**Title : Effectiveness of trunk and pelvic PNF pattern for improving trunk control in patients with acute stroke.**

**Author :** *Dr. Krishna G Shinde, **Dr. Suverna S Ganvir**

*PG Student, ** Professor Dept of Physiotherapy

**Address for Correspondence :** Padmashree Dr. Vithalrao Vikhe Patil Foundation's College of physiotherapy, Ahmednagar

**Abstract-**

**Background :** In stroke, there is paralysis or weakness of one side of the body includes upper limb, trunk and lower limb leading to the disturbances in the trunk muscles. The sensory and motor impairments of upper limb, lower limb and trunk interfere with the functional performance after Stroke. Trunk performance has been identified as an important early predictor of functional outcome after Stroke. **Aims & objectives. :** To find the effectiveness of trunk PNF patter on improving the trunk balance in patients with acute stroke. **Material and method :** - an experimental study carried on 10 subjects with acute stroke.subjects who meet the inclusion criteria were asked to participate in the study, all procedure were explained to the subjects, informed consent was obtained from each subjects prior to participation. After that PNF techniques were given of trunk and pelvic for 5days in a week for 3 weeks. **Result and Conclusion :** The statistical analysis of data was performed by SPPS 11.5 Microsoft windows. The statistical significance for analysis is set up at $P < 0.05$ level. The results of present study shows statistically significant results for the trunk impairment scale ($p = 0.00$) & postural assessment scale ($p = 0.001$). This concludes that trunk and pelvic PNF pattern are helpful in improving trunk control in acute stroke patients.

**Key word** : Stroke, Trunk Impairment Scale, PASS Scale.Proprioceptive neuromuscular faciltitation (PNF)

**Introduction :** Stroke is a common neurological disorder, representing a major cause of disability. It is considered as a significant health problem, which needs an unremitting and wide-ranging rehabilitation[1].Stroke is also known as "cerebral vascular accident", "brain attack" or "apoplexy"[2,3]. According to WHO stroke is defined as "acute onset of neurological dysfunction due to abnormality in cerebral circulation with resultant signs and symptoms that corresponds to involvement of focal area of brain lasting more than 24 hours" [4] In stroke, there is paralysis or weakness of one side of the body including upper limb, trunk and lower limb leading to the disturbances in the trunk muscles. In the acute stage, the patient is unable to move his trunk in lying and neither can they sit[5].

To enhance the independence of stroke patients in daily life Proprioceptive Neuromuscular Facilitation techniques can also improve the trunk balance in acute stroke patients. Hence the Purpose of this study is to find out the effectiveness of trunk and pelvic PNF pattern to improve trunk control in acute stroke patients.

**Aims & objectives :** To find the effectiveness of trunk PNF pattern on improving the trunk balance in patients with acute and sub acute stroke.

**Material & Method :** The study has been approved by the ethical committee of PDVVPF's college of physiotherapy Ahmednagar. All subjects were recorded for demographic characteristic including Name, age, sex, address, marital status, type of lesion, side of the affected, history and underlying disease were collected from the medical records.

Both male and female patients age between 30 years to 60 years, a score of more than 25 in Berg Balance Scale, First ever unilateral stroke, the stroke duration 0 – 2 years were included in the study. Patients were excluded if they are not medically stable, uncontrolled hypertension, spinal deformity, impaired cognitive function, history of vertigo, giddiness that may impair balance and postural control, recent history of any major trauma of maximum 6 month duration, subjects with visual/ perceptual deficits/ neglect syndrome. The subjects who meet the inclusion criteria were asked to participate in the study, all procedure were explained to the subjects, informed consent was obtained from each subjects prior to participation.

**Intervention :** Patient received PNF Pattern for trunk and pelvic for 30 minutes, once in a day, 6 days per week for 3 weeks. The PNF patterns in the set used in the study are as described by Knott and Voss Upper trunk in supine position Flexion with rotation to the left (Chopping), Extension with rotation to the left (Lifting). For Lower Trunk in supine position Flexion with

rotation to the right, Extension with rotation with the right, the pelvic patterns are anterior elevation and Posterior depression.

**Data analysis :** The statistical analysis of data was performed by SPPS 11.5 Microsoft windows. The statistical significance for analysis is set up at $P < 0.05$ level. Descriptive statistics was used to examine the demographic data and stroke characteristic of all subjects.

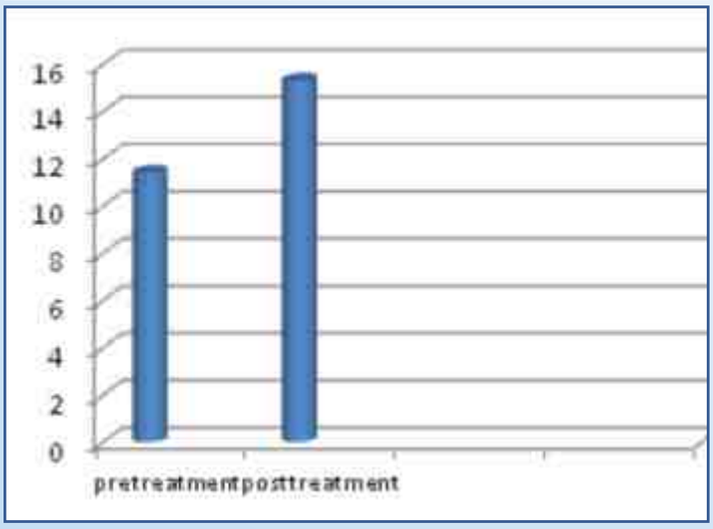
**Results :** Characteristic of subjects- A total 10 patients were originally recruited for the study from the hospital with following inclusion and exclusion criteria:

**Descriptive characteristic are shown in below Table.**

| Age | 30 to 60 years. |
|---|---|
| Gender | 6 male |
| | 4 female |
| Type of lesion | Ischemic lesion |
| Affected side | 7 right side |
| | 3 left side |
| handedness | 9 right side |
| | 1 left side |

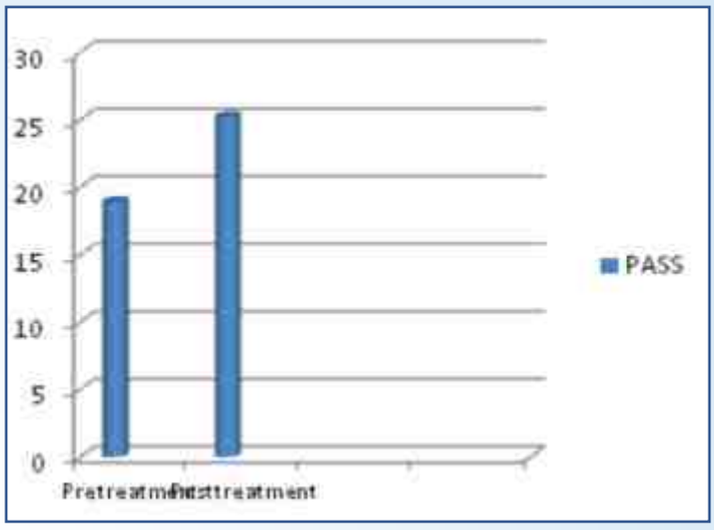
**Trunk Impairment scale score before and after the treatment.**

| Vriables | MEAN | SD | Correlation | Significance |
|---|---|---|---|---|
| Pretreatment | 11.4 | 4.42 | .92 | .OO |
| Postreatment | 15.3 | 3.12 | | |




**Postural Assessment Scale score before and after the treatment.**

| Vriables | MEAN | SD | Correlation | Significance |
|---|---|---|---|---|
| Pretreatment | 18.9 | 5.2 | .74 | .O13 |
| Postreatment | 25.2 | 4.2 | | |




**Discussion :** Most of the studies in stroke rehabilitation are concerned with the management of the upper or lower extremity dysfunction. In contrast with limb rehabilitation, trunk restoration is a rather neglected area of stroke rehabilitation research. Hence, this study aimed to evaluate the effects of Pelvic Proprioceptive Neuromuscular Facilitation (PNF) technique on facilitation of trunk movement in acute and sub acute stroke patients. Post treatment, result shows improvement in terms of static and dynamic sitting balance and coordination's when assessed by Trunk Impairment Scale. There was also improvement in maintain and changing posture when assessed by postural assessment scale.

There was 1.888 times more improvement in post treatment trunk impairment scale, suggesting better trunk muscle activity. The probable mechanism by which PNF could have worked is by facilitating the neuromuscular mechanism, thus by stimulating the proprioceptors. Kabat reported that a greater motor response can be attained when employing facilitating techniques in addition to resistance. Facilitation resulted from a number of factors such as application of stretch, use of particular movement patterns and use

of maximal resistance in order to induce irradiation. In some studies it is showed that when a muscle contraction is resisted, that muscles response to cortical stimulation increases. The use of particular movement patterns also causes changes in spinal and supraspinal level [6,7]

There was 1.720 times more improvement in postural assessment scale after treatment intervention, suggesting carry-over effect of pelvic PNF in improving balance. The PNF approach to treatment uses the principle that control of motion proceeds from proximal to distal body regions. Facilitation of trunk control, therefore, is used to influence the extremities.

The result of the present study found improvement in trunk performance in terms of static sitting balance and dynamic sitting balance and coordination. However, the improvement in the entire outcome measures in this study could be due to natural recovery also, as we have recruited the acute and sub acute stroke participants.

**Conclusion :** This study result showed that the trunk and pelvic Proprioceptive Neuromuscular Facilitation technique are effective on facilitating trunk control and balance in acute and sub acute stroke patients

This study result showed that the trunk and pelvic Proprioceptive Neuromuscular Facilitation technique are effective on facilitating trunk control and balance in acute and sub acute stroke patients.

**Implications for practice :** Trunk and Pelvic PNF technique can be used along with the regular physiotherapy programme to improve the trunk control and balance in acute and sub acute stroke patients.

**Limitations of the present study:** This study analyzed the results between pre and post treatment values. No follow-up assessment was done to find out the carried over effect, all the participants of our study were. Recruited from a single geographical location.

**References :**


1. Dally S, and Ruff RL, Electrically induced recovery of gait components for older patients with chronic stroke, Am J Phys Med Rehabil.79, 2000, 349- 60.
2. Thompson J E et al, The evolution of surgery for the treatment and prevention of stroke. The Willis Lecture, Stroke 27(8), 1996, 1427-34.
3. Kopito, and Jeff, A Stroke in Time. 6(9), 2001, MERGINET. Com.
4. World Health Organization, Cerebrovascular Disorders Geneva: World Health Organization. 1978.
5. Tsuji T, Liu M, Hase K, Chino N. Trunk muscles in persons with hemiparetic stroke evaluated with computed tomography. J Rehabil Med. 2003; 35:184-88.
6. Susan B O Sullivan and Thomas J Schmitz, Physical Rehabilitation (Fifth edition. New Delhi: Jaypee Brothers Publication; 2007).
7. Susan S. Adler, Dominiek Beckers and Math Buck, PNF in practice, an illustrated guide (Third edition. Germany: Springer Publication; 2008)


**FIRST AMBULANCE**

**First Hospital based ambulance service in the world established at Bellevue by Dr. Edward L. Dalton in 1869**

**(source**

kandalakis, Panagiotis N.; Lainas, Panagiotis; Zoras, Odyseas; Skandalakis, John E.; Mirilas, Petros (2006). ""To afford the wounded speedy assistance": Dominique Jean Larrey and Napoleon". World Journal of Surgery (Springer-Verlag) 30 (8): 1392–9.)