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IMPORTANCE AND INFLUENCES OF PROPRIOCEPTIVE NEUROMUSCULAR FACILITATION EXERCISES IN CHILDREN

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Abstract:

Objective: *The objective of the study was to assess how stroke patients are influenced by Proprioceptive Neuromuscular Facilitation exercises and importance of these exercises.*

Methods: *The research study was organized at Mayo Hospital, Lahore. The time period for this study was from January 2018, to June 2018. The selection was done irregularity. The participants were categorized into two ground, in participants of group I and II. Proprioceptive Neuromuscular Facilitation therapy and passive range of motion exercises were applied respectively. Medical Research Council scale was used for muscle strength assessment, Questionnaire was used for gathering of information. For assessment of data, SPSS was used.*

Results: *Total patients enrolled for this study were 50. The age of these patients was less than 15 years. In the control group I and II, at base line, muscle strength of affected side was 2.36 ± 0.49 and 2.60 ± 0.50 respectively. This value increases remarkable in both groups as 4.76 ± 0.43 and 3.80 ± 0.50 respectively after three months. ($p < 0.0001$).*

Conclusion: *In the reduction of stiffness and pain and for enhancing working ability, Proprioceptive Neuromuscular Facilitation method proved efficient.*

Key words: *Haemorrhagic stroke, Ischaemic stroke, PNF technique, Stroke, Cerebrovascular accident (CVA).*

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INTRODUCTION:

Among younger, the incidence of stroke is not frequent. The stroke is indicated by paralysis, fits and loss of speech. The main factors that contribute to stroke are uncertain. But some considerable causes of stroke include clumps travelling from heart and brain blood vessels of the brain. When the blood couldn't reach to specific brain part, stroke occurs. Consequently, cells of that region die. Due to restricted blood supply, the cells in the neighbor are affected that region is unable to perform functions normally and destroyed eternally [1]. All around the globe, it is estimated that out of 100,000 every two children suffer from this stroke [2].

Among youngster, there observed high incidence of stroke in the following years. The process of treatment is not stable and has many complexities. So, it is not easy to identify and control this disorder. The stroke is not exhibited equally in children and elders. In both the nature of stroke is different. Also, it influences children and adults in a different way. The incidence of ischaemic stroke in children and adults in western countries is 55 % and 80 – 85 % respectively [3]. After the management of stroke, one of the techniques that is used is the Proprioceptive Neuromuscular Facilitation (PNF). Also, for eventual repining of motor capabilities of patient, functional therapy approach is used in Proprioceptive Neuromuscular Facilitation (PNF) (Hold – Relax, Agonist Contract and Contract – Relax) [4]. The objective of the present study was to assess how stroke patients are influenced by PNF and importance of these exercises.

PATIENTS AND METHODS:

The research study was organized at Mayo Hospital, Lahore. The time period for this study was from January 2018 to June 2018. The selection was made randomly. The age of participants was less than 15 years. The patients were weakened from one side of body for 3 months. The participants were categorized into control and experimental groups through systematic sampling. In group I and II, Odd and even – numbered patients were included respectively. In participants of group I and II, Proprioceptive Neuromuscular Facilitation therapy and passive range of motion exercises were applied respectively. Questionnaire was used for gathering information.

For management, physiotherapy was done which have long procedure. It includes daily stretching and ROM exercises for flexibility enhancement, isotonic exercises for at least two days per week, infra – red application (dry heat) for 10 minutes, isometric exercises to enhance strength and warm up ROM exercises for 5 minutes. In both groups, the comparison was made to check the improvement of muscle power from base line. Improvement was referred as increase in strength of affected muscle. At 1 months 1,2 and 3, by using Medical Research Council (MRC), patient was assessed. Muscle power was graded as grade 0, I, II, III, IV and V if muscle is not able to move, flicker of movement moves in gravity – assisted position, move against gravity, move under sub – maximal resistance and move under normal power respectively [5]. In the form of percentages and frequencies, qualitative data was illustrated. On the other hand, in order to illustrate quantitative information, Mean Standard Deviation (SD) was used. SPSS was used for data assessment. In different time duration, to check difference in mean muscle strength of the affected side in both group, repeated measurement analysis of variance (ANDVA) was employed. In order to compare muscle strength of affected side, independent sample t – test was employed. The p – value was considered valuable if less than 0.005.

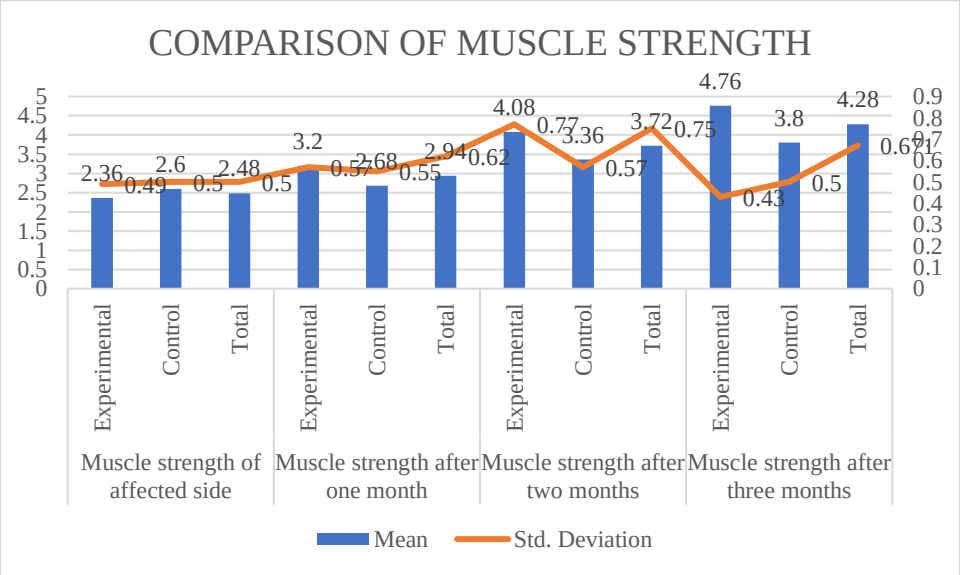
RESULTS:

Total patients enrolled for this study were 50. The age of these patients was less than 15 years. In the control group I and II, at base line, muscle strength of affected side was 2.36 ± 0.49 and 2.60 ± 0.50 respectively. After one month, the muscle strength for Control groups was 2.68 ± 0.55 and for experimental groups, was 3.20 ± 0.57. There observed an eventual improvement in next three months after treatment. 4.08 ± 0.77 and 3.36 ± 0.57 was the strength of muscle for experimental and Control groups after the time period of two months. The improvement after the period of the months was remarkable (Mean 4.76 ± 0.43). The improvement in muscle strength was from 2.36 ± 0.49 to 4.76 ± 0.43 after three months which was maximum. According to MRC scale, this was normal improvement in different time interval, to check the differences in mean muscle strength of affected side with in both groups, recumbent measurement ANOVA was used. [$p < 0.0001$] (Table and figure).

Table: Comparison of muscle strength of affected side in experimental and control groups.

Statistics		Mean	Std. Deviation	P-value
Muscle strength of affected side	Experimental	2.36	0.49	0.093
	Control	2.60	0.50	
	Total	2.48	0.50	
Muscle strength after one month	Experimental	3.20	0.57	0.002
	Control	2.68	0.55	
	Total	2.94	0.62	
Muscle strength after two months	Experimental	4.08	0.77	< 0.0001
	Control	3.36	0.57	
	Total	3.72	0.75	
Muscle strength after three months	Experimental	4.76	0.43	< 0.0001
	Control	3.80	0.500	
	Total	4.28	0.671	

The value of P less than 0.005 was remarkable.



DISCUSSION:

In the reduction of stiffness and pain and for enhancing working ability, Proprioceptive Neuromuscular Facilitation method proved efficient. Its efficiency was considered after comparing the efficiency of PNF method with Passive ROM exercise [6]. Using a randomized control trial format, this study first analyzed that how standardized measures of stroke severity influenced by systematic programmer of RUM [7]. These observed a slow recovery of patients' motor control in other physical therapy techniques. So, in management after stroke, the most famous and efficient technique is PNF according to history. In avoiding the repetition of disorder, this technique is very helpful. Its efficiency is considered for both children and adults [8]. At first, it was only employed for treating children suffering with cerebral palsy (CP). Now, in both neurological and orthopedic issues, this technique is considered effective. Clinicians in order to involve in treatment, require strong proof for decision. Also, there are restricted research studies regarding treatment and control of stroke in children. In the management of stroke, there was a requirement of long procedure. It needs attention continuously. For effective management, children should be involved fully [9]. The team of professionals should be responsible.

CONCLUSION:

In the reduction of stiffness and pain and for enhancing working ability, Proprioceptive Neuromuscular Facilitation method proved efficient. Moreover, in children, PNF technique was very affluent.

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