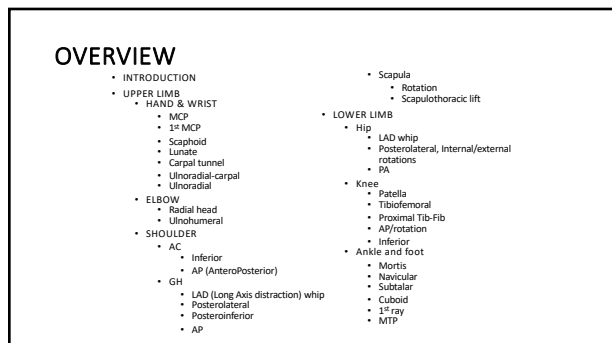
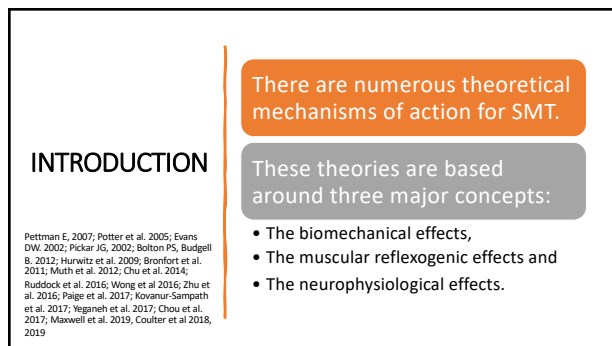


1



2



3

The biomechanical effects

The hip joint is a synovial joint and has synovial folds that are highly innervated and capable of generating pain. Hip synovial folds have been reported to be involved in production of catching, locking and clicking of the joint.²⁹

MT is suspected to gap the joint, therefore reducing the impaction on the trapped synovial folds and allowing it to return to its normal position.^{27,30}

This will allow the joint to regain full or improved ROM.

4

The muscular reflexogenic effects

It has been reported that MT can have hypoalgesic as well as muscle reflex effects.³¹⁻³⁵

The hypoalgesic effects of MT can be attributed to the gate-control theory of pain.^{26,28}

The joint capsule and surrounding musculature have numerous proprioceptors in the form of muscle spindles and type I and type II afferents.^{26,28}

With MT, there is a dynamic stretch to the tissue that will cause an increase in afferent discharge from these receptors.³⁵⁻³⁷

This increase in afferent input will attenuate the pain sensation at the dorsal horn, thereby creating a hypoalgesic effect.²⁶

5

The muscular reflexogenic effects


The muscle-reflexogenic effects of MT are believed to occur through the effects on the muscle spindles surrounding the joint.

As with the gate-control theory, during the act of the manipulation, there is an increase in the afferent output from the surrounding muscle spindles.³⁵⁻³⁷

Directly after MT, the muscle spindles become silent for a short period.^{35,37}

After this silent period, the spindles return to firing at their appropriate rate, which can cause a relaxation of the surrounding muscles.


6



There are several studies examining the efficacy of manipulations on ROM in extremity joints, specifically the gleno-humeral and ankle joint complex.

There is a growing body of evidence to date on the benefits of manipulative therapy for the joints of the ankle and shoulder.


7



Southerst et al. 2015 systematic review

- The current evidence on the effectiveness of manual therapy for MSDs of the upper and lower extremities is *limited*.
- The available evidence supports the use of manual therapy for non-specific shoulder pain and ankle sprains, but not for subacromial impingement syndrome in adults.
- Future research is needed to determine the effectiveness of manual therapy and guide clinical practice.


8



Manipulative therapy of the ankle has demonstrated to have:

- Short-term benefits in the treatment of plantar fasciitis (Brantingham et al. 2012),
- Improved measures of proprioception and ROM in dorsiflexion with multiple treatments (Kohne et al. 2007), and
- Improved dynamic standing balance (Wassinger et al. 2014).

9



Immediate Effects

- ↑ Dorsiflexion, ↑ Balance/Proprioception
- Insufficient data for pain

Short Term Effects

- ↑ function, ↓ stiffness, ↑ proprioception
- Improved pain level

Long Term Effects

- ↑ Dorsiflexion and stability/balance

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10

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A clinical crossover trial of the effect of manipulative therapy on pain and passive and active range of motion of the painful hip

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11



Brantingham et al. 2012 in their systematic review of literature regarding MT for common lower extremity disorders reported:

Fair evidence (B) for short term and limited evidence (C) for long-term treatment of hip osteoarthritis, knee osteoarthritis, patellofemoral pain syndrome, and ankle inversion sprain.

12



Neto et al. (2019) investigated The effect of a single high velocity low amplitude hip mobilization on strength in subjects with knee injuries.

They used HVLA hip distraction similar to our study without drop on 40 subjects.

They reported a single hip distraction HVLA mobilization resulted in a significant increase in gluteus maximus strength but changes in gluteus medius or quadriceps strength in subjects with knee injuries.

13

Discussion

In our study although statistical significance was found only for passive hip abduction, the effect sizes appear to show a high trend towards improvement in active and passive ER (0.70 and 0.69 respectively) following HVLA MDP.

The higher effect sizes in ER may have been due to the direction of the manipulation which included 15-20 degrees of ER and ending in 15-20 degrees of extension.

These findings are encouraging for the use of HVLA MDP in improving hip passive abduction, active and passive ER.

14

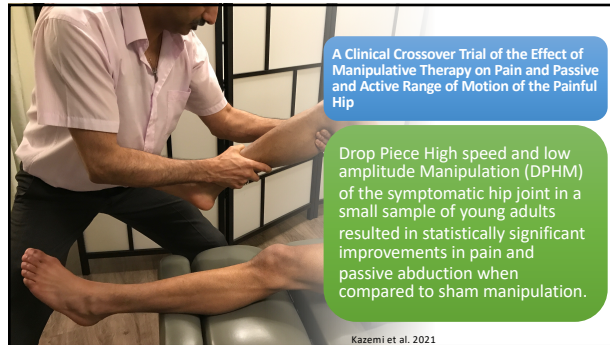


Fair evidence for short-term treatment of plantar fasciitis but limited evidence for short-term treatment of metatarsalgia and hallux limitus/rigidus and for loss of foot and/or ankle proprioception and balance.

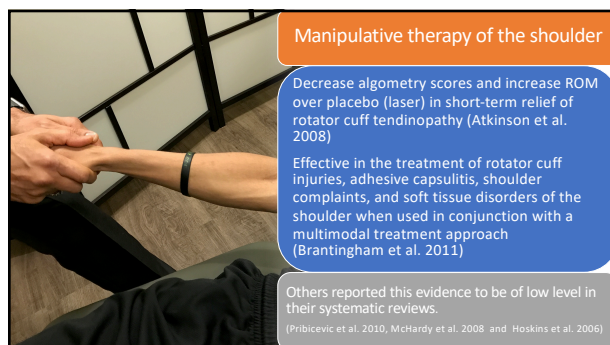
Finally, insufficient evidence for treatment of hallux abducto valgus.

Further research is needed on MT as a treatment of lower extremity conditions, specifically larger trials with improved methodology.

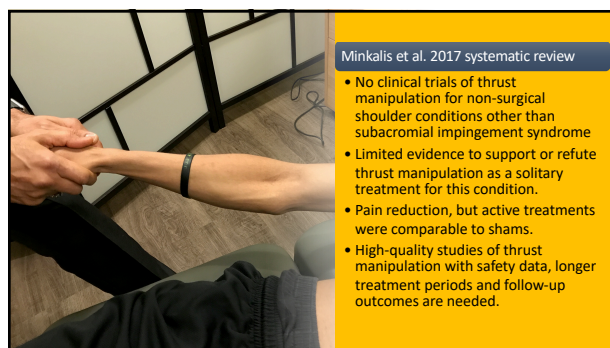
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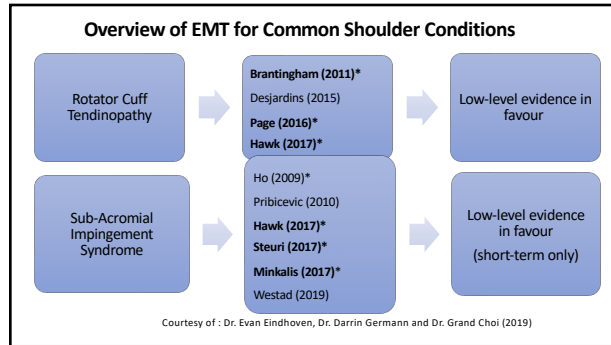
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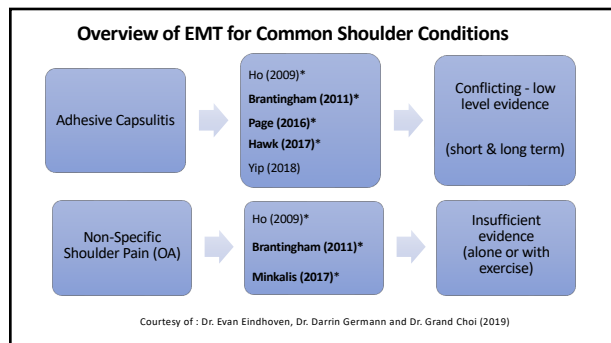
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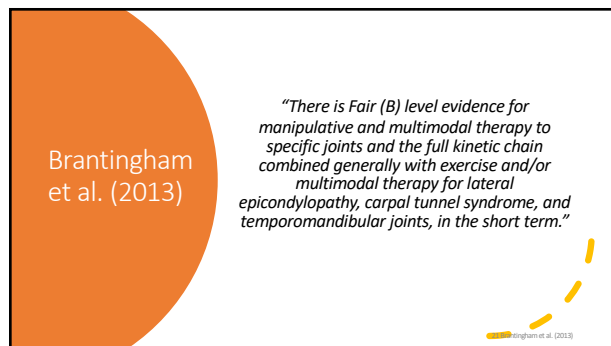
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19



20



21



Sutton et al. 2016 systematic review

- The current evidence on the effectiveness of multimodal care for musculoskeletal disorders of the elbow, forearm, wrist and hand is **limited**.
- The available evidence suggests that there may be a role for *multimodal care* in the management of patients with persistent lateral epicondylitis.
- Future research is needed to examine the effectiveness of multimodal care and guide clinical practice.

22

Drop piece
manipulation

- Not much supporting clinical evidence.
- Maybe increasing the efficiency of manipulation.¹⁷
- The degree of adjustive effort and force may be reduced.
- Decreases the counter-resistance of both the table and the patient.
- The force of the manipulation is enhanced by the counter-reactive force generated across the joint when adjustive thrusts are maintained through the impact of the drop piece.¹⁸
- Both of these proposed explanations consider Newton's first law.¹⁸

23

Drop piece
manipulation

- Bergmann and Davis outline the basic procedure for using a drop piece as follows:
 - First, the targeted joint is positioned over the drop section.¹⁹
 - Then, the drop section is set, and its tension is checked.
 - The tension should be enough to support the patient's weight without dropping, but light enough so only minimal force is needed to overcome the resistance.²⁰
 - Finally, contacts are established over the structure to receive the thrust, and a thrust is generated to make the section drop. This procedure is repeated for a total of three times.¹⁹

24

Principle of
extremity
adjusting

HVLA

- Lock the joint
- HV (High Velocity) speed matters
- Use your weight and hips

Drop board/Thulie

- Lock the joint
- High speed IN and OUT
- Do not hold the trust at the end range

Whip

- No locking of the joint
- Focus on the joint to be adjusted and avoid hyper extension of the the distal joints

25

PRACTICE

PEC THRUST



PISIFORM THRUST

HIP MOVEMENT

WHIP

26

Upper Limb-
Hand & wrist

27

Upper Limb- Hand & wrist

MCP



The slide contains a clinical photograph on the left showing a therapist in a pink shirt palpating the base of the thumb on a patient's hand. To the right are two anatomical diagrams of the hand bones. The top diagram shows the thumb with the first metacarpal (MCP) highlighted in red. The bottom diagram shows the entire hand with the MCP of the thumb highlighted in red.

28

Upper Limb- Hand & wrist

1st MCP & MCC



The slide contains a clinical photograph on the left showing a therapist palpating the base of the thumb. To the right are two anatomical diagrams of the hand bones. The top diagram shows the thumb with the first metacarpal (MCP) and the second metacarpal (MCC) highlighted in red. The bottom diagram shows the entire hand with the MCP and MCC of the thumb highlighted in red.

29

Upper Limb- Hand & wrist

Scaphoid



The slide contains a clinical photograph on the left showing a therapist palpating the wrist area. To the right are two anatomical diagrams of the hand bones. The top diagram shows the wrist bones with the scaphoid highlighted in red. The bottom diagram shows the entire hand with the scaphoid highlighted in red.

30

Upper Limb- Hand & wrist

Lunate



The slide features a clinical photograph on the left showing a person's hand and forearm being examined by a healthcare professional. On the right, there are two anatomical diagrams of the hand and wrist bones. The top diagram shows the bones from a dorsal perspective, and the bottom diagram shows them from a palmar perspective. The lunate bone is highlighted in the diagrams.

31

Upper Limb- Hand & wrist

Carpal tunnel




The slide includes two clinical photographs on the left. The top photo shows a person's hand being held in a specific position, and the bottom photo shows a person's forearm and hand being examined. On the right, there are two anatomical diagrams of the hand and wrist bones. The top diagram shows the bones from a dorsal perspective, and the bottom diagram shows them from a palmar perspective. The carpal tunnel is highlighted in the diagrams.

32

Upper Limb- Hand & wrist

Ulnoradial-carpal

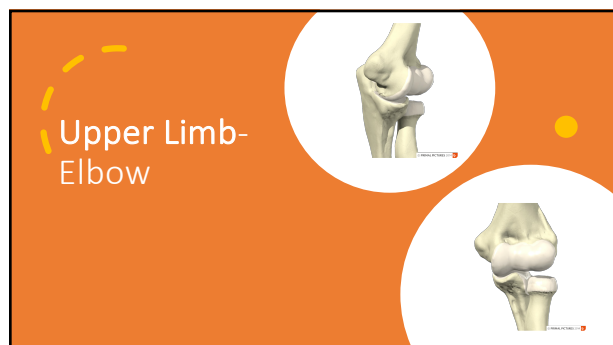


The slide contains two clinical photographs on the left. The top photo shows a person's hand being held in a specific position, and the bottom photo shows a person's forearm and hand being examined. On the right, there are two anatomical diagrams of the hand and wrist bones. The top diagram shows the bones from a dorsal perspective, and the bottom diagram shows them from a palmar perspective. The ulnar deviation is highlighted in the diagrams.

33



34



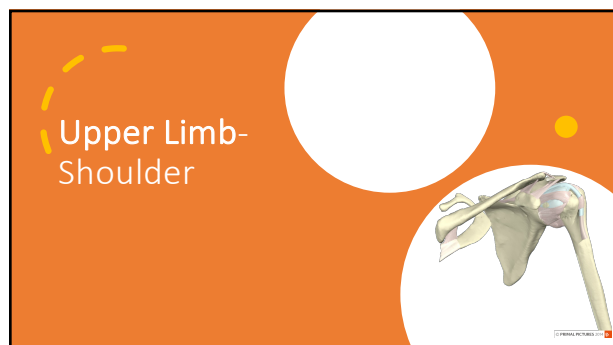
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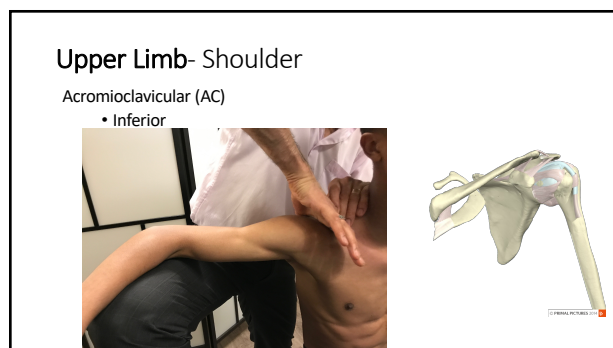
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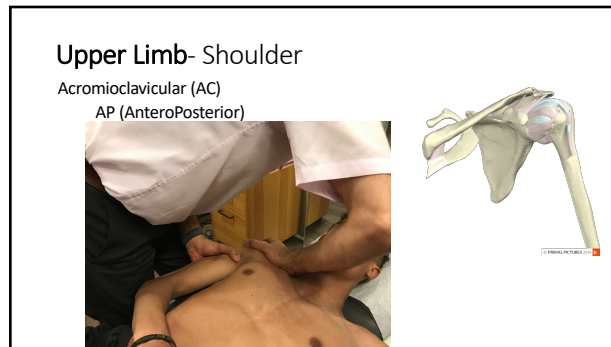
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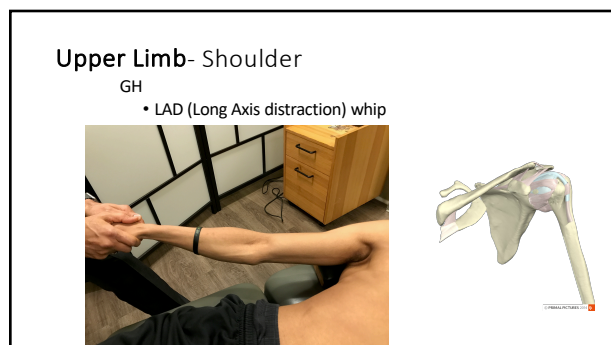
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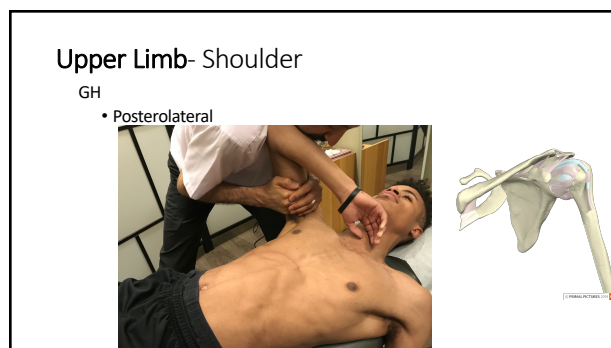
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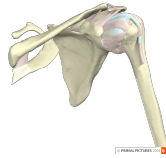


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Upper Limb- Shoulder

GH

- Posteroinferior

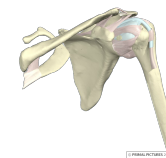


43

Upper Limb- Shoulder

GH

- AP

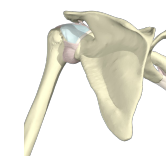


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Upper Limb- Shoulder

Scapula

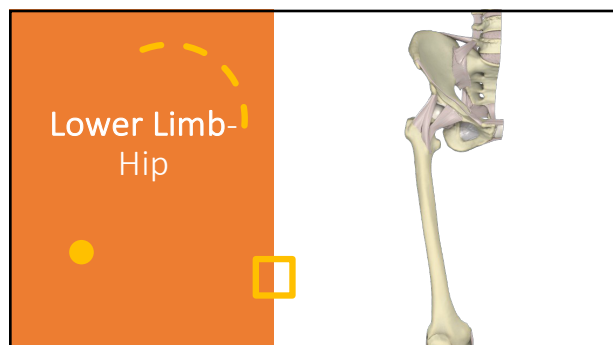
- Rotation



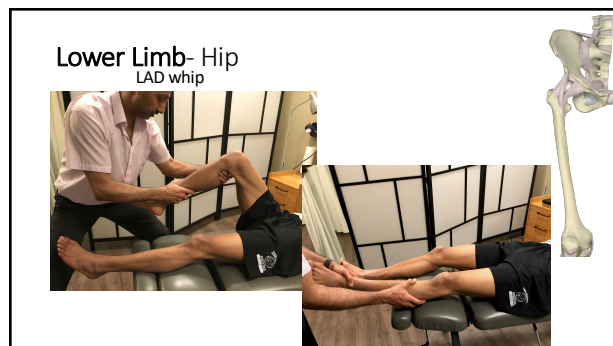
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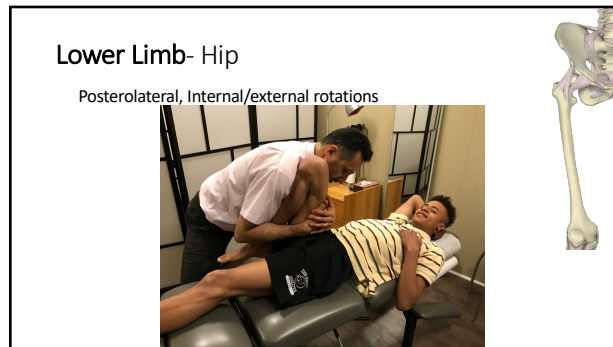
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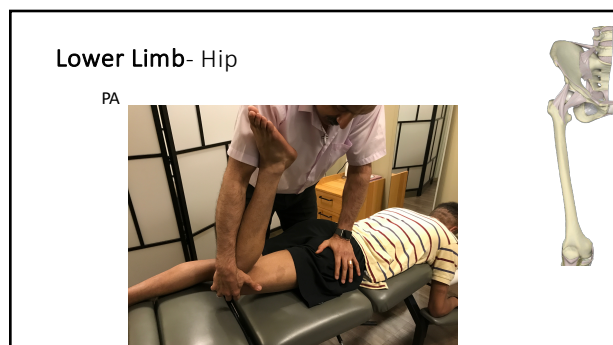
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51

Lower Limb- Knee

Patella



52

Lower Limb- Knee

Tibiofemoral-Knee flexion



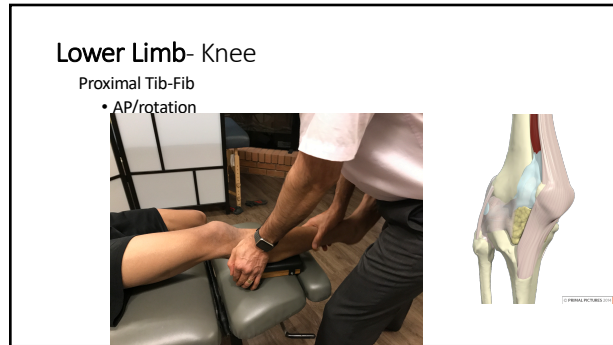
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Lower Limb- Knee

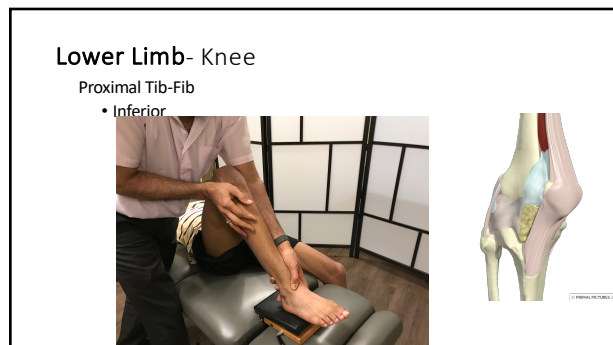
Tibiofemoral-Knee whip



54



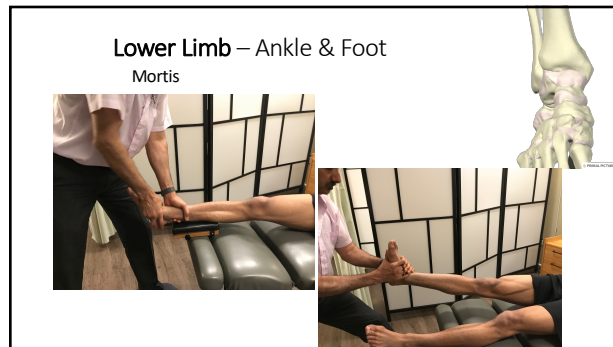
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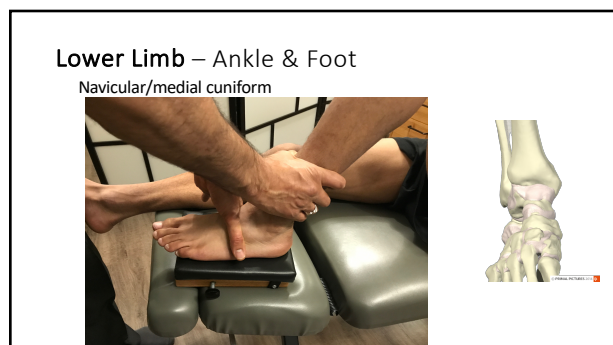
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58



59



60

Lower Limb – Ankle & Foot

Cuboid



61

Lower Limb – Ankle & Foot

1st ray



62

Lower Limb – Ankle & Foot

MTP



63

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66