Choice of Technique & Grade with Manual Therapy Treatment

cervical dysfunction

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Treatment of Mobility Restriction

Technique choices:

- soft tissue techniques
- functional technique
- manual traction
- neuromeningeal system mobilization
  - sliders
  - tensioners
- passive mobilizations
  - PIVM Type
  - PAVM Type
    - Z or U joint focus
  - NAGS
- active mobilizations
  - MET
  - SNAGS / SMWAMS
- exercise

Grading Systems:

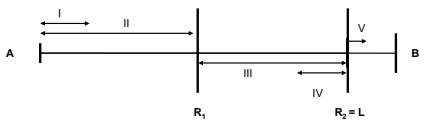
Kaltenborn:

- Stage 1
  "loosen"
  - before the start of resistance (R1)
- Stage 2
  'take up the slack'
  - between R1 and R2
  - well into resistance
- Stage 3
  "stretch"
  - attempts to move R2 further into range

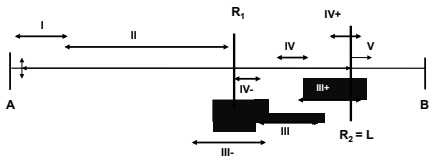
Maitland:

- Grade I
  - small amplitude movement at beginning of the range
- Grade II
  - large amplitude before R1
- Grade III
  - large amplitude into resistance
- Grade IV
  - small amplitude into resistance
- Grade V
  - high velocity, low amplitude thrust at the barrier

Movement Diagram: original grading system



modification of grading system



pain > resistance

- pain is the main consideration
- movement limited by P2 rather than resistance
- irritable
- often muscle reactivity or guarding present
- severe pain or pain at rest

Pain

Position	
Strength	
Grade	
Speed	
Duration	
Choice	

Pain

Position	resting position , neutral, least pful
Strength	
Grade	
Speed	
Duration	
Choice	

Pain

Position	resting position , neutral, least pful
Strength	gentle
Grade	
Speed	
Duration	
Choice	

Pain

Position	resting position , neutral, least pful
Strength	gentle
Grade	in pain free range – grade I or II traction - stronger grade as tolerated, may be sustained
Speed	
Duration	
Choice	

Pain

Position	resting position , neutral, least pful
Strength	gentle
Grade	in pain free range – grade I or II traction - stronger grade as tolerated, may be sustained
Speed	slow
Duration	
Choice	

Pain

Position	resting position , neutral, least pful
Strength	gentle
Grade	in pain free range – grade I or II traction - stronger grade as tolerated, may be sustained
Speed	slow
Duration	short – 30 sec, reassess, repeat 2-3x
Choice	

Pain

Position	resting position , neutral, least pful
Strength	gentle
Grade	in pain free range – grade I or II traction - stronger grade, sustained
Speed	slow
Duration	short – 30 sec, reassess, repeat 2-3x
Choice	traction / distraction functional tech / MET PIVM / PAVM generally flexion before extension

resistance ≥ pain

- pain & stiffness both present
- different types of relationships between pain & resistance
- if pain = resistance, likely have to move into resistance to be effective
- always monitor & respect pain
- won't necessarily always be painfree

Resistance & Pain

Position	
Strength	
Grade	
Speed	
Duration	
Choice	

Resistance & Pain

Position	neutral, pain free position → moving into physiological range
Strength	
Grade	
Speed	
Duration	
Choice	

Resistance & Pain

Position	neutral, pain free position → moving into physiological range
Strength	gentle at first, then progress into range – may cause post treatment soreness
Grade	
Speed	
Duration	
Choice	

Resistance & Pain

Position	neutral, pain free position → moving into physiological range
Strength	gentle at first, then progress into range – may cause post treatment soreness
Grade	respecting pain, grade II to II+ → progress to III- or IV-
Speed	
Duration	
Choice	

Resistance & Pain

Position	neutral, pain free position → moving into physiological range
Strength	gentle at first, then progress into range – may cause post treatment soreness
Grade	respecting pain, grade II to II+ → progress to III- or IV-
Speed	slow to mod as move further into range
Duration	
Choice	

Resistance & Pain

Position	neutral, pain free position → moving into physiological range
Strength	gentle at first, then progress into range – may cause post treatment soreness
Grade	respecting pain, grade II to II+ → progress to III- or IV-
Speed	slow to mod as move further into range
Duration	start 1 min → 2 min, repeat 2-3x
Choice	

Resistance & Pain

Position	neutral, pain free position → moving into physiological range
Strength	gentle at first, then progress into range – may cause post treatment soreness
Grade	respecting pain, grade II to II+ → progress to III- or IV-
Speed	slow to mod as move further into range
Duration	start 1 min → 2 min, repeat 2-3x
Choice	traction / distraction accessory or physiological – whichever has greatest pain free range (NAGS) MET / SNAGS

Resistance

- stiffness is the main disability
- pain is a minimal component
- R_1 & R_2 are the most important factors
- end range problem
- techniques are aimed at stretching stiff structures → may cause discomfort

Resistance

Position	
Strength	
Grade	
Speed	
Duration	
Choice	

Resistance

Position	into resistance → end of range
Strength	
Grade	
Speed	
Duration	
Choice	

Resistance

Position	into resistance → end of range
Strength	firm
Grade	
Speed	
Duration	
Choice	

Resistance

Position	into resistance → end of range
Strength	firm
Grade	grades III+ to IV+ interspersed with III treatment soreness expected- monitor
Speed	
Duration	
Choice	

Resistance

Position	into resistance → end of range
Strength	firm
Grade	grades III+ to IV+ interspersed with III treatment soreness expected- monitor
Speed	fast oscillations or slow, sustained stretch movements
Duration	
Choice	

Resistance

Position	into resistance → end of range
Strength	firm
Grade	grades III+ to IV+ interspersed with III treatment soreness expected- monitor
Speed	fast oscillations or slow, sustained stretch movements
Duration	3-4 mins, repeat 2-3X – depends on effect & treatment soreness
Choice	

Resistance

Position	into resistance → end of range
Strength	firm
Grade	grades III+ to IV+ interspersed with III treatment soreness expected- monitor
Speed	fast oscillations or slow, sustained stretch movements
Duration	3-4 mins, repeat 2-3X – depends on effect & treatment soreness
Choice	physiological & accessory movements incorporate combined movements NAGS & SNAGS

CLINICAL EFFECTIVENESS of PHYSIOTHERAPY TECHNIQUES

In the
Treatment of Neck Dysfunction

Strong evidence

- multimodal approach
  - mobilization / manipulation
  - therapeutic exercise
- subacute & chronic
- long term effect
- 28-70% advantage over control
- long term absolute benefit
  - ↓ pain 25mm on NRS

Moderate evidence

- exercise **
  - strong evidence when used as part of multimodal approach
- laser
  - intermediate term
- electrotherapy
  - immediate post treatment only for acute > chronic
- traction
  - short term
  - inconsistent evidence for radiculopathy
- acupuncture
  - immediate to short term for pain

No benefit

- home exercise (alone)
- hot packs
- electromechanical stimulation
- ultrasound

Ref : Gross et al, 2007
Gross et al, 2009