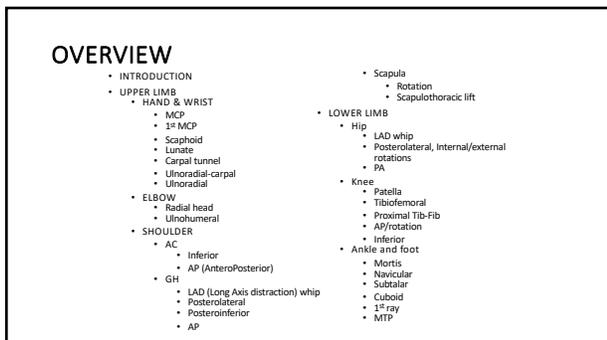
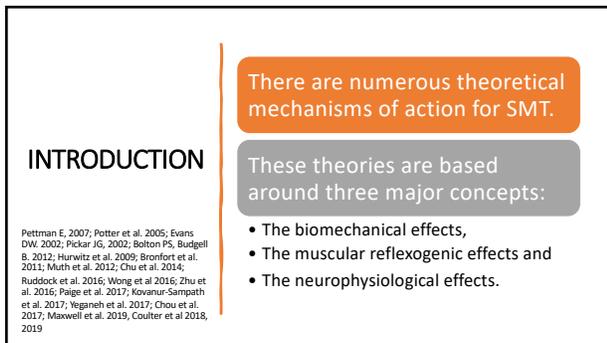


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2



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

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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 Sydney Hubbel Leguard, BHSc (Hons), DC¹
 Sebastian Lilja, BHSc (Hons), DC¹
 Steven Mahaise, BHSc (Hons), DC¹

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



Original article
 The effect of a single high velocity low amplitude hip mobilization on strength in subjects with knee injuries
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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.

15

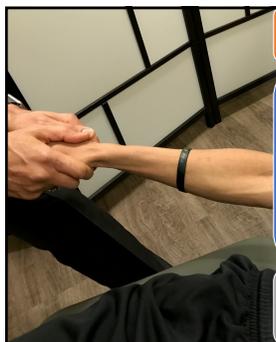


A Clinical Crossover Trial of the Effect of Manipulative Therapy on Pain and Passive and Active Range of Motion of the Painful Hip

Drop Piece High speed and low amplitude Manipulation (DPHM) of the symptomatic hip joint in a small sample of young adults resulted in statistically significant improvements in pain and passive abduction when compared to sham manipulation.

Kazemi et al. 2021

16



Manipulative therapy of the shoulder

Decrease algometry scores and increase ROM over placebo (laser) in short-term relief of rotator cuff tendinopathy (Atkinson et al. 2008)

Effective in the treatment of rotator cuff injuries, adhesive capsulitis, shoulder complaints, and soft tissue disorders of the shoulder when used in conjunction with a multimodal treatment approach (Brantingham et al. 2011)

Others reported this evidence to be of low level in their systematic reviews.
(Pribicevic et al. 2010, McHardy et al. 2008 and Hoskins et al. 2006)

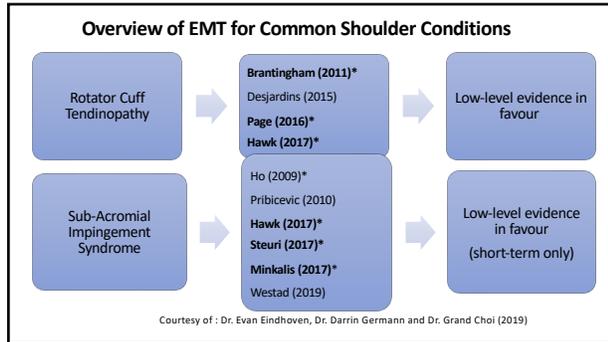
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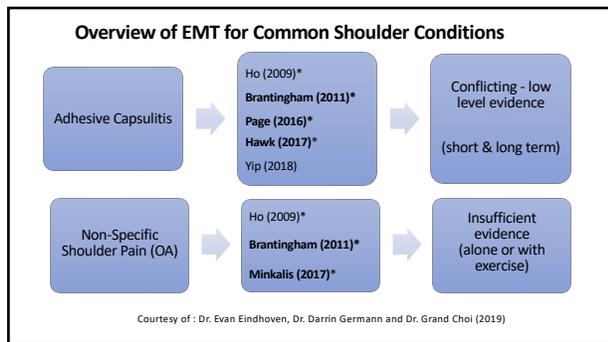
Minkalis et al. 2017 systematic review

- No clinical trials of thrust manipulation for non-surgical shoulder conditions other than subacromial impingement syndrome
- Limited evidence to support or refute thrust manipulation as a solitary treatment for this condition.
- Pain reduction, but active treatments were comparable to shams.
- High-quality studies of thrust manipulation with safety data, longer treatment periods and follow-up outcomes are needed.

18



19



20

Brantingham et al. (2013)

"There is Fair (B) level evidence for manipulative and multimodal therapy to specific joints and the full kinetic chain combined generally with exercise and/or multimodal therapy for lateral epicondylopathy, carpal tunnel syndrome, and temporomandibular joints, in the short term."

Brantingham et al. (2013)

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

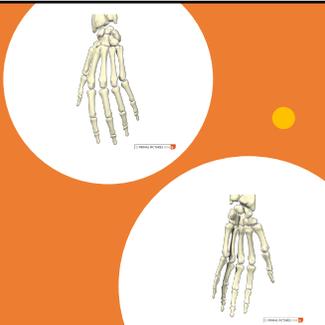
PISIFORM THRUST

HIP MOVEMENT

WHIP

26

**Upper Limb-
Hand & wrist**



27

Upper Limb- Hand & wrist
MCP



The slide features a clinical photograph on the left showing a practitioner in a pink shirt palpating the patient's hand. On the right, there are two anatomical diagrams of the hand and wrist bones. The top diagram shows a dorsal view with the first metacarpal (MCP) highlighted in red. The bottom diagram shows a palmar view with the MCP also highlighted in red.

28

Upper Limb- Hand & wrist
1st MCP & MCC



The slide features a clinical photograph on the left showing a practitioner palpating the patient's hand. On the right, there are two anatomical diagrams of the hand and wrist bones. The top diagram shows a dorsal view with the first metacarpal (MCP) and the second metacarpal (MCC) highlighted in red. The bottom diagram shows a palmar view with the MCP and MCC also highlighted in red.

29

Upper Limb- Hand & wrist
Scaphoid



The slide features a clinical photograph on the left showing a practitioner palpating the patient's wrist. On the right, there are two anatomical diagrams of the hand and wrist bones. The top diagram shows a dorsal view with the scaphoid highlighted in red. The bottom diagram shows a palmar view with the scaphoid also highlighted in red.

30

Upper Limb- Hand & wrist
Lunate



The slide features a clinical photograph on the left showing a person's hand being held by another person, with a focus on the wrist. On the right, there are two anatomical diagrams of the hand and wrist bones. The top diagram shows the hand from a dorsal view, and the bottom diagram shows a more detailed view of the wrist bones, with the lunate bone highlighted in red.

31

Upper Limb- Hand & wrist
Carpal tunnel



The slide features two clinical photographs on the left. The top photo shows a person's hand being held, and the bottom photo shows a person's hand being held with the wrist flexed. On the right, there are two anatomical diagrams of the hand and wrist bones, with the carpal tunnel area highlighted in red.

32

Upper Limb- Hand & wrist
Ulnoradial-carpal

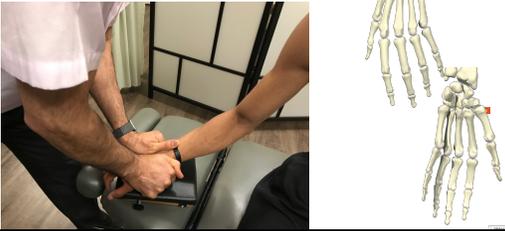


The slide features two clinical photographs on the left. The top photo shows a person's hand being held, and the bottom photo shows a person's hand being held with the wrist flexed. On the right, there are two anatomical diagrams of the hand and wrist bones, with the ulnoradial-carpal joint area highlighted in red.

33

Upper Limb- Hand & wrist

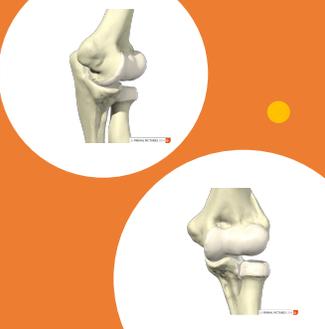
Ulnoradial



The image contains two parts. On the left is a clinical photograph showing a healthcare provider's hands performing an ulnar deviation test on a patient's right hand. The provider is holding the patient's forearm and hand, moving the hand towards the ulnar side. On the right is a skeletal diagram of the hand and wrist, with a red arrow pointing to the ulnar deviation of the hand.

34

Upper Limb- Elbow



The image features an orange background with two circular anatomical diagrams of the elbow joint. The top diagram shows a lateral view of the elbow, and the bottom diagram shows a medial view. A dashed yellow line and a solid yellow dot are also present on the orange background.

35

Upper Limb- Elbow

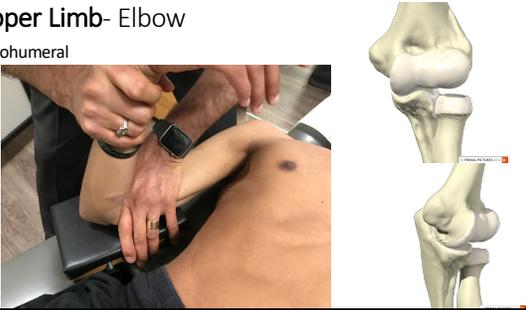
Radial head



The image contains two parts. On the left is a clinical photograph showing a healthcare provider palpating the radial head of a patient's forearm. On the right is a skeletal diagram of the elbow joint, with a red arrow pointing to the radial head.

36

Upper Limb- Elbow
Ulnohumeral



The image contains two parts. On the left is a clinical photograph showing a person's elbow being palpated by a healthcare professional. On the right is a 3D anatomical diagram of the elbow joint, highlighting the ulnohumeral joint between the humerus and ulna.

37

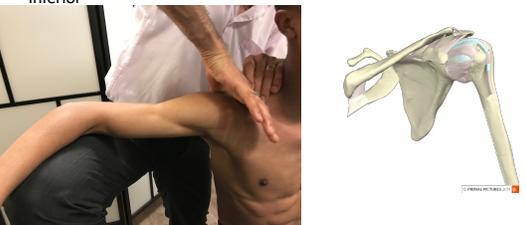
Upper Limb- Shoulder



The image features a solid orange background with a white circle on the left and a smaller yellow circle on the right. In the bottom right corner, there is a 3D anatomical diagram of the shoulder joint.

38

Upper Limb- Shoulder
Acromioclavicular (AC)
• Inferior



The image contains two parts. On the left is a clinical photograph showing a person's shoulder being palpated at the acromioclavicular joint. On the right is a 3D anatomical diagram of the shoulder joint, with the acromioclavicular joint highlighted in blue.

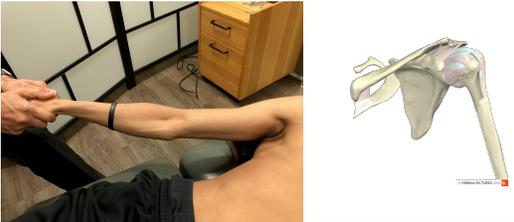
39

Upper Limb- Shoulder
Acromioclavicular (AC)
AP (AnteroPosterior)



40

Upper Limb- Shoulder
GH
• LAD (Long Axis distraction) whip



41

Upper Limb- Shoulder
GH
• Posterolateral



42

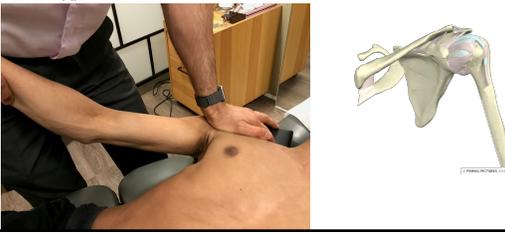
Upper Limb- Shoulder
GH
• Posteroinferior



The clinical photograph shows a healthcare provider palpating the posterior-inferior aspect of a patient's shoulder. The anatomical diagram illustrates the scapula and humerus from a posteroinferior perspective, with a blue dot indicating the palpation site on the scapula.

43

Upper Limb- Shoulder
GH
• AP



The clinical photograph shows a healthcare provider palpating the anterior-posterior aspect of a patient's shoulder. The anatomical diagram illustrates the scapula and humerus from an anterior-posterior perspective, with a blue dot indicating the palpation site on the anterior scapula.

44

Upper Limb- Shoulder
Scapula
• Rotation



The clinical photograph shows a healthcare provider palpating the scapula on a patient's back to assess for rotation. The anatomical diagram illustrates the scapula and humerus from a superior view, with a blue dot indicating the palpation site on the medial border of the scapula.

45

Upper Limb- Shoulder
Scapula
• Scapulothoracic lift



46

Lower Limb- Hip

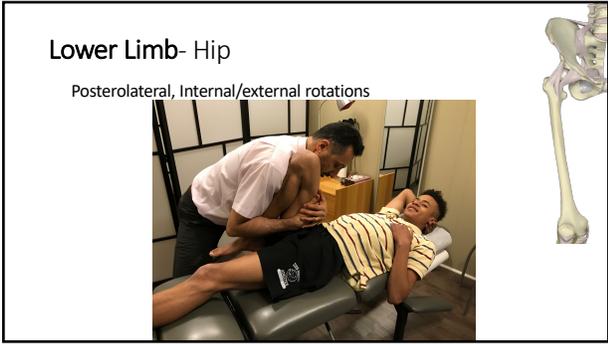


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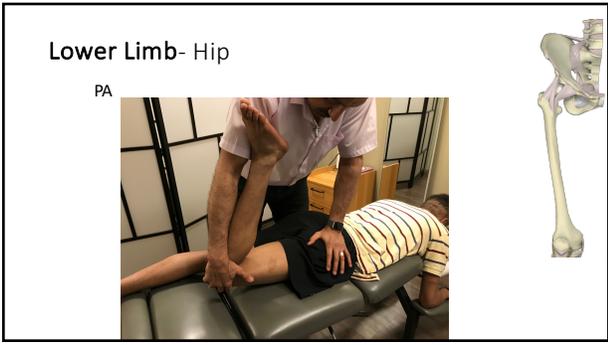
Lower Limb- Hip
LAD whip



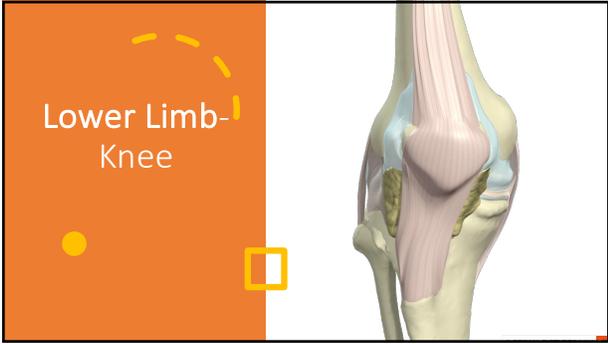
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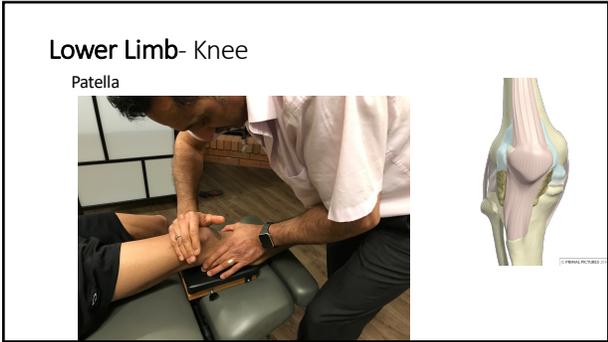
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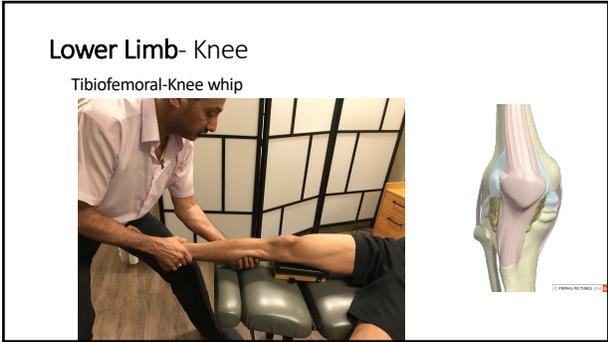
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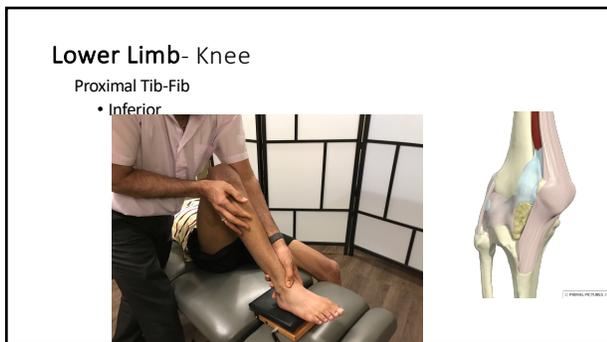
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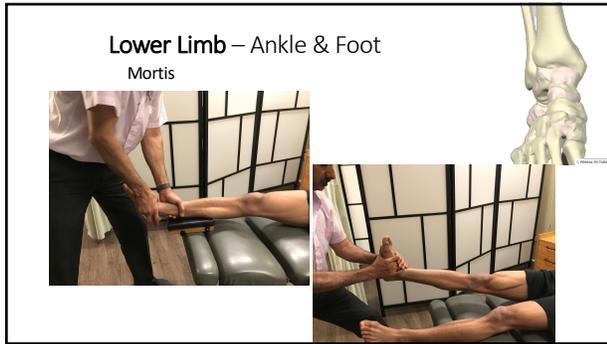
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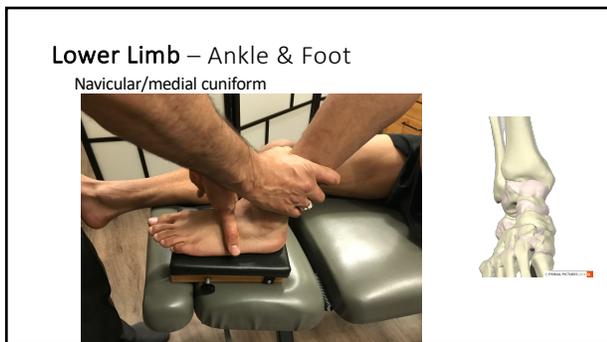
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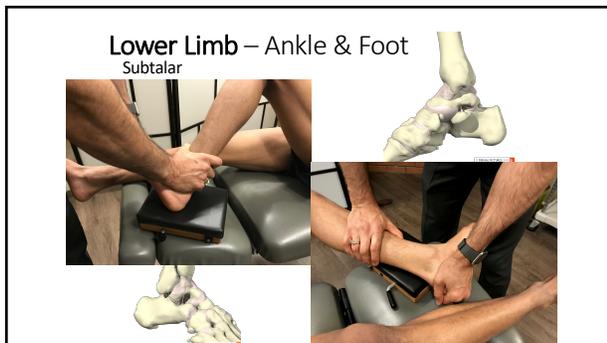
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58



59



60

Lower Limb – Ankle & Foot

Cuboid



The image contains two parts. On the left is a clinical photograph showing a person's right foot on a treatment table. A practitioner's hands are positioned to palpate the lateral aspect of the foot, specifically the area of the cuboid bone. On the right is a 3D anatomical diagram of the right foot and ankle, with the cuboid bone highlighted in a light purple color. The diagram shows the relationship between the cuboid, the talus, and the distal tibia and fibula.

61

Lower Limb – Ankle & Foot

1st ray



The image contains two parts. On the left is a clinical photograph showing a person's right foot on a treatment table. A practitioner's hands are palpating the medial aspect of the foot, specifically the first metatarsophalangeal joint (1st ray). On the right is a 3D anatomical diagram of the right foot, with the first metatarsal and proximal phalanx highlighted in red. The diagram shows the relationship between the 1st ray and the surrounding tarsal and metatarsal bones.

62

Lower Limb – Ankle & Foot

MTP



The image contains two parts. On the left is a clinical photograph showing a person's right foot on a treatment table. A practitioner's hands are palpating the medial aspect of the foot, specifically the first metatarsophalangeal joint (MTP). On the right is a 3D anatomical diagram of the right foot, with the first metatarsophalangeal joint highlighted in red. The diagram shows the relationship between the first metatarsal and the proximal phalanx of the first toe.

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