Thoracic Outlet Syndrome and Physiotherapy: What Is Our Role

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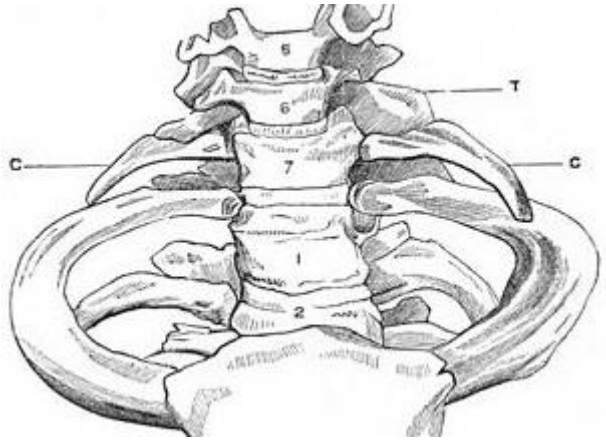
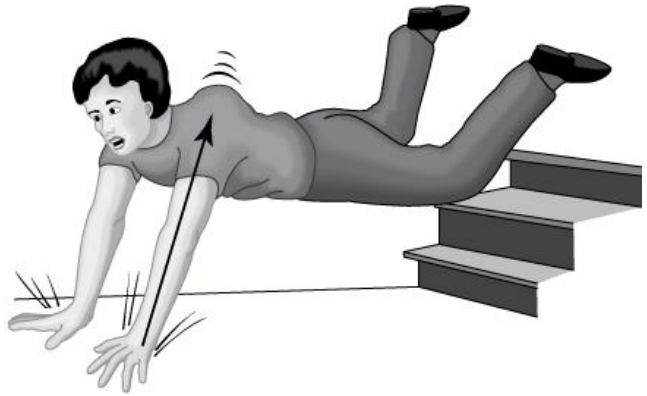
A Diagnostic Dilemma

- Patient presentation
- Lack of distinct signs and symptoms
- Lack of unifying terminology
- No diagnostic gold standard





(Illig et al., 2016)

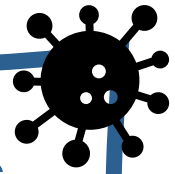
“A group of potentially disabling conditions thought to be caused by compression of neurovascular structures serving the upper extremity”

(Illig et al., 2016)

Subtypes

Arterial Thoracic Outlet Syndrome – 1%

- Subclavian artery compression
- Often by an anomalous bone structure
- Symptomatic ischaemia with UL elevation OR fixed arterial damage



Venous Thoracic Outlet Syndrome – 3-4%

- Subclavian vein compression
- Acute or chronic
- Arm swelling with UL elevation OR fixed (suggesting thrombosis)

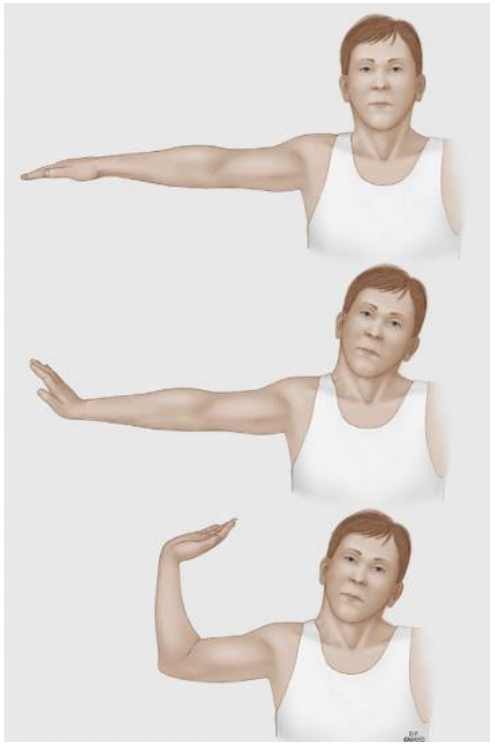
Neurogenic Thoracic Outlet Syndrome – 95%

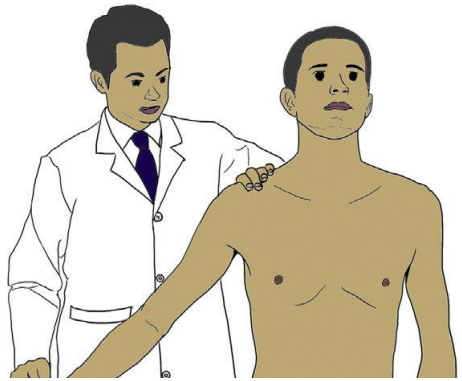
- Brachial plexus irritation or compression at the thoracic outlet

(Illig et al., 2016)

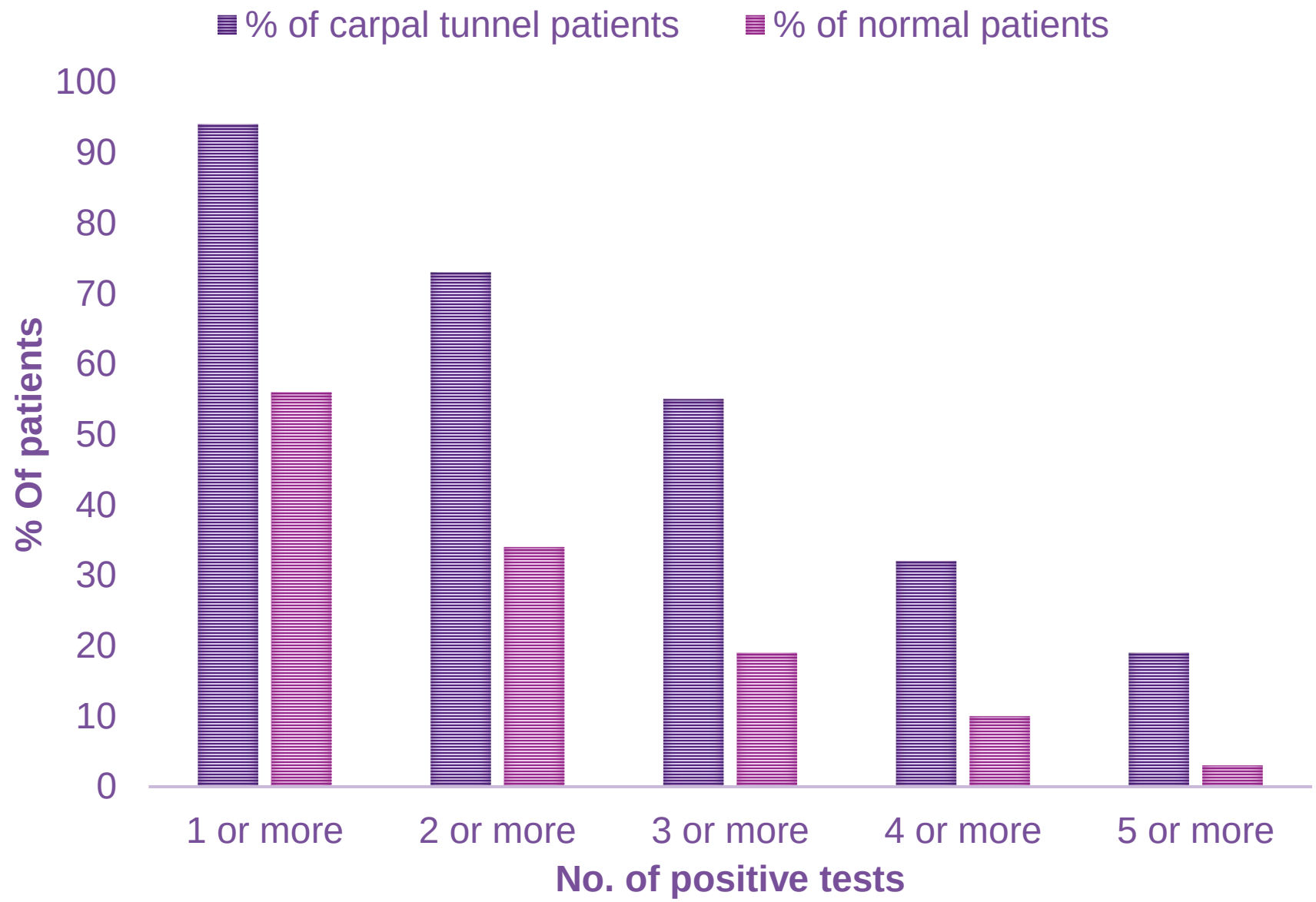
Physical Assessment

(Illig et al., 2016; Gillard et al., 2001)





PERCENTAGE OF PATIENTS WITH POSITIVE PROVOCATIVE MANEOVRES



(Nord et al., 2008)

Physical Assessment- Special Testing

As per the Society of Vascular Surgery's Reporting Guideline

Elevated Arm Stress Test

Upper Limb Neural Provocation Test

(Illig et al., 2016)

Reliability and Validity of the sEAST In nTOS

(Pesser et al., 2022)

- Re-test reliability ICC 0.87
- 77% chance distinguishing from asymptomatic controls
- 63% chance distinguishing from symptomatic controls

Diagnosis of nTOS

3 of the 4 criteria must be present to diagnose nTOS

1. Pain and/ or tenderness at the brachial plexus (scalene triangle or pectoralis minor insertion site)

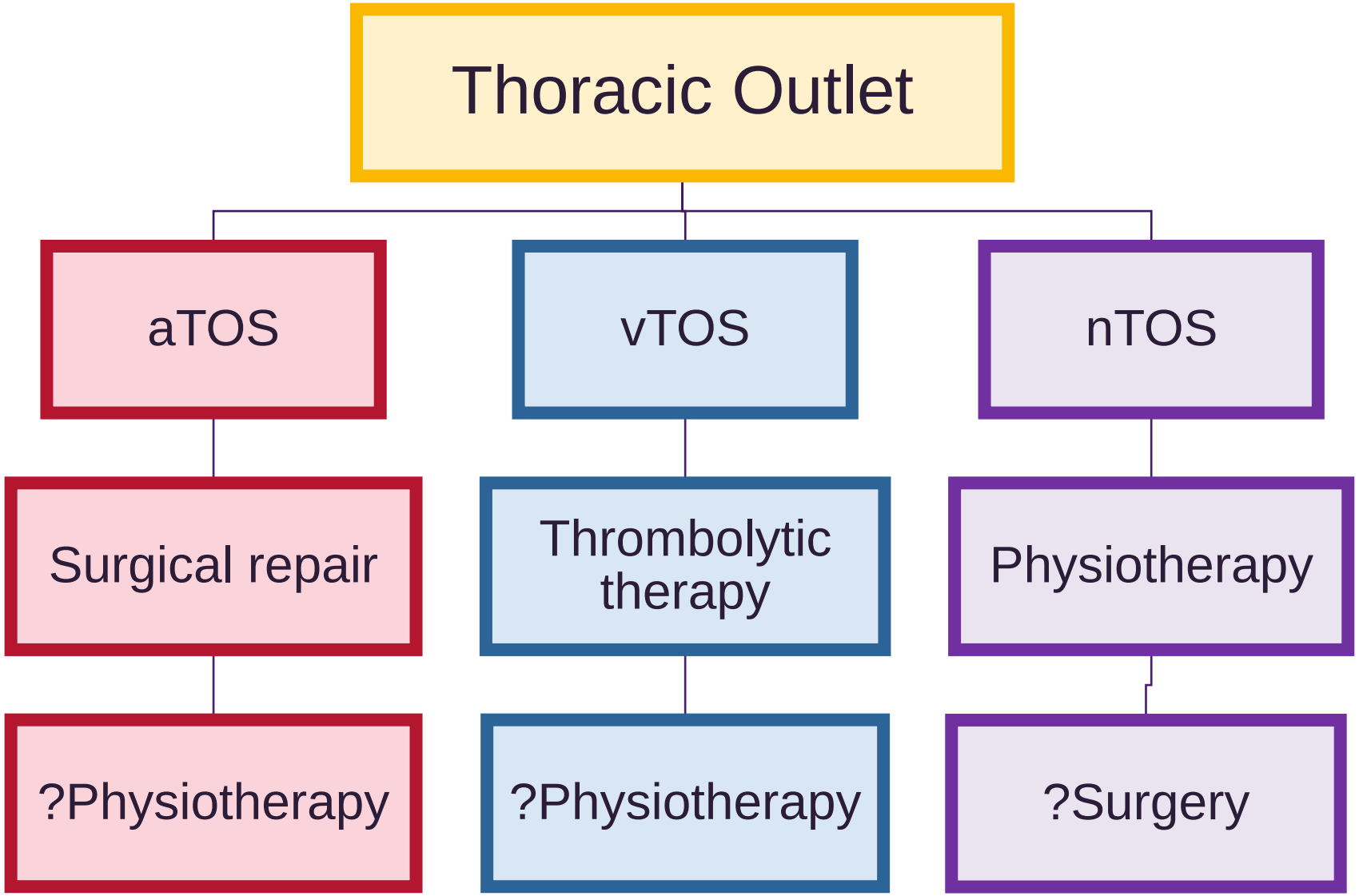
2. Evidence of nerve compression, manifesting as distal pain, numbness, tingling, and/ or motor dysfunction. These symptoms are usually made worse by manoeuvres that narrow the scalene triangle (arms overhead and/ or EAST) or stretch the plexus (dangling and/ or ULTT)

3. Absence of other things that could reasonably explain the symptoms

4. Positive response to a properly performed anterior scalene or pectoralis minor block

(Illig et al., 2016)

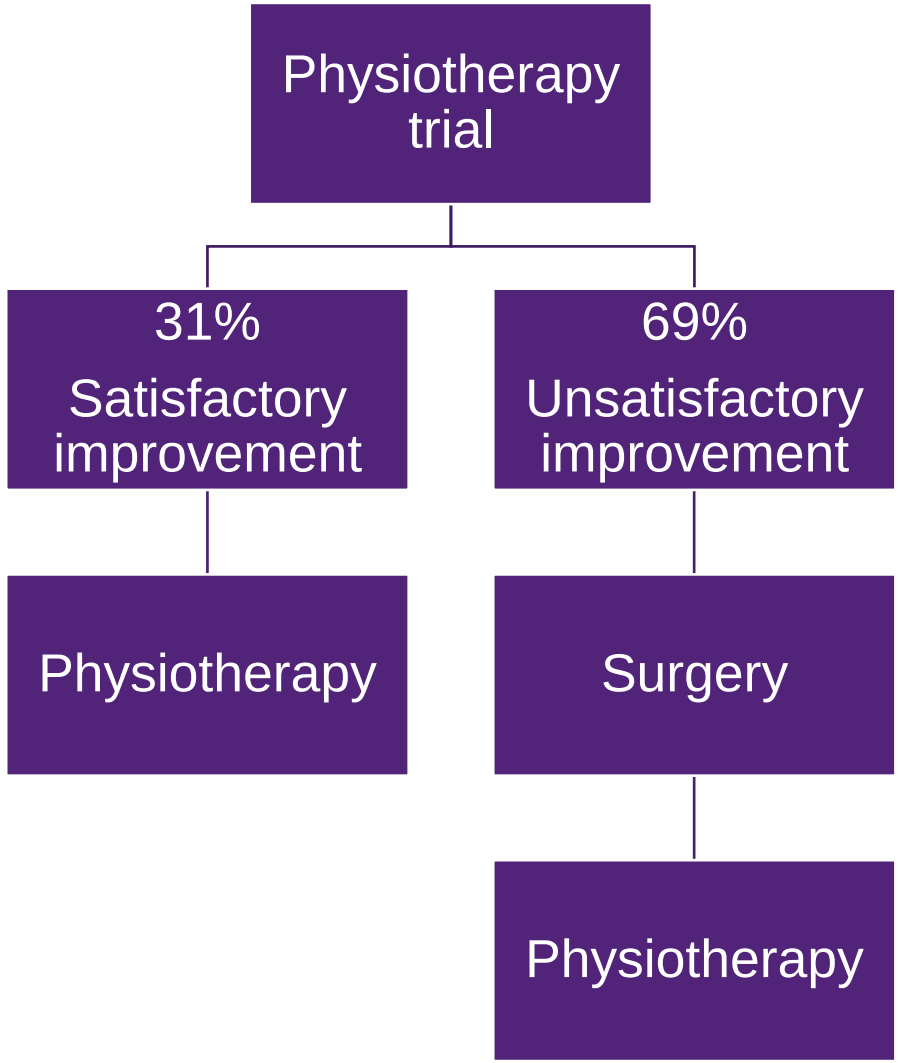
Primary Intervention For TOS Subtypes



(Illig et al., 2016)

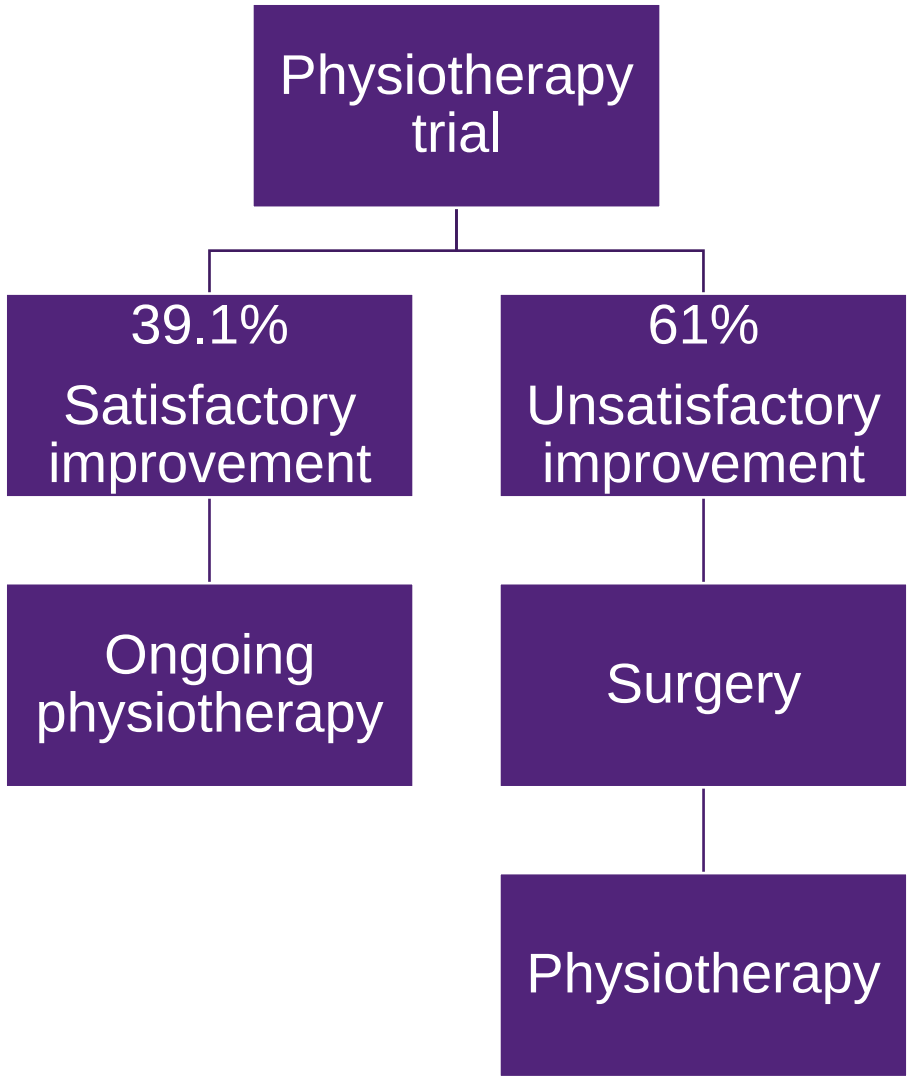
nTOS Pathway Of Care

- QuickDASH improvement
  - Physiotherapy 29.5% vs Surgery 47.5%
- Post-operatively = fair to excellent 89%
- Considerations:
  - Chronic population
  - Time for conservative management
  - Mean follow-up 21.1 vs 12 months
  - Physiotherapy post-op



(Balderman et al., 2019)

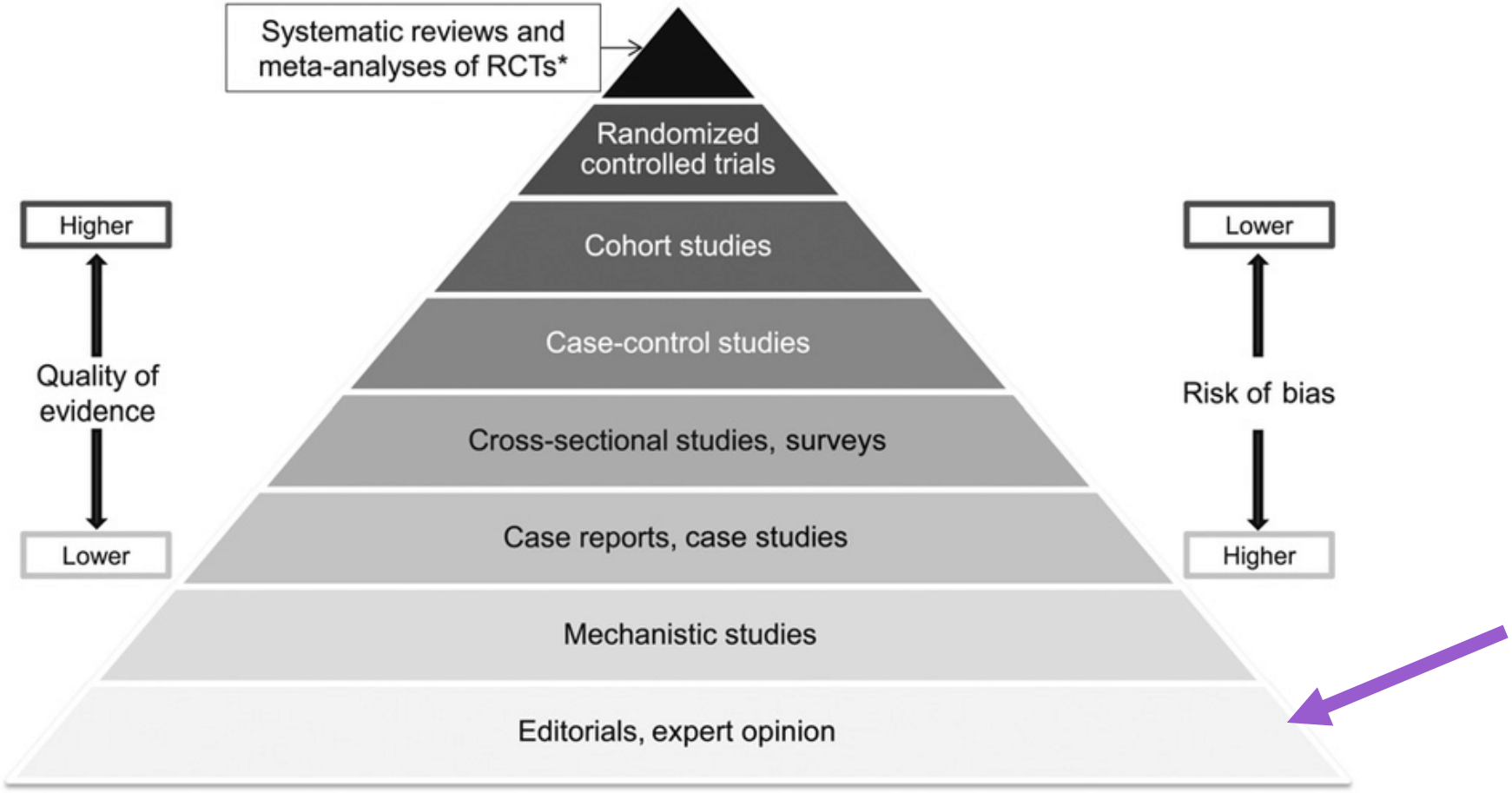
nTOS Pathway Of Care



- PT successful in 39.1% of patients
  - No follow up
  - Consider chronicity
- Subsequent decompression in 60.9%
  - Good or excellent 70%
  - Recurrent or persistent 10.4%
  - Physiotherapy Mx post

(Pesser et al., 2021)

Evidence Supporting Various Physiotherapy Techniques



Treatment – Hooper et al.

(Hooper et al., 2010)

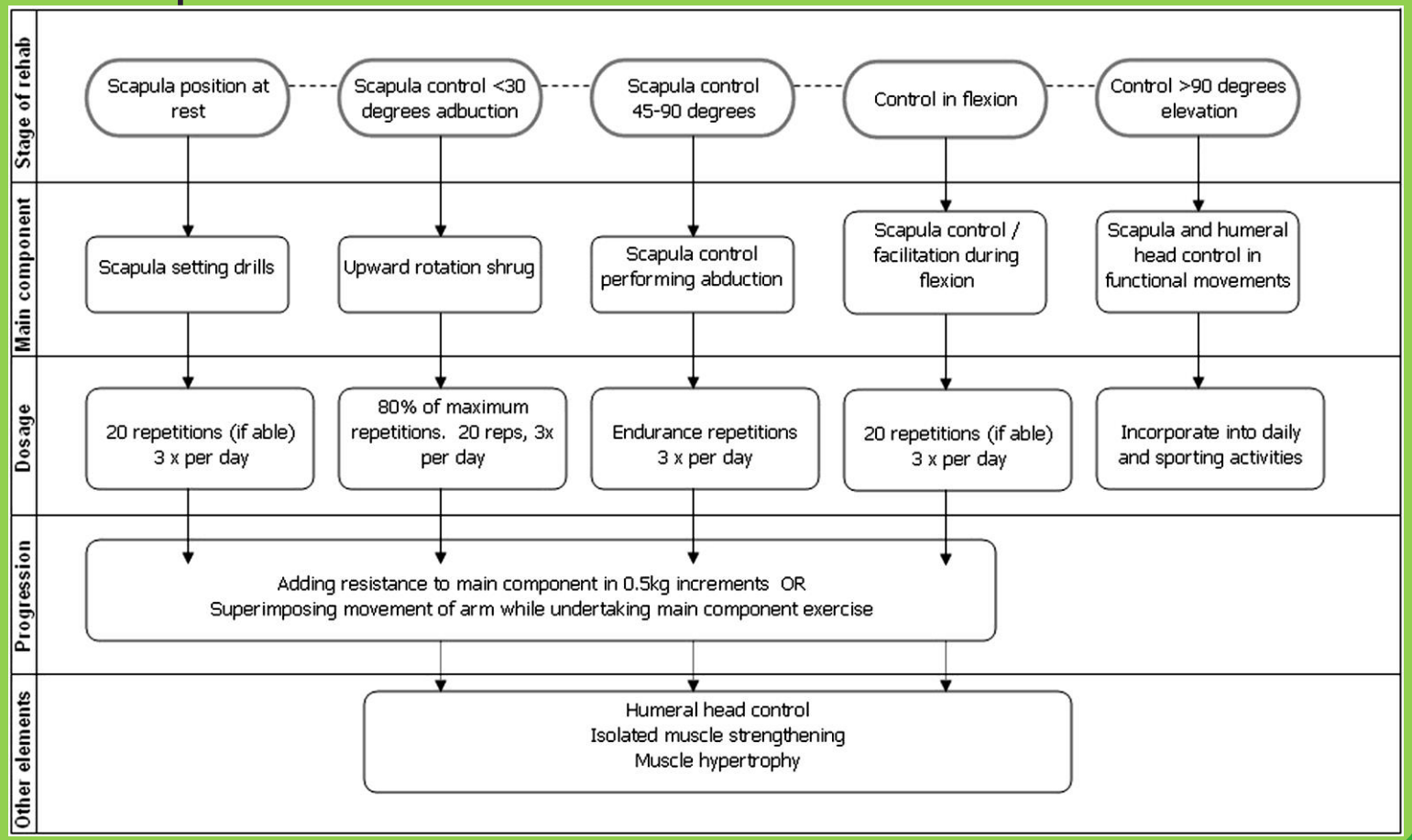
- Manual therapy
- Stretching
- Scapular endurance
- Activity modification

- Neural mobilisation
- Breathing
- Taping

Treatment – Watson et al.

(Watson et al., 2010)

Scapular endurance

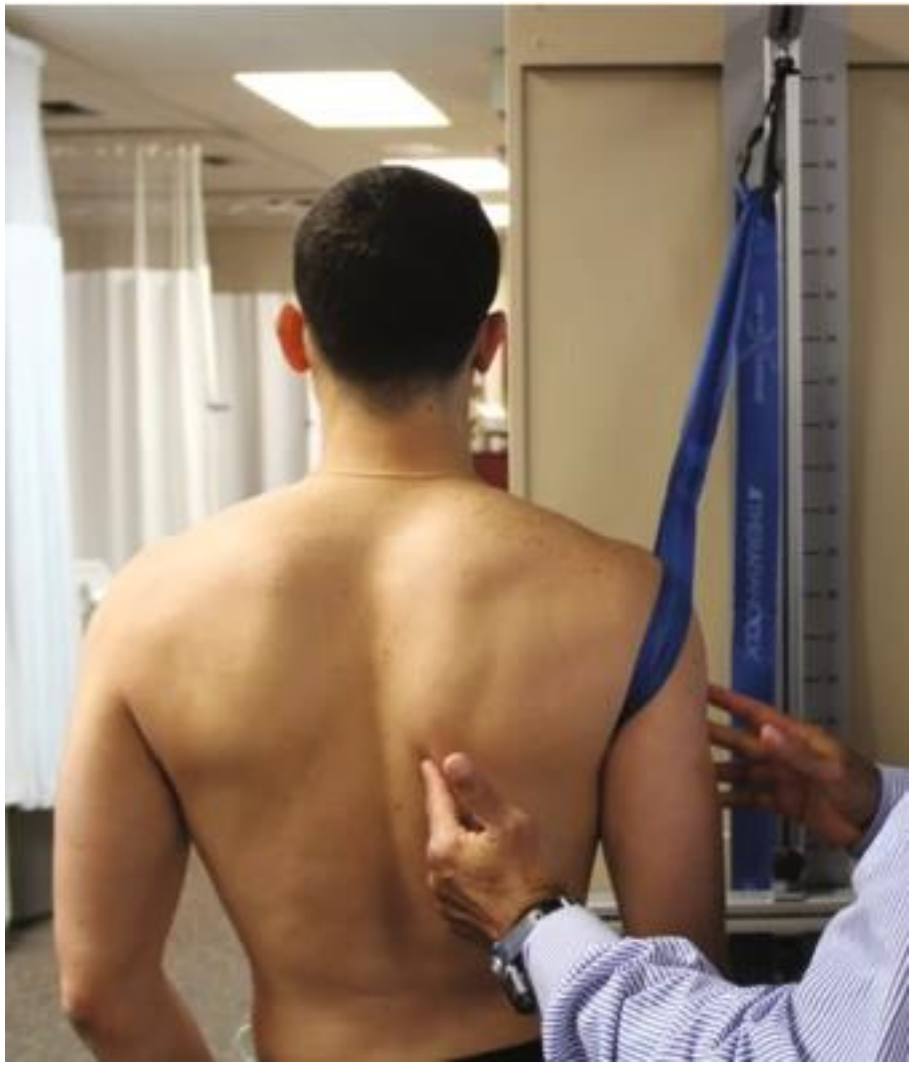


- Manual therapy
- Stretching
- Taping
- Neural mobilisation

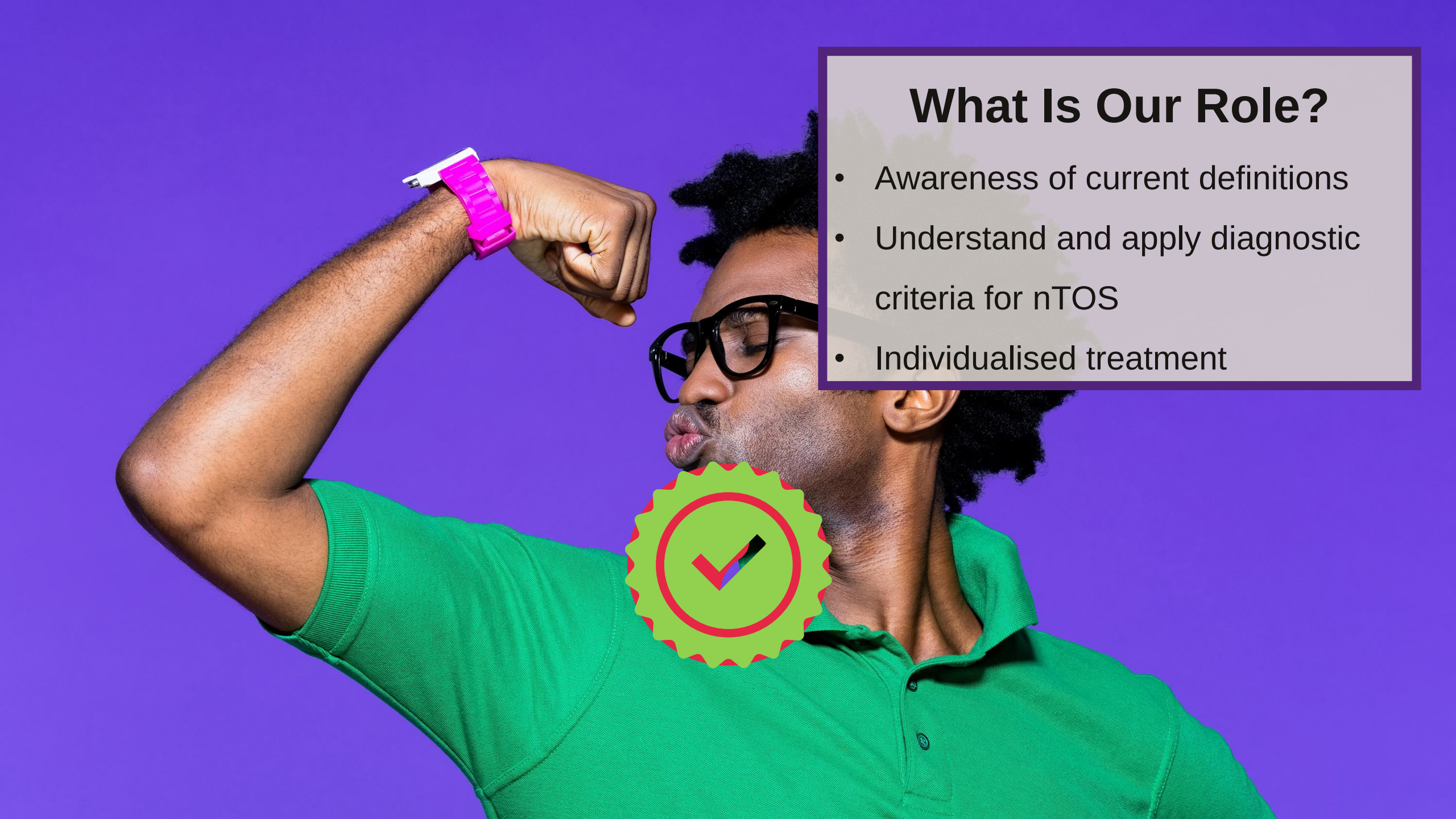
Treatment – Hisamoto et al.

(Hisamoto et al., 2021)

- Scapular endurance
- Distal UL stabilisation
- Taping
- Neural mobilisation
- Breathing
- Manual therapy
- Electrophysical agents
- Stretching



Physiotherapy Treatment – Summary



What Is Our Role?

- Awareness of current definitions
- Understand and apply diagnostic criteria for nTOS
- Individualised treatment

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