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A STUDY TO COMPARE THE EFFECTS OF MIRROR BOX THERAPY VERSUS PROPRIOCEPTIVE NEUROMUSCULAR FACILITATION TECHNIQUES ON UPPER LIMB FUNCTIONS AMONG STROKE PATIENTS

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ABSTRACT

Background of the Study: According to Holm thieme, nadine morkish 2018 which concluded that mirror box therapy enhances the upper limb motor function exercises in hemiparetic patients. Mirror therapy was used to improve motor function after stroke. **Aim of the Study**: Aim of the study was to compare the effects of mirror box therapy versus proprioceptive neuromuscular facilitation techniques on upper limb functions among hemiparetic stroke patients.

Objectives of the Study

- To assess the effects of mirror box therapy on upper limb function among hemiparetic strokepatients.
- To assess the effect of proprioceptive neuromuscular facilitation techniques on upper limb function among hemiparetic stroke patients.
- To compare the effects of mirror box therapy versus proprioceptive neuromuscular facilitationtechniques on upper limb functions among hemiparetic stroke patients.

Methodology: This study consists of 30 samples of acute hemiparetic stroke patients who were divided into 2 groups, Group A consisting of 15 samples group B with 15 samples. Mirror box therapy was given to group A targeting upper limbs (shoulder, elbow, wrist, and fingers). Proprioceptive neuromuscular facilitation techniques was given to group B for the duration of 4 weeks, 45min\day, 3days\week. Pre and post values of Fugl meyer (upper extremity) were taken.

Outcome Measures: The Fugl-Meyer Assessment (FMA) is a stroke.
specific, performance-based impairment index. **Result**: The pre and post test values of Fugl meyer proved the significant improvement inacute hemiparetic stroke patients.

KEYWORDS: Stroke, mirror box therapy, proprioceptive neuromuscular facilitation, Fugl Meyer, upper limb.

INTRODUCTION

Stroke is the common neurological disease that leads[1] to mortality morbidity and disability in the adult population.[2] It is the leading cause of severe term disability in adults. WHO defined stroke as "Rapidly developing clinical signs of focal (or global) disturbance of cerebral function; lasting more than 24 hours or leading to death[3], with no apparent cause other than vascular origin".[4]

AIM OF THE STUDY: The aim of the study was compare the effects of mirror box therapy versus proprioceptive neuromuscular facilitation techniques on upper limb functions among hemiparetic stroke patients. **Mirror box therapy** is relatively new therapeutic intervention for stroke patients.[6] It is a simple, inexpensive and, most importantly, patient- directed treatment that may improve upper- extremity function. **Proprioceptive Neuromuscular Facilitation (PNF)** is a therapeutic approach defined as promoting the response of the nerve impulses to recruit muscles through stimulation of the proprioceptors in addition to other sensory stimuli (tactile, visual or verbal) in the beginning i.e. at cognitive phases that decrease overtime as learning progresses in stroke patients.[11]

OBJECTIVES OF THE STUDY

- To assess the effects of mirror box therapy on upper limb function among hemiparetic stroke patients.
- To assess the effect of proprioceptive neuromuscular facilitation techniques on upper limb function among hemiparetic stroke patients.

- To compare the effects of mirror box therapy versus proprioceptive neuromuscular facilitation techniques on upper limb functions amonghemiparetic stroke patients.

RESEARCH DESIGN AND METHODOLOGY

- An experimental study design was conducted with 30 patients within the age group of 40 to 60 years who fulfilled the inclusion and exclusion criteria.

INCLUSION CRITERIA

- Stroke patients with age: 40-60 years.
- Patients belongs to the Brunnstrom stage of motor recovery forupper extremity: 1-3.
- Time since stroke: 2months - 1year.
- Both the gender of male and female patients were included.

EXCLUSION CRITERIA

- Severe cognitive disorders that would interfere with studypurpose (MMSE < 23/30).
- Bilateral hemiplegia.
- Medically unstable patient.
- Patients with visual impairments.

OUTCOME MEASURE: The Fugl-Meyer Assessment (FMA)

PROCEDURE

The total 30 samples who fulfilled the inclusion and exclusion criteria were recruited for the study. Written informed consent was obtained from the samples. The procedure were explained to the samples, they were divided into two groups namely GROUP A-15 samples and GROUP B -15 samples. The mirror box therapy exercises were given for the 15 samples (group A) and the proprioceptive neuromuscular facilitation techniques were given forthe 15 samples of (group B).

1. Group - A: Mirror box therapy group (15 subjects)

Patients were given Mirror therapy and conventional therapy.

Mirror therapy

- The patient was made to sit on chair in front of a table, on which a mirror was placed.
- The patient was asked to place both unaffected and affected hands on each side of the mirror.

- Reflected side of mirror was placed towards the unaffected side of the patient.
- The patient was then asked to perform following exercises with unaffected upper limb and with affected limb (as much as possible).

While doing above exercises, the patient was asked to observe the reflection of unaffected extremity in mirror (which looks like the affected extremity) and to imagine that his/her affected extremity is moving normally (motor imagery). The Mirror therapy was lasted for 45min/day, 5 days/week for 4 weeks.

2. Group – B: proprioceptive neuromuscular facilitation group (15subjects)

- Rhythmic initiation of upper limb.
- Slow reversal of upper limb.
- Agonistic reversal of upper limb.

PNF elements such as manual contact, stretch, resistance, and verbal cuing were incorporated along with treatment duration of 45 min /day.

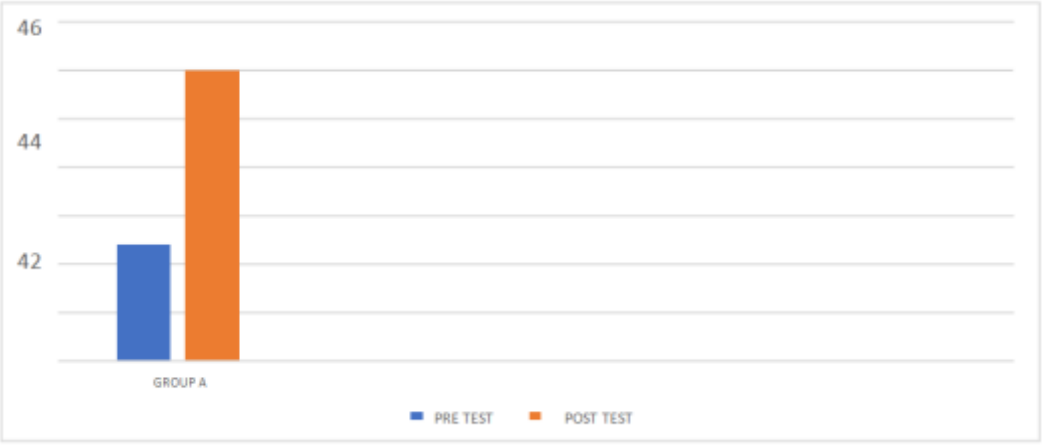
STATISTICAL ANALYSIS

Group A: MIRROR BOX THERAPY

Table 1: pre test and post test of the mirror box therapy.

Group A	MEAN		STANDARD DEVIATION		T- VALUE	P- VALUE
	PRE TEST	POST TEST	PRE TEST	POST TEST		
FUGL MEYER	36.8	44.0	3.7	4.9	4.5416	<0.0001

Graph 1: Comparison of Pre and Post Test Value of Group A (Fugl Meyers).



Graph 1: Comparison of Pre Test and Post Test Value of Group A.

Group B: PNF (Proprioceptive Neuromuscular Facilitation).

Table 2: pre test and post test proprioceptive neuromuscular facilitation.

Group B	MEAN		STANDARD DEVIATION		T- VALUE	P-VALUE
	PRE TEST	POST TEST	PRE TEST	POST TEST		
FUGL MEYER	35.5	41.5	3.9	5.09	3.6239	<0.0001

Graph 2: Comparsion of Pre and Post Test Value of Group B (Fugl Meyer).

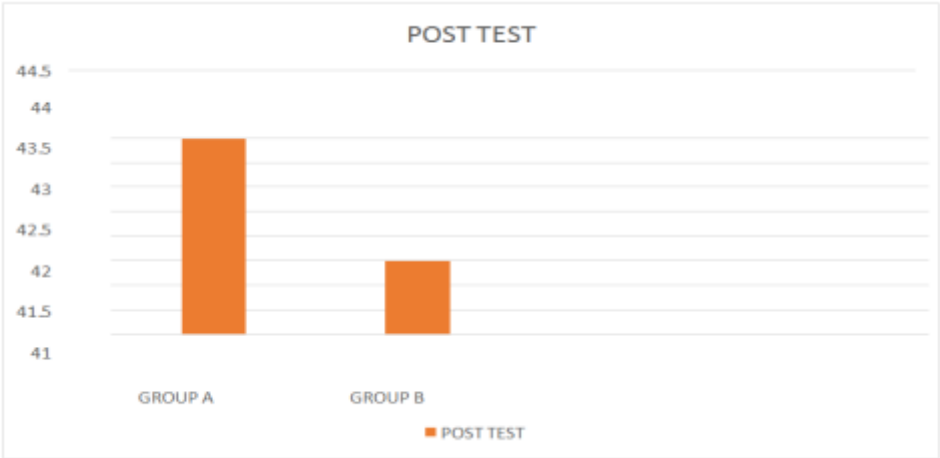
Graph 2: Comparison of Pre Test And Post Test Value of Group B.

GROUP A VS GROUP B

Table 3: comparison of post test value of group A and group B.

SL.NO	MEAN	STANDARD DEVIATION	T- VALUE	P- VALUE
	POST TEST	POST TSET		
GROUP A	44.0	4.9	4.5416	<0.0001
GROUP B	41.5	5.09	3.6239	<0.0001

Graph 3: COMPARSION OF BOTH GROUP A AND B (FUGL MEYER)



Graph 3: comparison of post test value of group A and group B.

RESULT

- The statistical values of the respective groups revealed that Group A (mirror box therapy) and the group B (proprioceptive neuromuscular facilitation techniques) for hemiparetic stroke patients are as follows: T- value 4.541, the P value <0.0001and T value -3.629,P value<0.0001.
- Hence the study result showed statistical improvement in hemiparetic stroke patients in both group A and group B. but there was a statistically greater improvement in the group A(mirror box therapy and proprioceptive neuromuscular facilitation techniques)than group B.

DISCUSSION

The study was conducted to determine the effects of mirror box therapy versusproprioceptive neuromuscular facilitation techniques on upper limb functions among hemiparetic stroke patients.30 samples were selected and was divided into 2 groups. GROUP A (mirror box therapy) and GROUP-B (proprioceptive neuromuscular facilitation techniques).

The assessments were taken for the subjects and the mirror box therapy and PNF physiotherapy were given for the individuals and the result were measured using the mirror box therapy by fugl meyer. The collected data was statistically analyzed by Unpaired t-test. The pretest measures of the fugl meyer were evaluated, and the same is evaluated and recorded as post-test values after 4 weeks of training. In group A (mirror box therapy), the average mean difference of 4.9, t value of 4.5416 and a p value of <0.0001. In group B(PNF) mean difference of 41.5, t value of 5.09 and a p value of <0.001 in averagemean difference of value of 2.4330 and a p value of <0.001 in fugl meyer. The post-test values of the Group A and B were significantly different, according to data collected Despite the fact that both groups improved statistically, group A(mirror box therapy)improved functional gains of upper extremity, more than the Group-B(PNF) amonghemiparetic stroke patients.

CONCLUSION

This study concluded that both the groups were effective in improving upper limb functions. However group A(mirror box therapy) was more effective than group B(PNF) in improving upper limb functions.

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