

Neuromuscular rehabilitation improves strength and reduces functional impairment following moderate – severe wrist injuries

O'Sullivan, H.¹, Milner, Z.¹, and Parfett, K.¹ ¹. Hand Therapy Department, Royal Melbourne Hospital

Background

Hand therapy literature related to wrist injury rehabilitation has changed direction in the last five years. This is due to a greater understanding of wrist biomechanics, importance of sensorimotor function, neuromuscular joint control and proprioceptive feedback. Despite this, wrist rehabilitation continues to primarily focus on conventional methods of AROM and strength training.

The Royal Melbourne Hospital provides services to more than 200 distal radius fractures annually, providing an opportunity to implement and evaluate the effectiveness of a neuromuscular rehabilitation program.

Aim

This study aimed to determine the effectiveness of a neuromuscular rehabilitation program following moderate-severe wrist injury.

Intervention

The program was developed based on stages 1-6 as described by Hagert (2010)

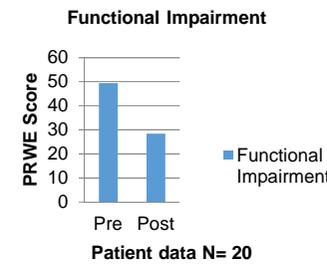
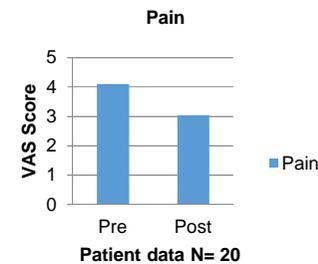
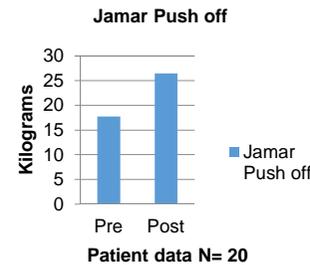
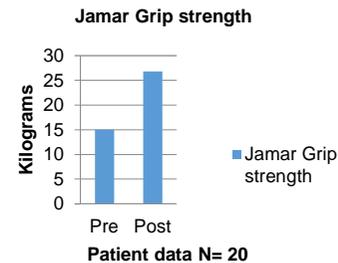
- Inclusion criteria**
- Patients consented to rehabilitation program
 - Moderate-severe wrist injury (Melone Classification II-IV)

Variable	Measurement tool
• AROM	• Goniometer
• Grip Strength	• Jamar Dynamometer
• Pinch Strength	• Jamar Pinch Gauge
• Axial Loading	• Jamar Push Off Test
• Pain	• Visual Analogue Scale
• Function	• Patient Rated Wrist Evaluation (PRWE)

- Program**
- 45 minute group, weekly attendance for 8 weeks
 - Individual programs including up to 8 exercises with appropriate grading
 - Three sets of each exercise performed

Evaluation

These graphs reflect the results of the first 20 patients that have completed this neuromuscular rehabilitation program. Results below indicate mean.



Discussion

The results from preliminary data analysis demonstrate an overall improvement for all patients that attended the neuromuscular rehabilitation group.

Most importantly, all patients improved their functional abilities as demonstrated on the PRWE. All participants who attended the group demonstrated improvements in all outcomes measured.

A group based neuromuscular rehabilitation program for patients following moderate-severe wrist injury enables improved functional outcomes for patients.

Significant findings for Allied Health

The neuromuscular rehabilitation program described addresses not only AROM and strength, but also conscious and unconscious neuromuscular facilitation, proprioceptive awareness and kinesthesia, in line with current rehabilitation concepts.

This cost-effective model facilitates improvements in all aspects of wrist rehabilitation, including improved functional outcomes whilst engaging patients in a group setting. This program could easily be adapted to suit other healthcare service provider needs.

Additional data and analysis is required to consolidate these preliminary findings.

Acknowledgements

Stephanie Ellis & Marlena Klaić for their assistance with data collection and support. Monash Health for their ongoing involvement with recruitment data collection.

References: available upon request

Correspondence to Hayley.O'Sullivan@mh.org.au

