To Elucidate the Effectiveness of Mulligan Technique (MWM) In Finger Stiffness (Pilot Study)

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Abstract

Stiffness is one of the complications in traumatic injury as it affects many of the daily activities. Every individual at least once in his lifetime susceptible to any type of traumatic injury. Hand and wrist are most active and intricate part of Upper extremity due to this they are vulnerable to injury leading to large functional difficulties. The functional activities affected are self-care activities and vocational activities.(MWM) technique bring about improvement in pain and functional status after immediate application. This pilot study aims to elucidate the effectiveness of MULLIGAN TECNIQUE (MWM) in finger stiffness. The aim and objectives are to investigate the hypothesis that MWM technique in finger stiffness is more effective than other conventional therapy in finger stiffness. Finger stiffness hinders day to day activities and all vocational activities. Therefore, reducing finger stiffness through MWM technique would relieve stiffness and there by effective functional mobility of fingers are achieved. The methodology used in this study is a single blind study of 30 participants aged between 20 to 40 years, divided evenly into Group A and B. Group A received only wax bath and graded oscillatory mobilization. In this study, the pre and post outcome measures were measured through Grip strength by Hand dynamometer and Pain by VAS scale. The result of the study shows that Mulligan technique (MWM) along with graded oscillatory mobilization and wax bath is beneficial effect on finger stiffness rather than graded oscillatory mobilization and wax bath.This pilot study states that the experimental hypothesis is proved with regard to the variables of pain and grip strength. Further studies on the effect of MWM in various specific joint stiffness and aetiological conditions entitles to determine the absolute and relative effect in these population.

Keyterms: Finger stiffness,Visual Analog Scale (VAS), Hand dynamometer, MULLIGAN technique Mobilization with Movement(MWM).

I. INTRODUCTION

Human hand is characterised as a symbol of "power'' and as an "extension of intellect and seat of will". Brain is responsible for the "design of civilisation" and hand is responsible for the "design of formation". Hand and wrist are the most active and intricate part of upper extremity, due to this they are vulnerable to injury leading to large functional difficulties. The major functional difficulties include stiffness. Joint stiffness is limitations in the range of motion and resistance encountered while the joint is moved through the range of motion. When a bone break there is bleeding from the bone ends, bleeding leads to scaring which results in stiffness particularly in the fingers. To manage finger stiffness is a clinical challenge and the most commonly prescribed intervention for the management of finger stiffness are splints and analgesics. Many treatments have been advocated based on their presumed effect on postulated mechanism of stiffness. These types of treatment fall into two categories (i.e.) conservative treatment and surgical intervention. The conservative management includes thermal modalities, exercise therapy, manipulation, mobilisation and splints. This journal aims to investigate the effect of mobilisation with movement in finger stiffness.

II. AIM & OBJECTIVES OF THE STUDY

The aim is to investigate the hypothesis that there is a significant improvement in Mulligan technique (MWM) in the management of finger stiffness and

a) To find out the effectiveness of MWM technique in finger stiffness.
b) To determine the efficacy of Mulligan technique (MWM) in finger stiffness.
c) To determine the efficacy of conventional therapy in finger stiffness.

III. NEED OF THE STUDY

There is a lack of scientific information about Mulligan Mobilization with Movement (MWM) technique. This MWM is claimed to bring about improvement in pain & status of function immediately following their application. The currently available procedure of treatment is time consuming and sometimes residual functional disability due to stiffness can takes place. The correct biomechanical and bio physiological alignment of finger takes place with manually mobilizing fingers along with movement.

IV. HYPOTHESIS

The hypothesis states that there is significant improvement in Mulligan technique (MWM) in the management of finger stiffness**.**

V. METHODOLOGY

A total number of thirty subjects were selected in the outpatient department of Swamy Vivekanandha institute of health science department of physiotherapy by purposive sampling method by who fulfilled the inclusion criteria. The study includes pre-test and post-test experimental design format.

SAMPLE SELECTION CRITERIA

Inclusion Criteria:
Age: 20 to 40 years.
Sex: Both Male and Female.
Traumatic conditions without Neuro vascular disorder.

Exclusion Criteria:
Inflammatory conditions.
Infective conditions.
Degenerative conditions.
Osteoporosis.
Congenital Hand deformities.
Immobile contractures.
Trigger finger and thumb.
Uncooperative patients.

OUTCOME MEASURES:

Hand dynamometer: It is an instrument which is design to measure isometric force exerted and grip strength is recorded.

VAS scale: Visual analogue scale is used as a tool for quantifying pain intensity.

VI. PROCEDURE:

In this single blind study,a total of thirty patients with finger stiffness were picked aged between 20 and 40 according to selection criteria they were assigned in two groups A & B based on odd- even allocation. Patient in Group A (control) received only Wax bath and Graded Oscillatory Mobilisation, patients included in Group B (experimental) received MWM, Wax bath and Graded Oscillatory Mobilisation.Prior to the commencement of the intervention, baseline measurement of pain was taken using VAS and subsequent measurements were taken on the third and fifth day.To measure the handgrip,the patients were positioned comfortably and made to pull the hand piece and measured the grip strength and then the procedure was repeated for three times and the average wascalculated. The collected data was meticulously analysed to discern any changes or improvements in the measured parameters between the two groups. This analysis

was aimed to evaluate the effectiveness of MWM as a potential intervention in the management of finger stiffness.

VII. DATA ANALYSIS

Table 1: Group A – Pre and Post values.

Outcome Measure	Mean		Standard Deviation		Paired 't' test value
	Pre test	*Post test*	*Pre test*	*Post test*	
VAS score	6.33	4.8	1.53	0.41	9.28
GripStrength	5.2	7.13	1.93	0.695	8.67

Table 2: Group B – Pre and Post values.

Outcome Measure	Mean		Standard Deviation		Paired 't' test value
	Pre test	*Post test*	*Pre test*	*Post test*	
VAS score	5.33	2.06	3.27	0.98	13.57
GripStrength	7.33	12.13	4.8	1.07	16.02

Table 3: Comparison of effectiveness between Group A and Group B

Outcome Measure	t-value		p-value	
	Group A	*Group B*	*Group A*	*Group B*
VAS score	9.28	13.57	3.27	0.05
GripStrength	8.67	16.02	4.8	0.07

VIII. RESULT:

The Data analysis shows significant improvement in VAS score and Grip strength when applying Mulligan technique (MWM) in the finger stiffness.

IX. CONCLUSION:

Based on the observation, there is a significant improvement in pain and grip strength it can be concluded that MWM technique have a positive impact in reducing finger stiffness. Further research on large samples and longer duration to establish improvement as a long-term effect.

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