

SPORTS PHYSICAL THERAPY

Dr Akhtar Rasul

LECTURE NO 11
PERIPHERAL NERVE INJURIES (PART “D”)

PERIPHERAL NERVE INJURIES

CHAPTER OBJECTIVES

This chapter aims to introduce the structure and function of nerves and the neurological system, and the pathophysiology of common nerve injuries of the lower limb. The chapter also reviews some common nerve injuries, their assessment and evidence based treatment

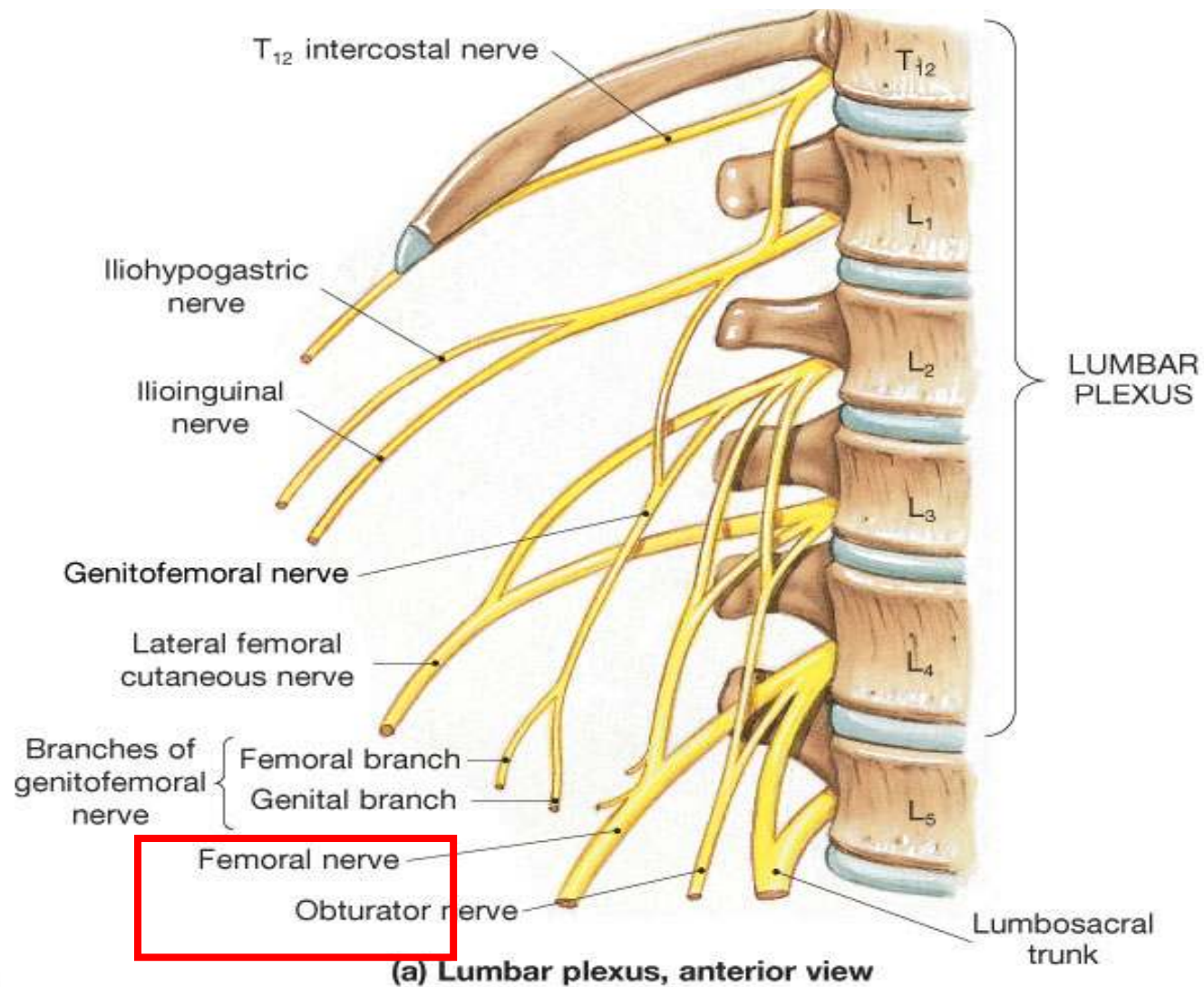
LOWER LIMB NERVES INJURIES IN SPORT

LOWER LIMB NERVES INJURIES IN SPORT

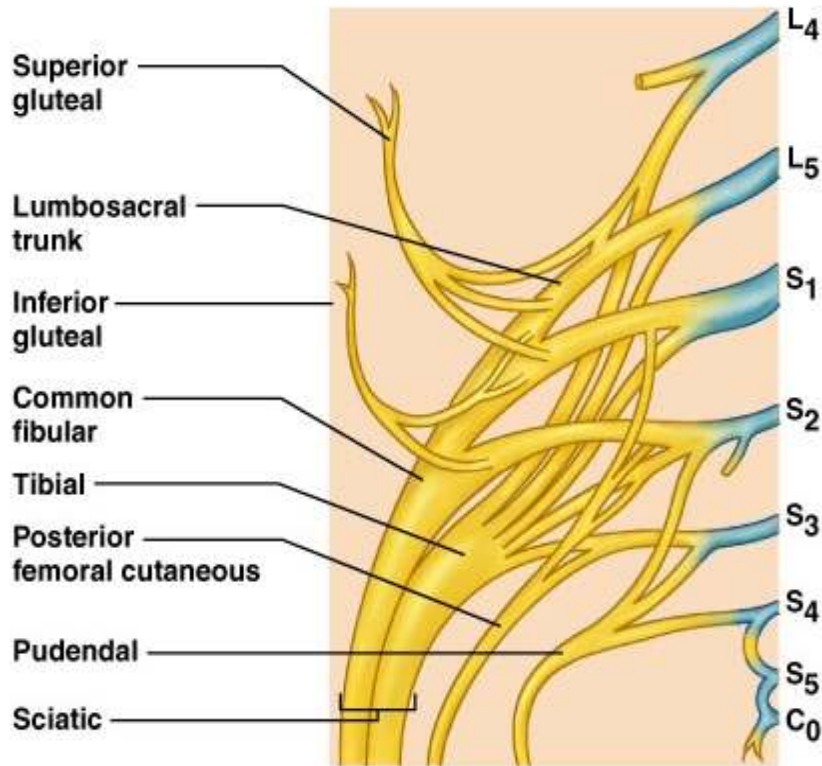
- Lumbosacral plexopathies are infrequent, compared to brachial plexus injury, ???
- Protective anatomical arrangement of the pelvis and surrounding musculature
- The nerves being associated with less mobile structures

Lumbar Plexuses

- Lumbar plexus - ventral rami of T₁₂-L₄



Sacral Plexes



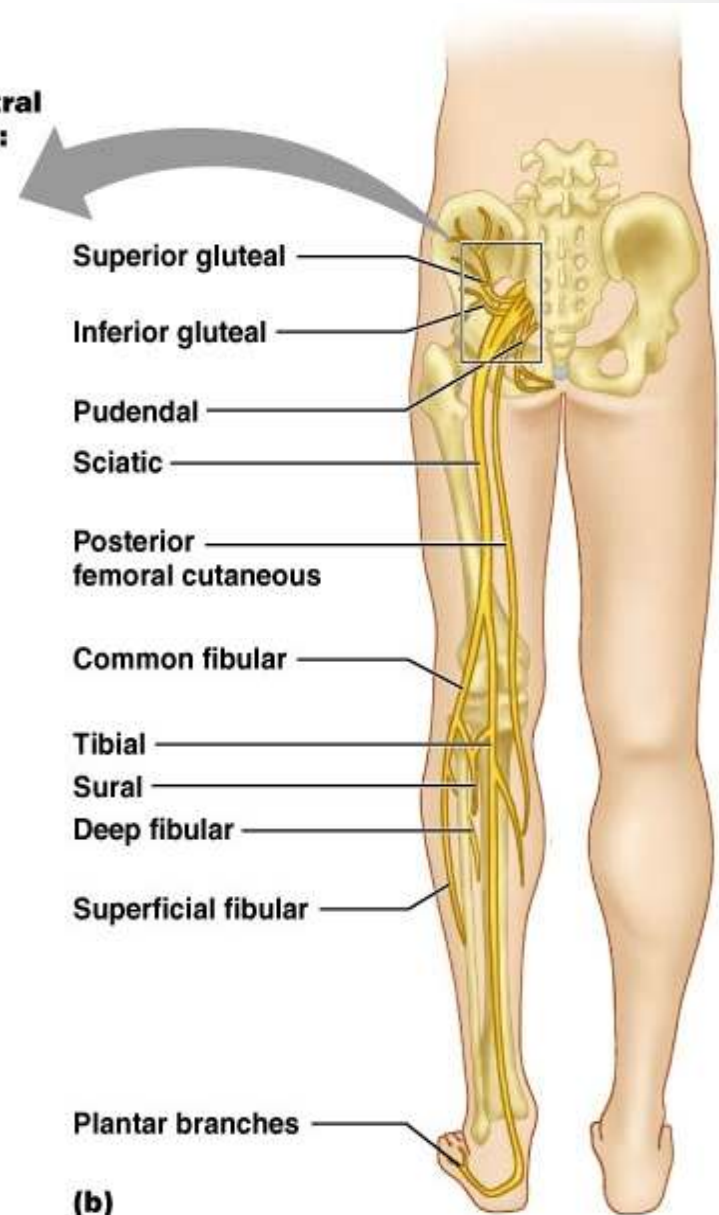
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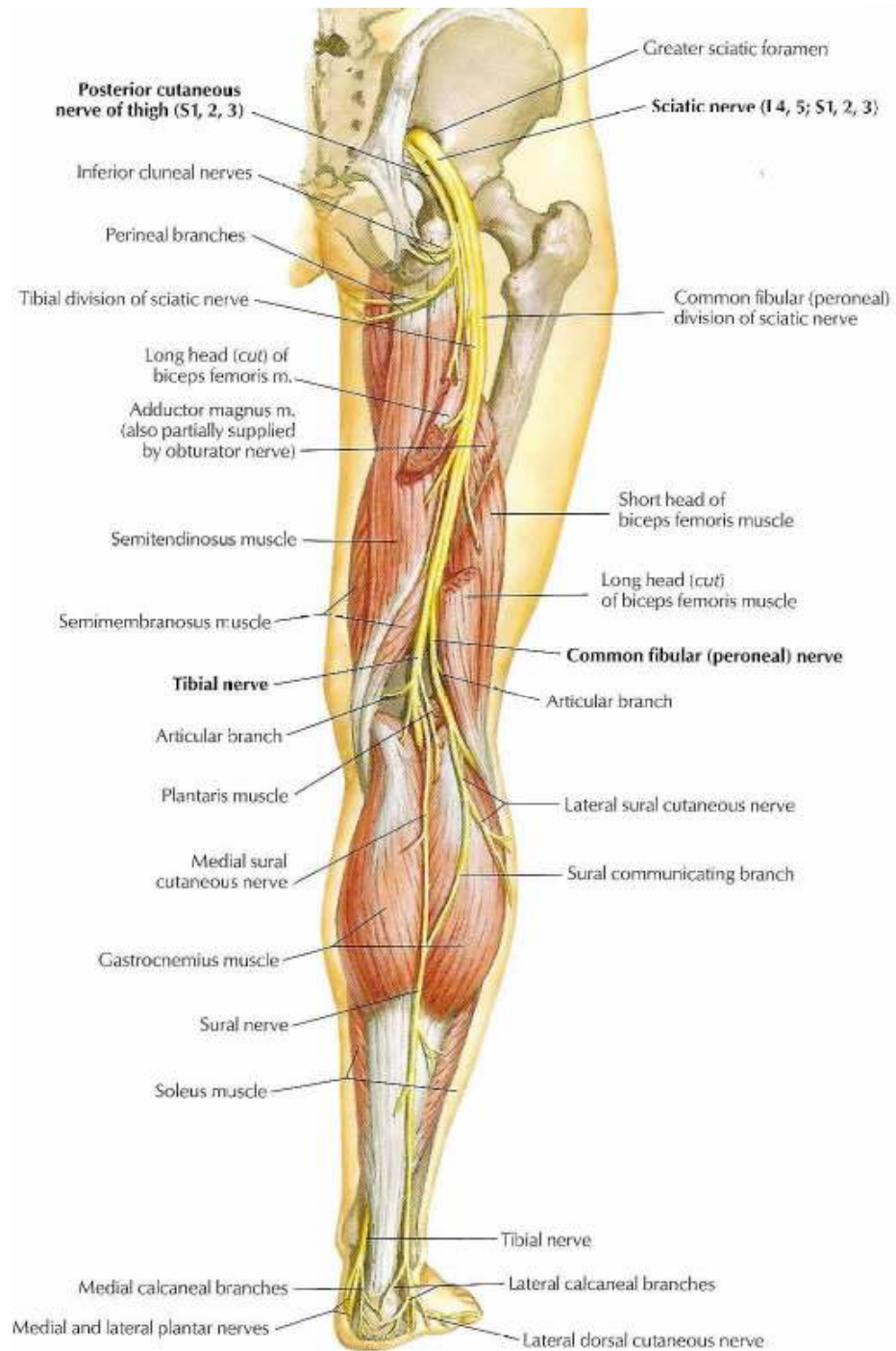
 = Ventral rami

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Ventral rami:



(b)

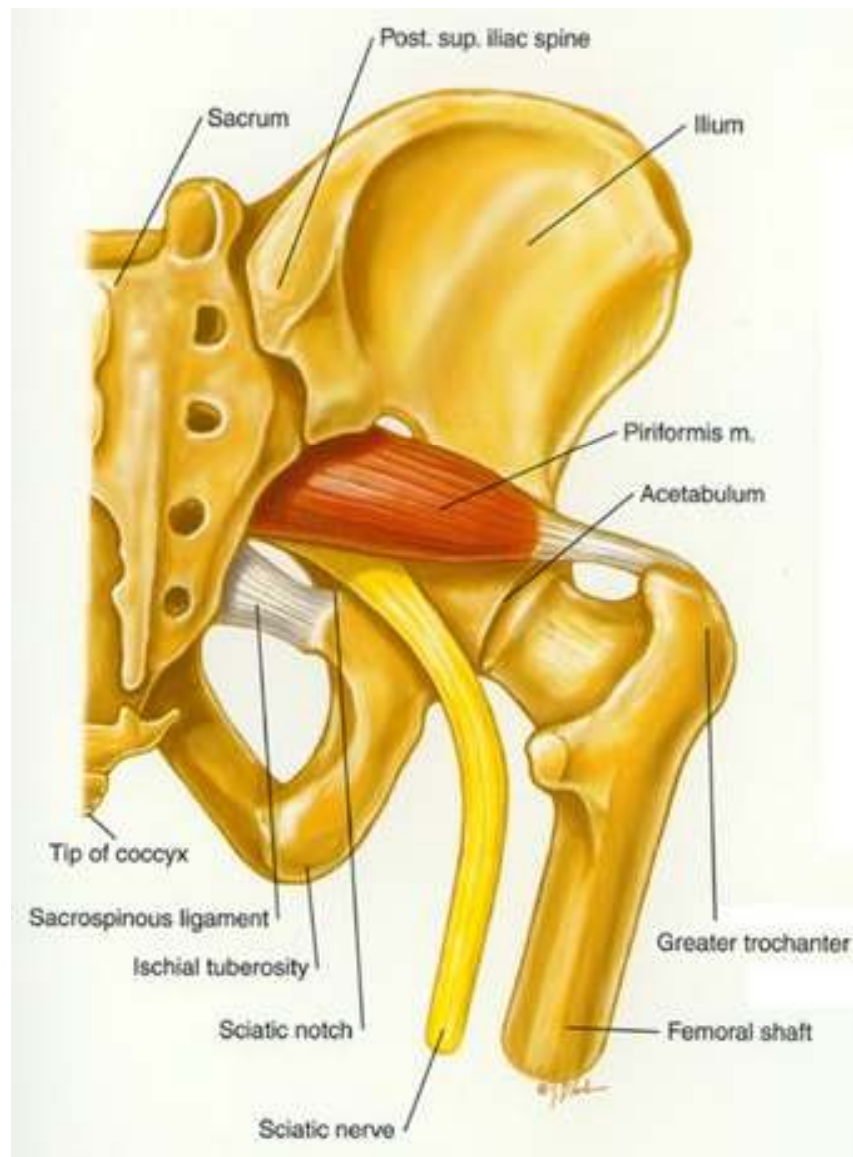


PIRIFORMIS SYNDROME



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PIRIFORMIS SYNDROME



PIRIFORMIS SYNDROME

INJURY BIOMECHANICS

- A hypertrophied Piriformis muscle compresses the sciatic nerve causing pain in the nerve's distribution
- This condition may be commonly seen in rowers



PIRIFORMIS SYNDROME

SYMPTOMS

- Pain and tenderness in the buttock region at the sciatic notch
- Ipsilateral radiating pain in the sciatic nerve's distribution
- Symptoms may be exacerbated by stretching the piriformis via adduction and medial rotation of the hip joint
- Palpation of the sciatic notch reproduce symptoms
- The intolerance to prolonged sitting on hard surfaces

Figure 2: The FAIR test for piriformis syndrome



The athlete places the painful side up in a position of hip flexion, abduction, and internal rotation. The examiner applies downward pressure to the knee attempting to reproduce the buttock pain.

PIRIFORMIS SYNDROME

The noticeable difference between piriformis syndrome and L5 radiculopathy is the

- Presents with back pain
- Altered reflexes
- Sensory loss
- Muscle weakness of the hamstrings and gastrocnemius

PIRIFORMIS SYNDROME

TREATMENT STRATEGY

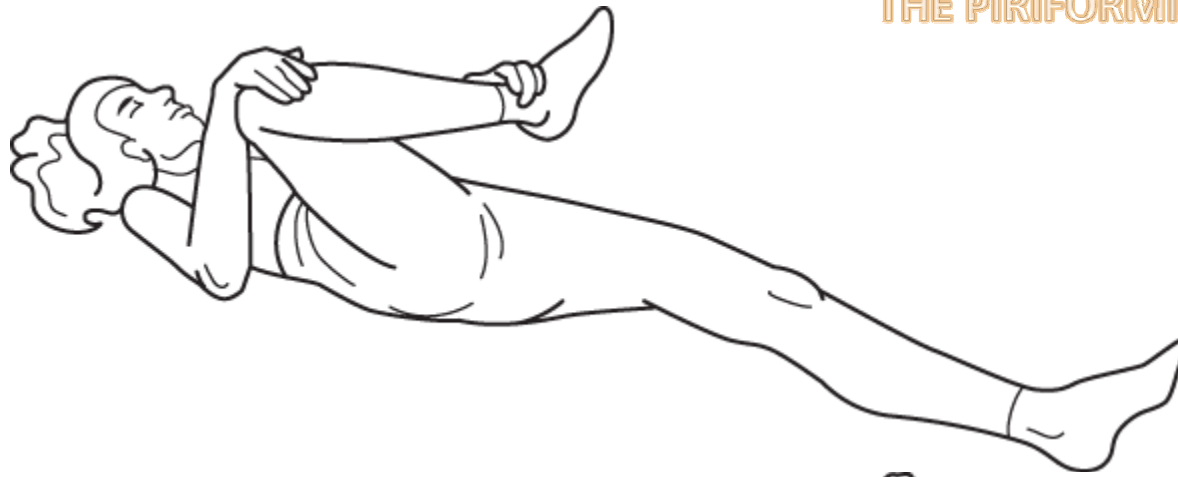
Treatment options for piriformis syndrome should include;

- NSAIDS,
- Physical Therapy,
- Neurodynamic Treatment Techniques
- Stretching Of The Muscle
- Injection
- Surgical Release

Physical Therapy Protocol for Patients With Piriformis Syndrome

1. Ultrasound 2.0 to 2.5W/cm² applied in broad strokes longitudinally for 10 to 14 minutes.
2. Hot packs or cold spray at the same location for 10 minutes.
3. Stretch the piriformis muscle for 10 to 14
4. Myofascial release at lumbosacral Para spinal muscles.
5. McKenzie exercises.
6. Duration: 2 to 3 times weekly for 1 to 3 months.

THE PIRIFORMIS STRETCH



THE PIRIFORMIS STRETCH



THE PIRIFORMIS STRENGTHENING



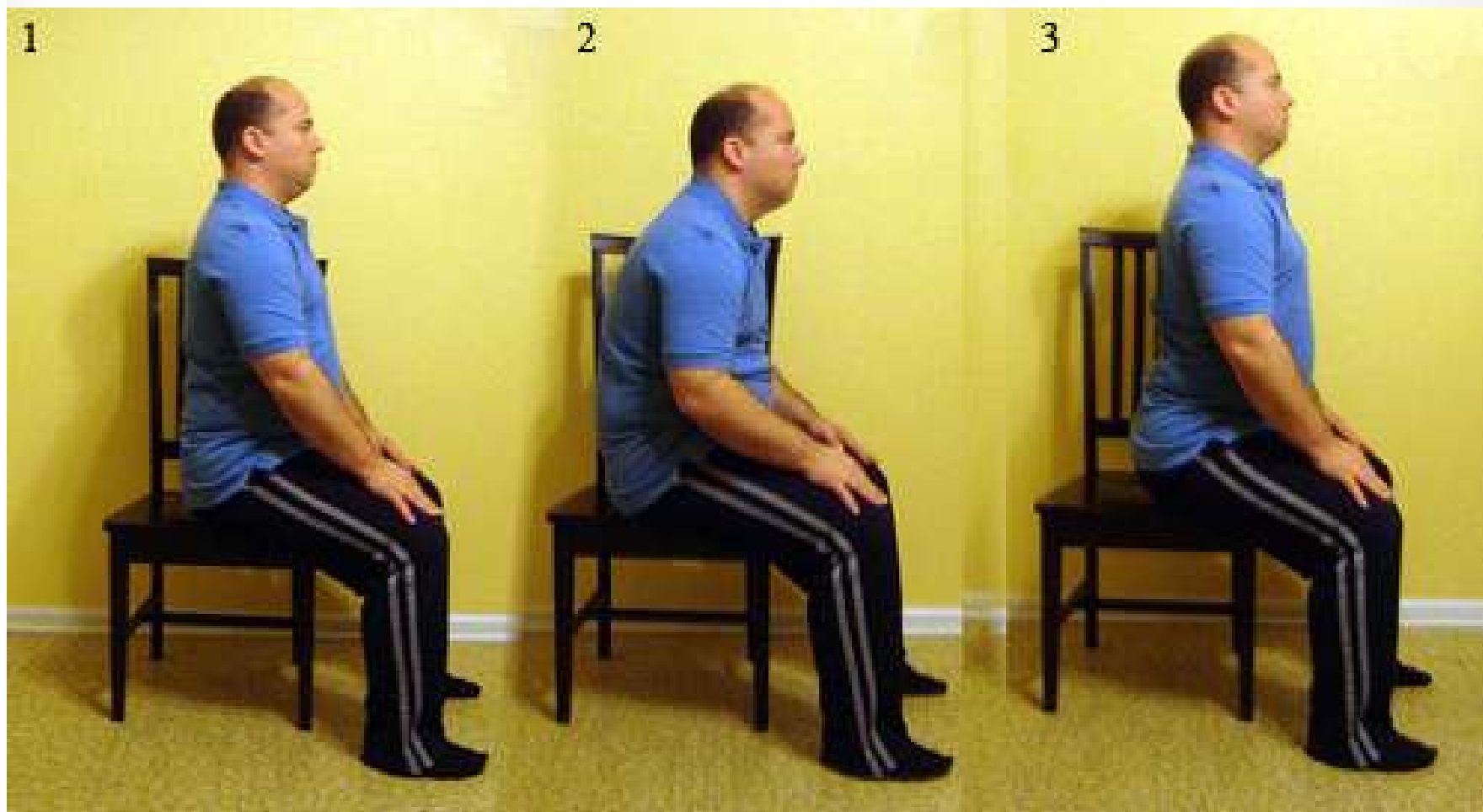
A



B

THE PIRIFORMIS HOME PLAN

Pelvic Tilting



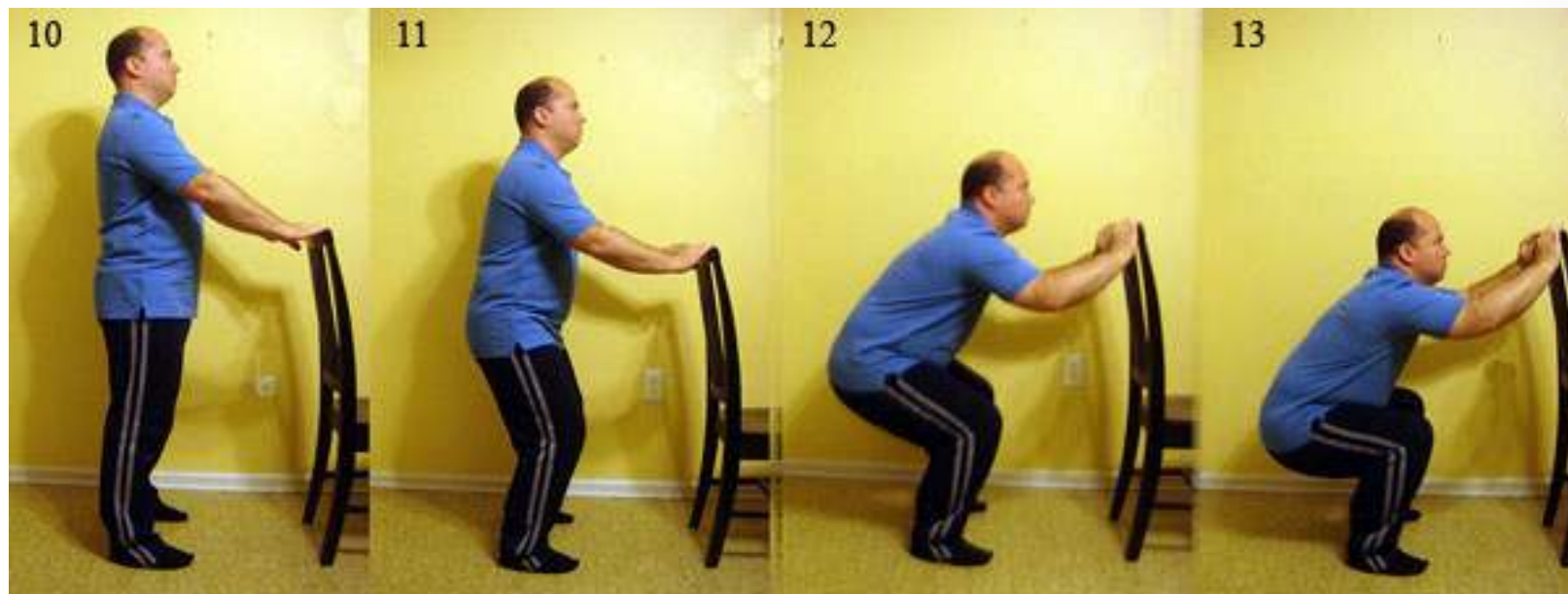
THE PIRIFORMIS HOME PLAN

Piriformis & Hip Flexor Stretches



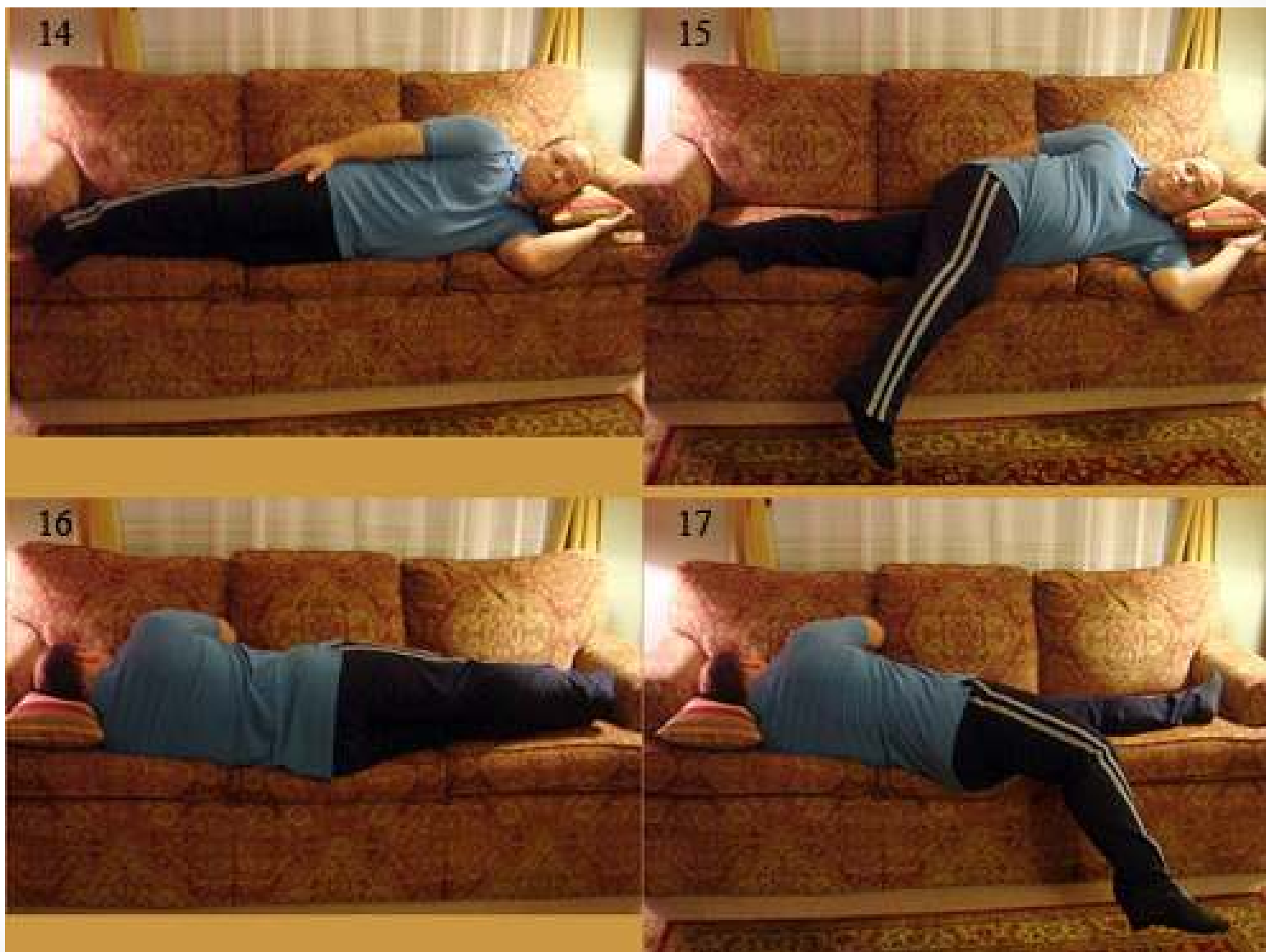
THE PIRIFORMIS HOME PLAN

Balanced Squats



THE PIRIFORMIS HOME PLAN

Gravity Leg Hanging



THE PIRIFORMIS MYOFASCIAL RELEASE



THE PIRIFORMIS MYOFASCIAL RELEASE



THE PIRIFORMIS MYOFASCIAL RELEASE



mckenzie's extension exercises

F O R L O W B A C K P A I N

Instructions:

The purpose of these exercises is to decrease pain and to restore normal function. Localization of pain as you exercise is a good sign. Activities or positions that cause pain to increase or move away from the back are considered to have adverse effects on your condition. These exercises are the most important part of your treatment.

1. Prone-lying

Lie face down with arms at your sides, head turned to one side. Take deep breaths and relax for 5 minutes.
Purpose: Aims to remove tension from back muscles. First aid for acute low back pain.



2. Elbow press

Place elbows under your shoulders and lean on your forearms. Take deep breaths and relax your muscles. Maintain for 5 minutes.
Purpose: Removes tension over low back muscles.



3. Press-ups

Place hands under shoulders. Straighten your elbows, pushing the top half of your body up as permitted. Maintain position for 1 to 2 seconds. Try to go higher after each try.
Purpose: Treats low back pain stiffness and prevents low back pain from recurring once fully recovered.



4. Chair bends

Sit down on a stable chair. Feet apart, hands on your thighs. Touch the floor as far as you can and after each repetition you may hold your ankles and pull yourself down.
Purpose: decreases tension and pressure over your low back area.



5. Backward bending

Feet slightly apart, hands at the small of the back, fingers pointing down. Bend backwards and use your hands as your pivot point for 1 to 2 seconds. Repeat 10 times.
Purpose: Stretches back muscles.

PORTFOLIO OF GRAPHIC DESIGNS

DANIEL C. DE LOS REYES, PT/PT

PERONEAL NERVE INJURY

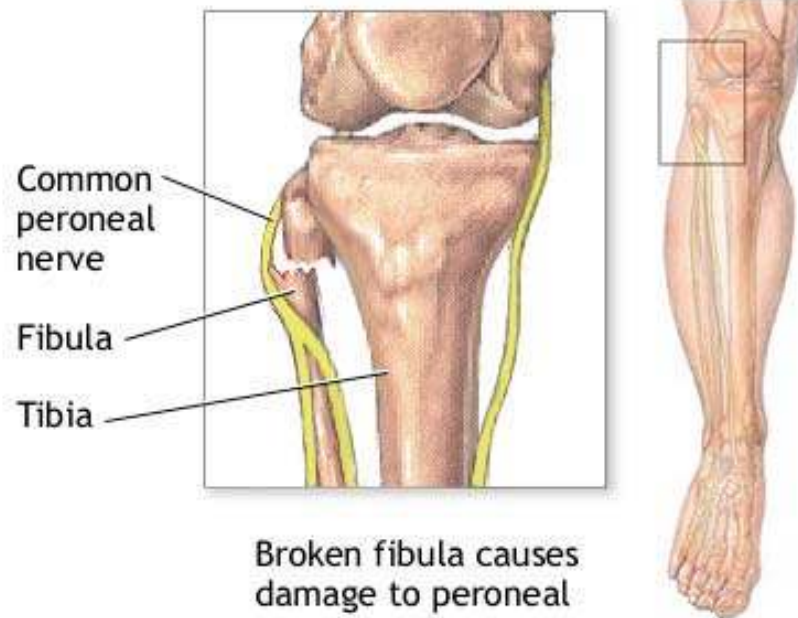
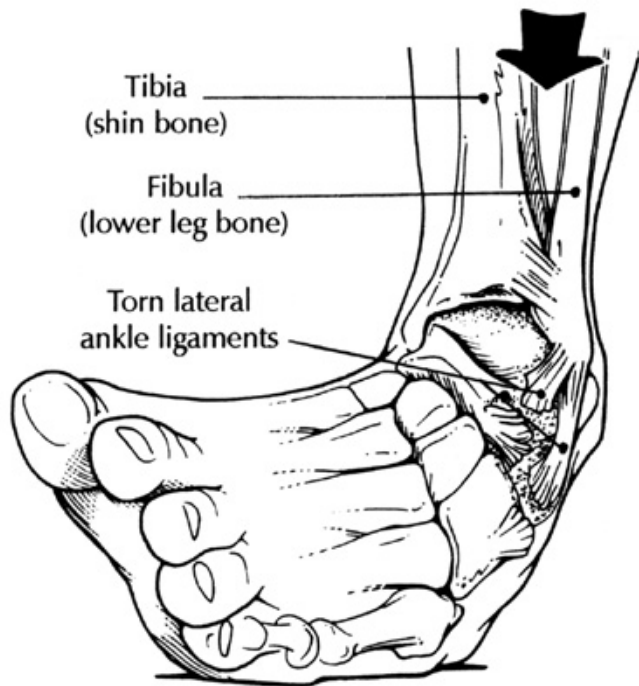


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PERONEAL NERVE INJURY

INJURY BIOMECHANICS

- ❑ Individuals who repetitively squat, such as a catcher in baseball, as this position can induce prolonged stretching of the nerve.
- ❑ However, it also occurs in individuals with minimal body fat which protect the nerve from external forces or compression.
- ❑ An acute injury to the CPN may occur in runners, whereby the nerve is forcibly stretched as the result of a severe ankle inversion injury.
- ❑ whilst fracture to the fibular head or knee dislocation can also injure this nerve



Broken fibula causes damage to peroneal nerve

PERONEAL NERVE INJURY

SYMPTOMS

- ❑ Typically patients complain of pain, burning or numbness down the anterolateral aspect of the lower leg with a loss in sensation.
- ❑ Clinical examination can reveal weakness in the ankle evetor muscles
- ❑ A positive Tinel's sign may be present at the fibular neck

PERONEAL NERVE INJURY

TREATMENT STRATEGY

Conservative treatment for non-traumatic peroneal neuropathy should include;

- NSAIDs,
- Active rest,
- Physical therapy
- Neurodynamic sliding or tensioning techniques.
- In thin athletes, padding on the fibular head
- Avoidance of crossing the legs is also advised and ankle bracing should be considered in patients presenting with foot-drop to prevent ankle inversion sprain.





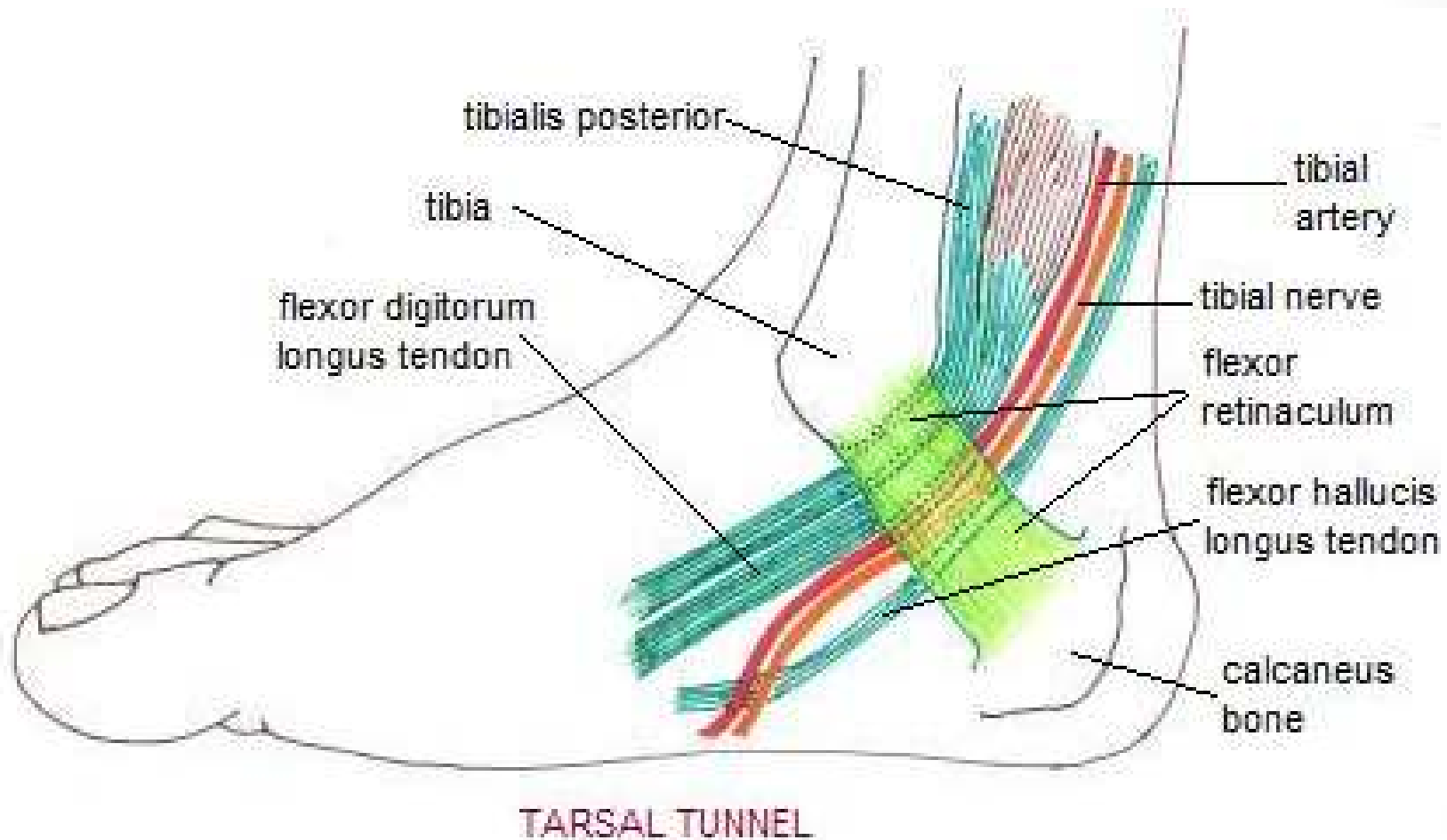
TARSAL TUNNEL SYNDROME

Tarsal Tunnel Syndrome



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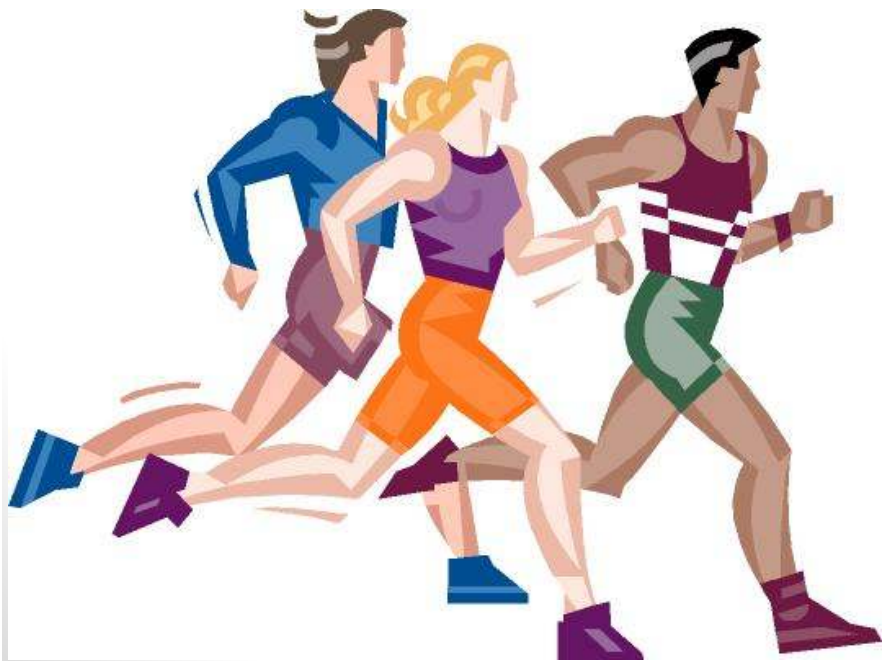
TARSAL TUNNEL SYNDROME ANATOMY



TARSAL TUNNEL SYNDROME

INJURY BIOMECHANICS

- This is an injury that may be prevalent in **hikers or runners**, the latter of which may be vulnerable to TTS (Shapiro and Preston 2009) due to the repetitive ankle dorsiflexion and plantar flexion which occurs whilst running .



TARSAL TUNNEL SYNDROME

SYMPTOMS

Patients can present with numerous symptoms such as;

- Tingling, numbness or pain at the toes, through the arch of the foot or the heel.
- Prolonged standing or walking may exacerbate symptoms
- The two most prominent clinical signs are a positive Tinel's test and sensory impairment of the terminal branches of the plantar nerve

TARSAL TUNNEL SYNDROME VS PLANTAR FASCIITIS

- Plantar fasciitis is condition requiring consideration during the diagnosing process in patients with suspected TTS.
- Plantar fasciitis generally presents with
- **Localised pain,**
- **Absent of sensory abnormalities;**

TARSAL TUNNEL SYNDROME

TREATMENT STRATEGY

- NSAIDs,
- Active rest,
- Manual therapy, Neurodynamic sliding or tensioning techniques
- Exercise therapy.
- An additional treatment option to consider is using orthotics or modify footwear to correct any excessive pronation, to minimise the stress placed on the tibial nerve.

RICE:
rest, ice,
compression
and elevation





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Foot with pronation

Orthotic

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Tarsal Tunnel Release



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Thank
you

A calligraphic 'Thank you' message. The word 'Thank' is written in a cursive style with a color gradient from orange to purple. The word 'you' is written below it in a similar style with a color gradient from green to blue. A yellow horizontal line is drawn under the 'you'. Below the line is a large green flourish that ends in a small red heart.

END OF LECTURE 11