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Elbow Stiffness: Therapeutic Management

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3 Learning Outcomes

- After this course, participants will be able to describe the joint and soft tissue mobilization techniques of the elbow.
- After this course, participants will be able to describe neurophysiological/proprioceptive/occupation-based interventions to reduce co-contraction phenomena.
- After this course, participants will be able to list orthotic options to prevent and resolve elbow stiffness.
Elbow Stiffness: Therapeutic Management

Osteokinematic Vs. Functional Movement of the Elbow

- Extension/Flexion (0-145)
- Supination/Pronation (85/80)
- Functional extension/flexion (30-130)
- Functional pronation/supination (50/50)
Accessory Movements

The flexion/extension axis demonstrates very little change in the instant center of rotation.

Motion occurs around a fixed axis with little translation.

Distraction mobilization: Scoop maneuver for flexion
Gliding mobilizations: Only in same direction as osteokinematic motion

Relevant Arthrology

- Humeroulna joint: Simple Hinge joint; Concave on convex with one freedom of movement
- Humeroradial joint: Pivot joint with one freedom of movement
- Concave on convex
Superior R/U Joint: Arthrology

Closed Pack Positions
- Humeroulna: Full extension
- Humeroradial: 90 flexion 5 supination.
- Proximal radioulnar: 5 Supination.

Open Pack Position
- Humeroulna: 70 flexion in 10 supination
- Humeroradial: Full extension/supination
- Proximal radioulnar: 70 flexion, 35 supination

(*Q1)
Joint Mobilizations of the Elbow

Humeroulna Distraction Scoop: Flexion

Proximal humeral stabilization with a second person when possible
Humeral Ventral Glide: Extension
Stabilization of the ulna
Movement through the humerus

Radial Head: Pronation
Dorsal glide moving from an anterior to posterior direction.

(*Q2)
Radial Head: Supination

Stabilization: Humerus
Mobilization: Radial head posterior to anterior

Soft Tissue Mobilization for Elbow Stiffness

Muscle Assessment and Treatment
Soft Tissue Management

Assessment
- Flat assessment
- Pincer assessment
- Length assessment

Treatment
- Stroking massage
- Breathing technique
- Muscle Lengthening
  - Contract-relax
  - Anchor and mobilize

Triceps Assessment/Treatment
Biceps Assessment and Treatment

Pronator Teres Assessment/Treatment
Exercise Intervention

Overhead Motion Protocol

  - Begin in supine (Dávilia & Johnson, 2006) for 3-4 weeks.
  - Elbow extension/flexion in pronation.
  - Elbow extension/flexion in supination.
    - 10-15 reps per exercise
    - 4-5 sessions per day

("Q4)
Progression to Active Assisted in Sitting: 3-6 weeks

Case 1. Solomon
Show Early Exercise Video
Case 2. Carol
Co-contraction Phenomena

Plyometric Approaches: Add to strengthening program: 8-12 weeks
Orthotic Intervention
Prevention and Resolution of Stiffness

Designs of Elbow Mobilization Orthoses

- Serial Static
- Dynamic
- Static-Progressive

- All designs improve PROM. No significant difference in outcomes between dynamic and static-progressive orthoses. (Müller et al., 2012)

(*Q6)
Principles of Orthotic Fabrication

- 3-points of Fixation rule
- 2/3 length of forearm
- Mobilization force should occur directly to the area of stiffness
- Dose = applied level of force X duration
- Consider
  - Intensity
  - Frequency
  - Duration
  - Compliance

(*Q7)

Optimum dosing is unknown!

- Current literature suggests the 30 minute/3 times per day protocol attains satisfactory results. (Müller, et al., 2012).

- However: previous studies on TERT suggest a wearing schedule of 6 hours per day (Glasgow et al., 2003).

- Comparative dosing studies are not available.

(*Q8)
Dislocation with LCL

- Treatment with hinged splinting with the forearm reduced in pronation
- Hinged splint does not fully protect from varus stress.
  Manocha et al., (2018)

(*)Q9
Hinged Elbow Fixator
Hinged Fixator Extension Splinting

References:


References:


References


Questions?

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