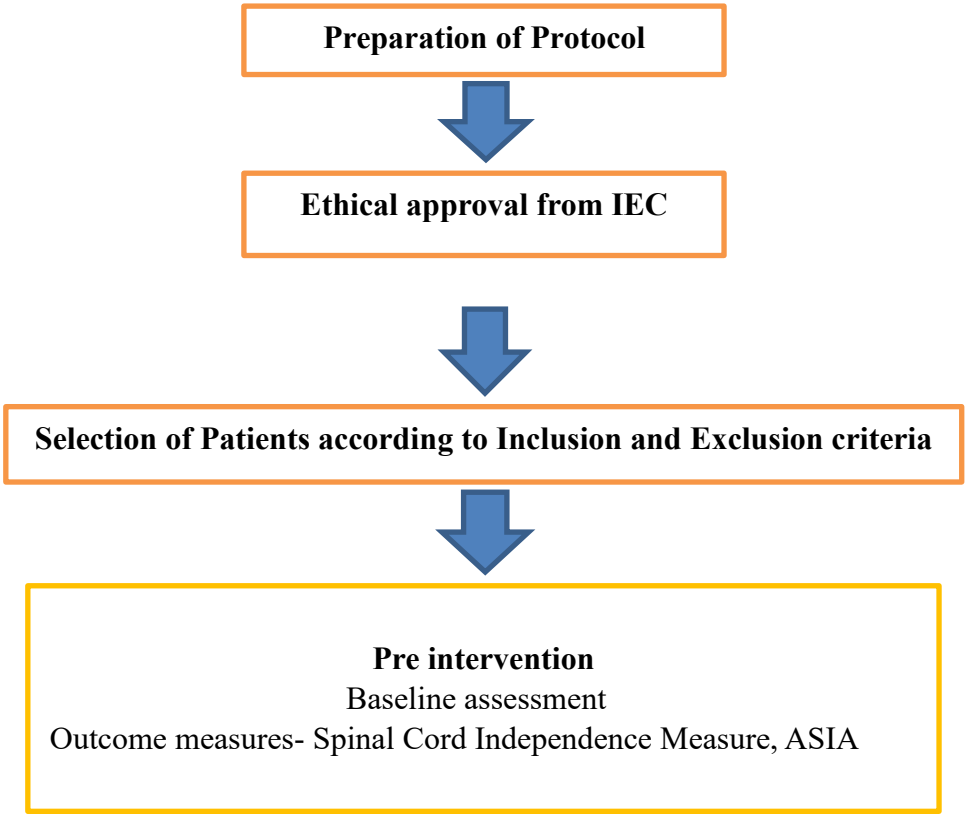
Outcome Measures:

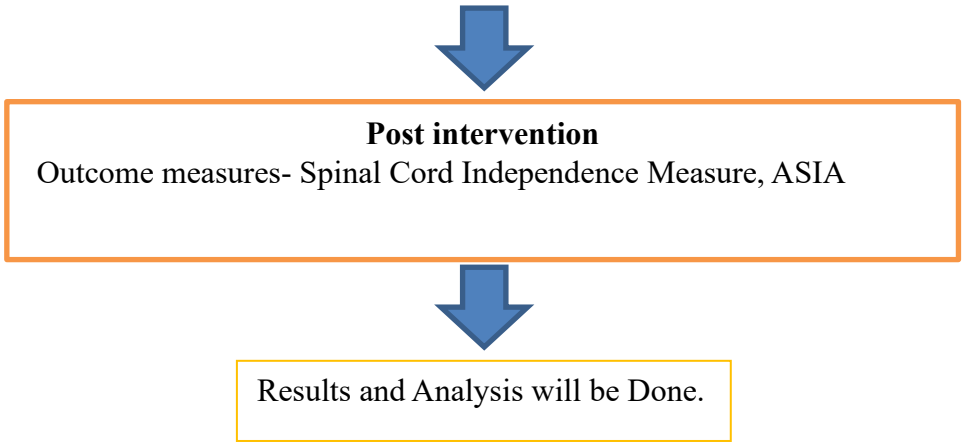
1. American Spinal Injury Association (ASIA) impairment scale
2. Spinal Cord Independence Measure (SCIM)

Variables	**Measurement Scales**	**Statistical Scale**	**Descriptive Statistics**
Age	Interview	Ratio	Mean ± SD Proportion
Gender	Observation/Interview	Nominal	Mean ± SD Proportion
Affected Side	Assessment	Nominal	Mean ± SD Proportion
Independence Performance	Assessment	Ordinal	Mean ± SD Proportion

Procedure

All the subjects will be explained about the study and written inform consent form will be signed by each one of them.





Intervention

Yoga Asana with Physiotherapy treatment 5 days/week for 4 weeks.

Physiotherapy treatment

Abdominal curl ups	5 reps * 10 sec holds
Abdominal Obliques	5 reps * 10 sec holds
Pelvic bridging	5 reps * 10 sec holds
Quadri pod	5 reps * 10 sec holds
Quadri pod with reach outs	5 reps * 2 sets
Kneeling with Swiss Ball	5 reps

Yoga

Bhujanasana	2 minutes *2set
Marjaryasana	2 minutes *2set
Parva asana	2 minutes *2set
Pawanmuktasan	2 minutes *2set
Bhekasana	2 minutes *2set
Hathayoga	2 minutes *2set
Dhanu asana	2 minutes *2set

REFERENCES:

1. Madhusmita, Monali & Ebnezar, John & Srinivasan, Thaiyar & Mohanty, Patita & Singh, Deepeshwar & Pradhan, Balaram. (2019). Efficacy of Yoga as an Add-on to Physiotherapy in the Management of Patients with Paraplegia: Randomised Controlled Trial. Journal of Clinical and Diagnostic Research. 13. 10.7860/JCDR/2019/40429.12724.
2. Monali Madhusmita ,John Ebnezar, Srinivasan T. M., Deepeshwar Singh and 2.Patitapaban Mohanty,2020, Effect of add on yoga therapy to physiotherapy in the management of spinal cord injury patients.
3. Yamamoto-Morimoto K, Horibe S, Takao R, Anami K. Positive Effects of Yoga on Physical and Respiratory Functions in Healthy Inactive Middle-Aged People. Int J Yoga. 2019 Jan-Apr;12(1):62-67. doi: 10.4103/ijoy.IJOY_10_18. PMID: 30692785; PMCID: PMC6329219.

4. Bryan S, Zipp GP, Parasher R. The effects of yoga on psychosocial variables and exercise adherence: a randomized, controlled pilot study. Alternative Therapies in Health & Medicine. 2012 Sep 1;18(5).
5. Gothe NP, McAuley E. Yoga is as good as stretching–strengthening exercises in improving functional fitness outcomes: Results from a randomized controlled trial. Journals of Gerontology Series A: Biomedical Sciences and Medical Sciences. 2016 Mar 1;71(3):406-11.
6. Catz A, Itzkovich M, Agranov E, Ring H TA. No TitleSCIM--spinal cord independence measure: a new disability scale for patients with spinal cord lesions. Spinal Cord. 1997;35(12):850-56.
7. Kirshblum SC, Burns SP, Biering-Sorensen F, Donovan W, Graves DE, Jha A, et al. International standards for neurological classification of spinal cord injury (revised 2011). J Spinal Cord Med. 2011;34(6):535-46
8. Overholser, James C., Schubert, Daniel S., Foliart, Roland, Frost F. No TitleAssessment of emotional distress following a spinal cord injury. Rehabil Psychol. 1993;38(3):187-98.
9. Estwing Ferrans C, Powers MJ. Quality Of Life Index - Spinal Cord Injury Version III. 1998;01-04
10. Susan B.O' Sullivan. Thomas J. Schmitz. George D. Fulk sixth edition Physical Rehabilitation Page no. 1001
11. Harvinder Singh Chhabra ISCos Textbook on comprehensive management of Spinal Cord Injuries Page no.156.