

MED439
KING SAUD UNIVERSITY

Gluteal region and back of the thigh

Musculoskeletal Block - Lecture 14

Objective:

- ✓ Contents of the gluteal region:
 - 3 Glutei muscles: Gluteus maximus, medius and minimus. Other 5 Small muscles: Piriformis, Obturator internus, Superior gemellus, Inferior gemellus and Quadratus femoris.
- ✓ Nerves & vessels.
- ✓ Foramina:
 - 1-Greater Sciatic Foramen.
 - 2-Lesser Sciatic Foramen.
- ✓ Back of the thigh: Hamstring muscles.

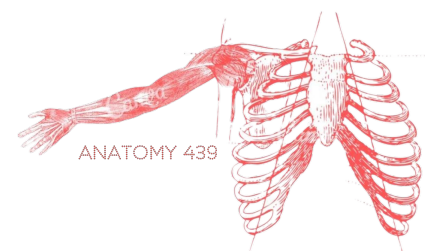
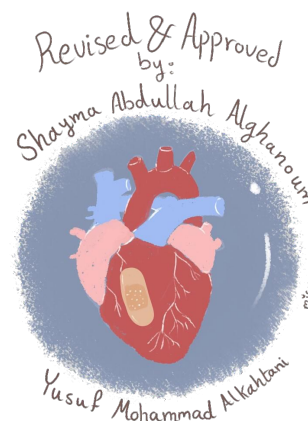
Color index:

Important

In male's slides only

In female's slides only

Extra information, explanation



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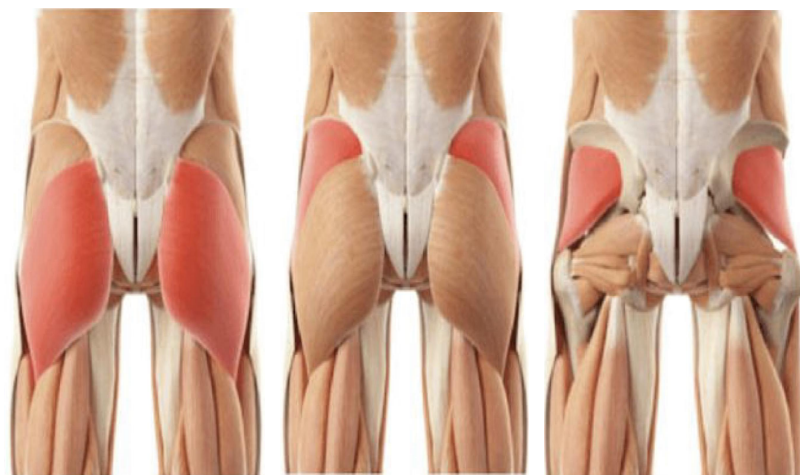


Contact us:
Anatomy439@gmail.com

Contents Of Gluteal Region:

Glutei:

1. Gluteus maximus
2. Gluteus medius
3. Gluteus minimus

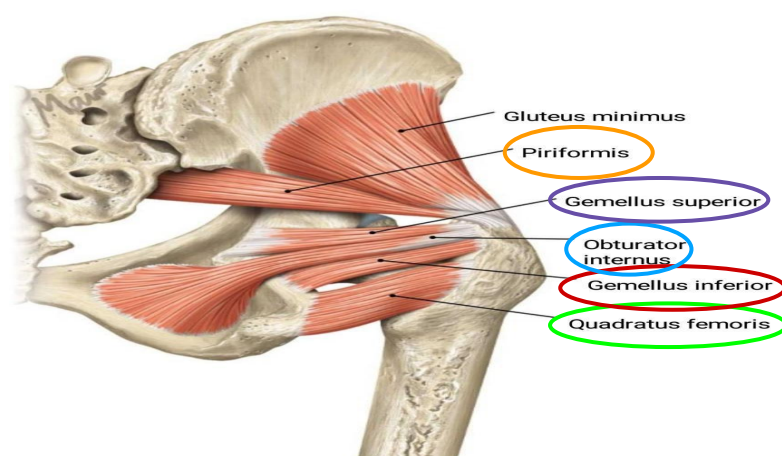


Gluteus Maximus Gluteus Medius Gluteus Minimus

Muscles

Small Muscles (Lateral Rotators):

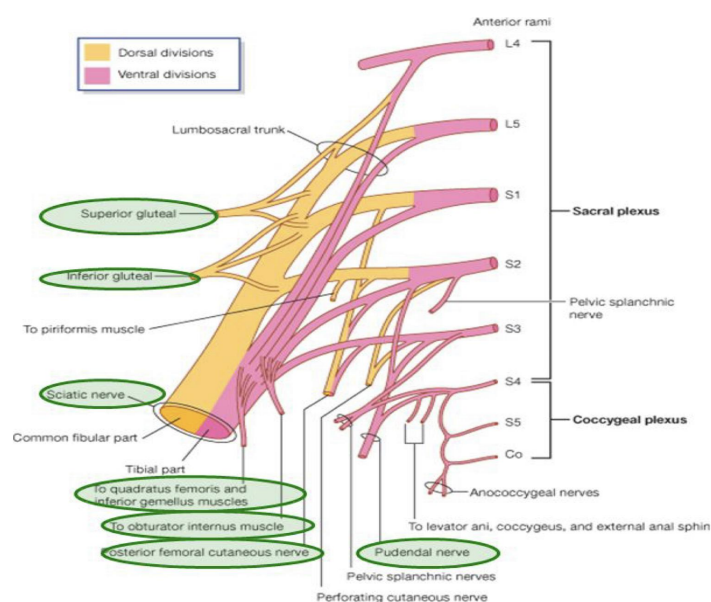
1. Piriformis
2. Superior gemellus
3. Obturator internus
4. Inferior gemellus
5. Quadratus femoris



Nerves

(All from Sacral plexus):

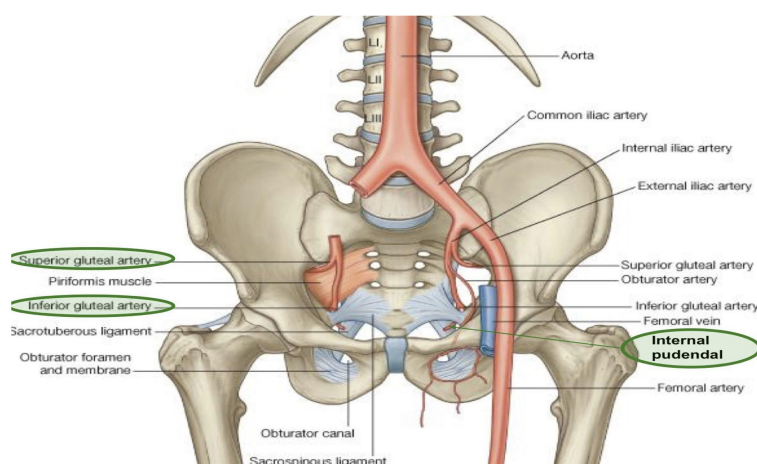
1. Sciatic nerve
2. Superior gluteal nerve
3. Inferior gluteal nerve
4. Posterior cutaneous nerve of thigh
5. Nerve to obturator internus
6. Nerve to quadratus femoris
7. Pudendal nerve



Vessels

(all from internal iliac vessels)

1. Superior Gluteal vessel
2. Inferior Gluteal vessel
3. Internal pudendal vessels



Greater Sciatic Foramen:

Greater Sciatic notch of hip bone is transformed into foramen by: **sacrospinous** (between the sacrum to ischial tuberosity) & **sacrospinous** (between the sacrum to ischial spine) ligaments.

Structures passing through **Greater sciatic foramen:**

Piriformis muscle

- (Above piriformis muscle)

Superior gluteal nerves and vessels

- (Below Piriformis muscle)

Inferior Gluteal nerves and vessels

Sciatic nerve

Posterior cutaneous nerve of thigh (superficialis)

Nerve to **quadratus femoris**

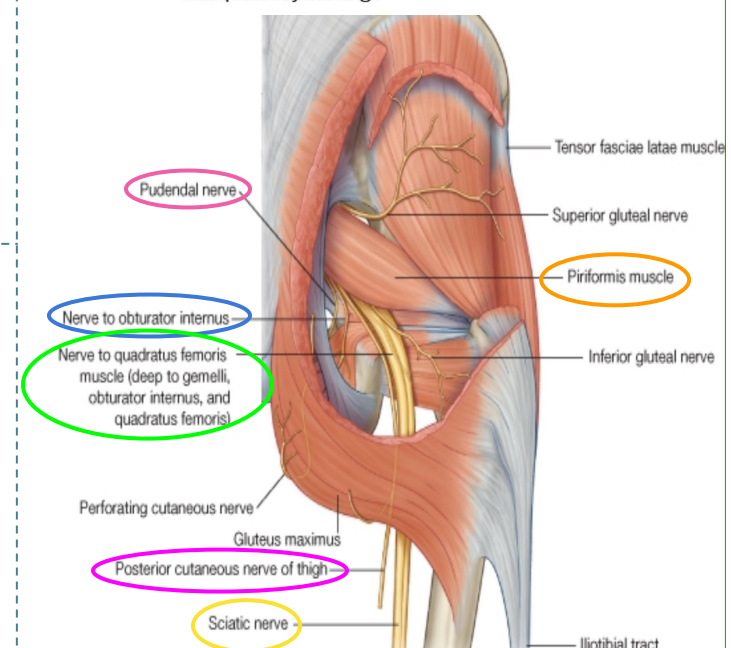
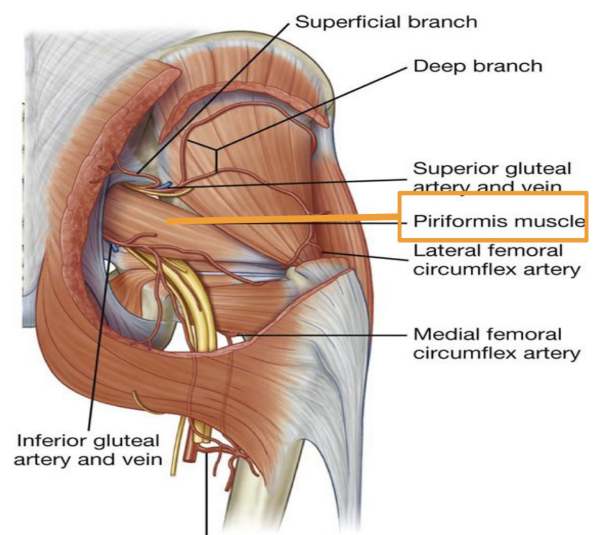
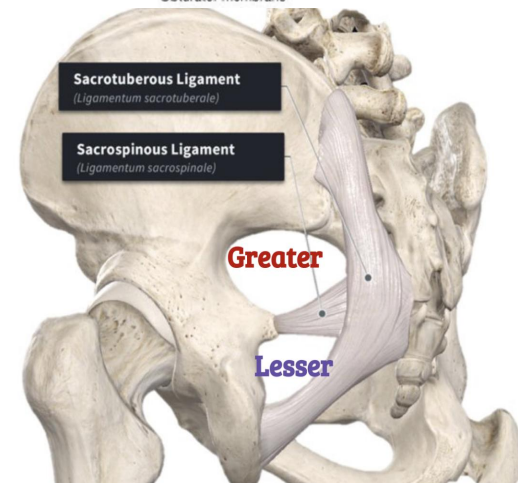
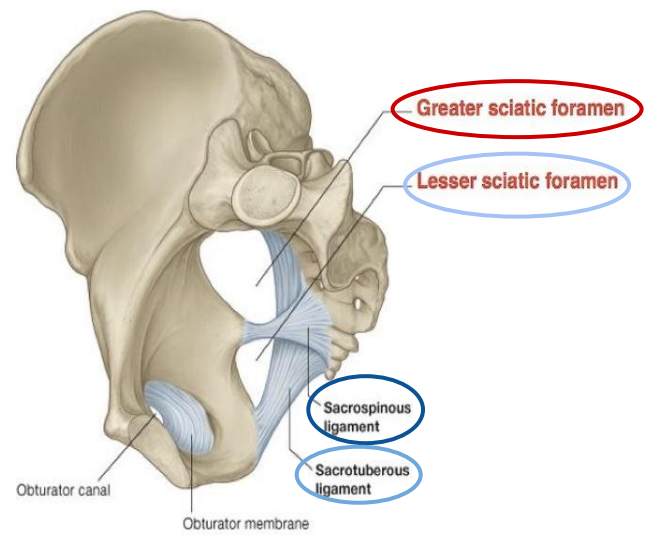
Nerve to **obturator internus**

Pudendal Nerve*

Internal Pudendal vessels*

*go to **Lesser Sciatic foramen** too

Pictures



Lesser Sciatic foramen:

Lesser Sciatic notch of hip is transformed into foramen by **Sacrospinous** & **Sacrospinous** ligaments.

Structures passing through **Lesser sciatic foramen:**

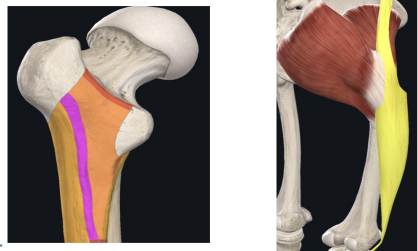
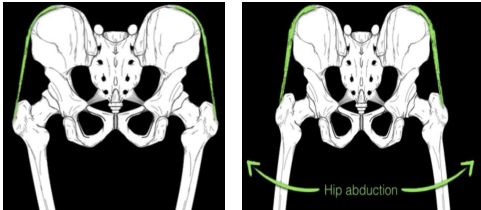
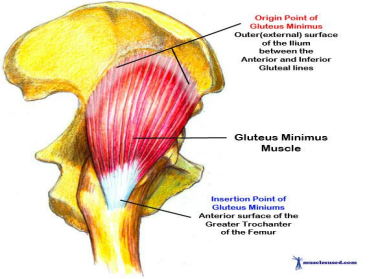
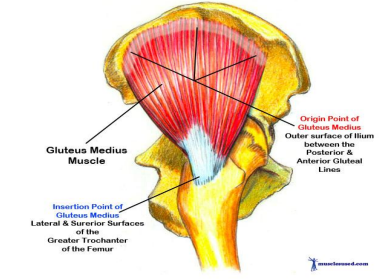
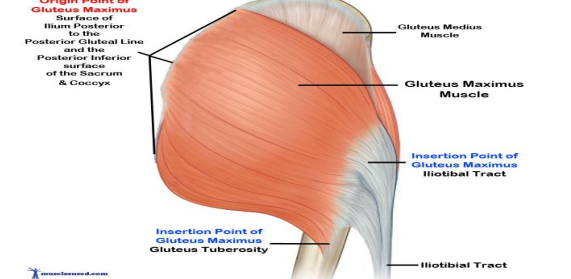
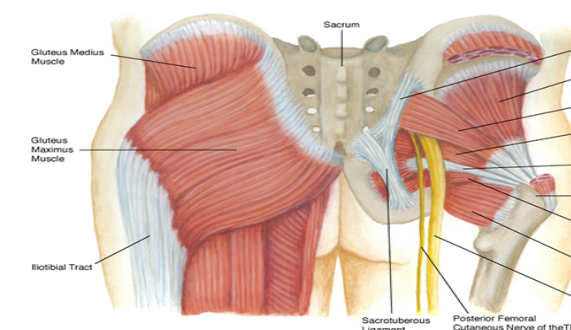
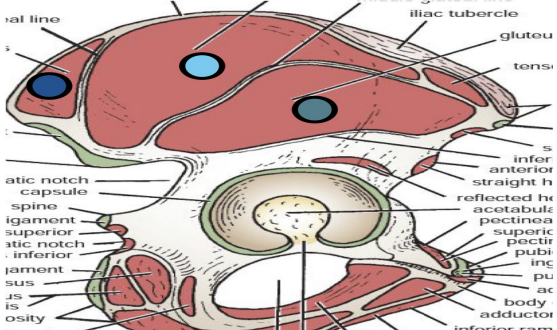
Tendon of **obturator internus**

Nerve to **obturator internus**

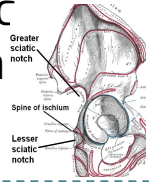
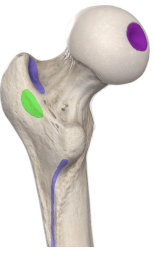
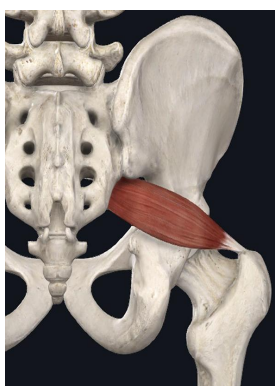

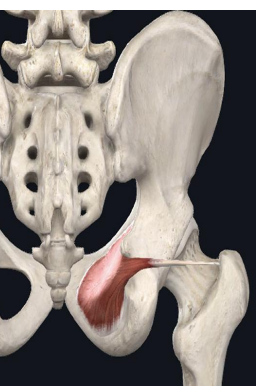
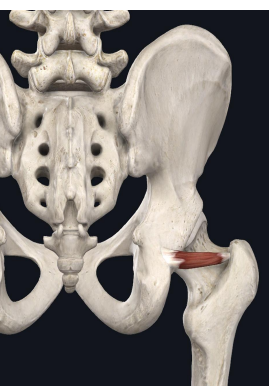
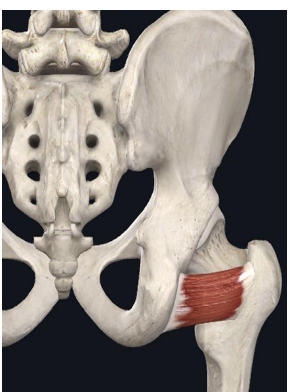

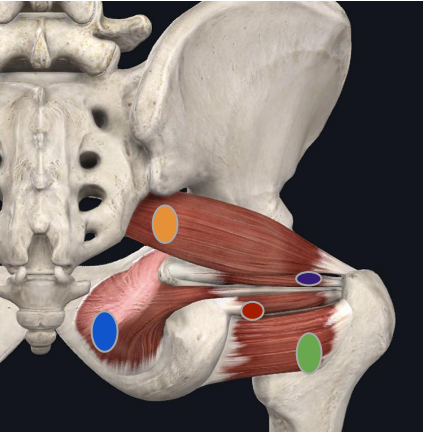
Pudendal nerve

Internal Pudendal Vessels

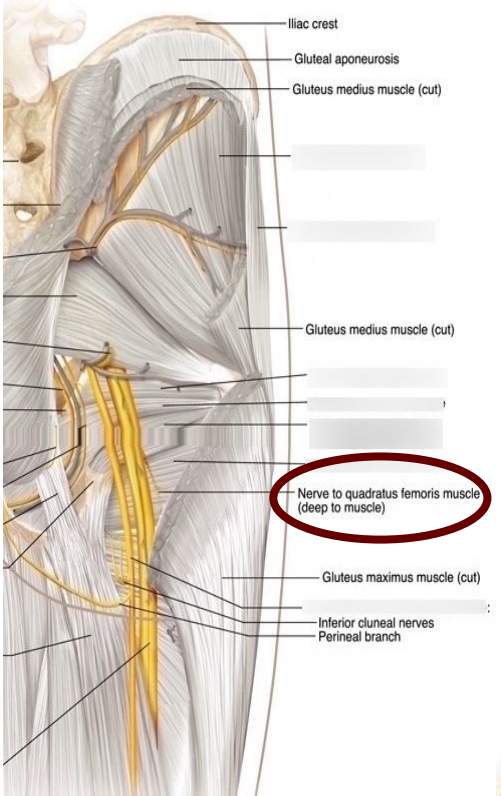
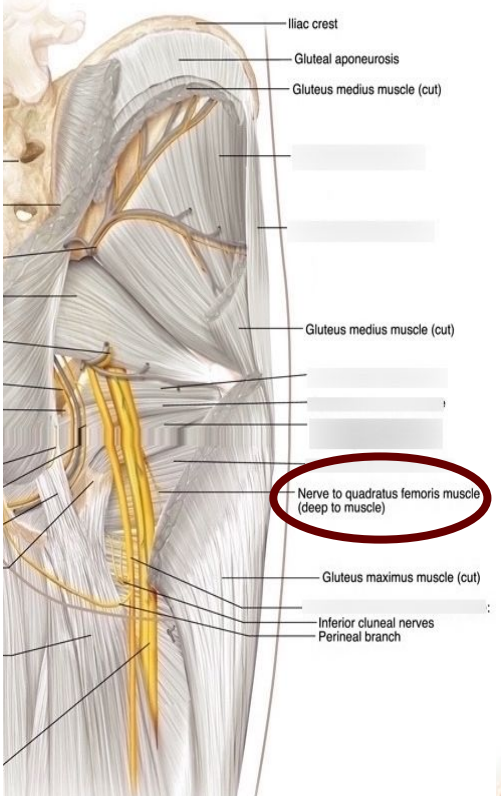
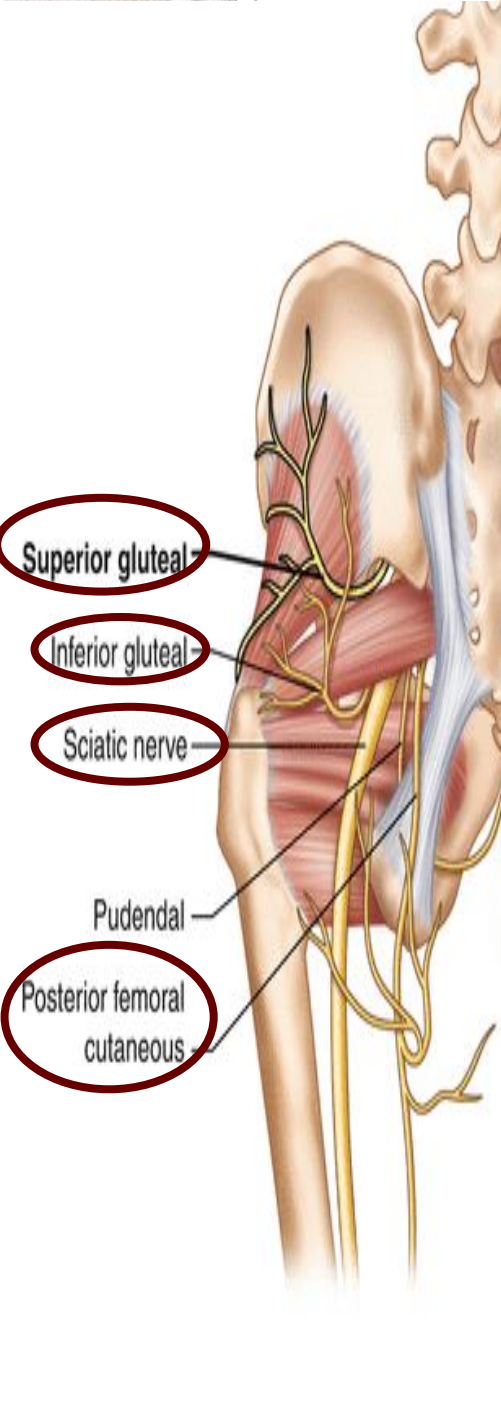
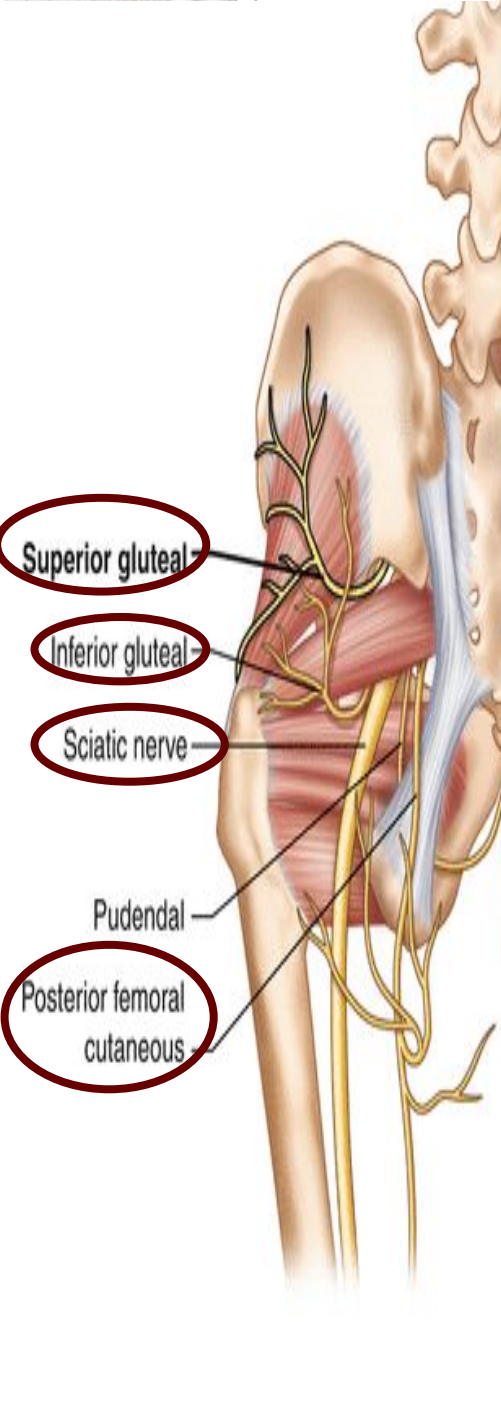
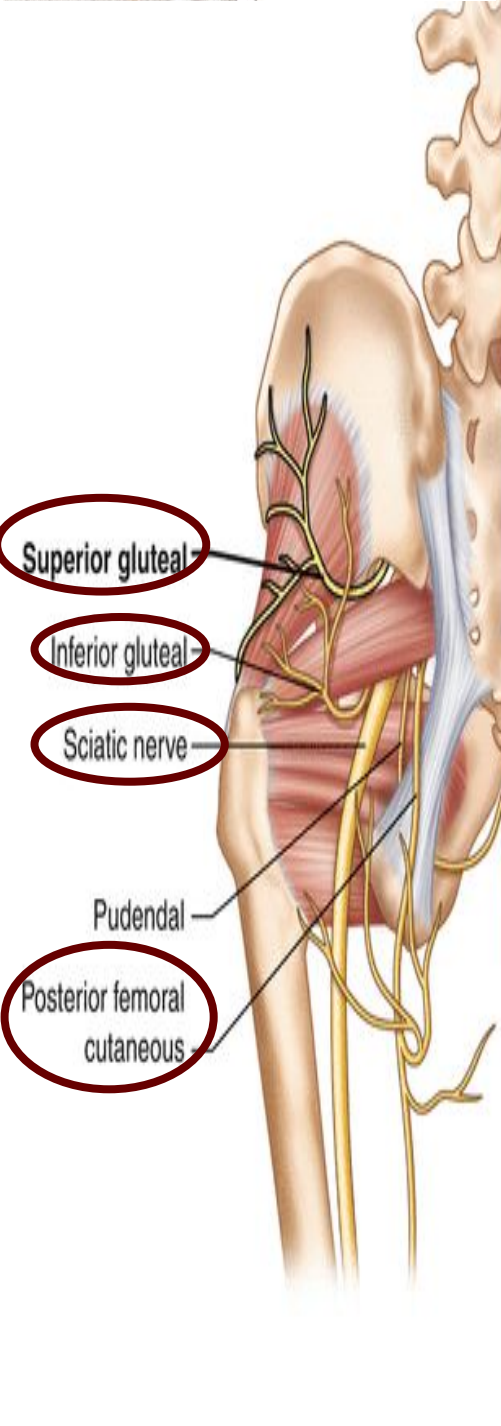
Glutei Muscles:

Muscles	Gluteus Minimus	Gluteus medius	Gluteus maximus
Origin	Anterior part of the gluteal surface of ilium	Middle part of the gluteal surface of ilium	-Posterior part of the gluteal surface of ilium - <u>Main origin</u> of gluteus maximus: Back of sacrum & coccyx & back of Sacrotuberous ligament
Insertion	Anterior surface of the greater trochanter	lateral surface of the greater trochanter	- <u>Main</u> insertion: iliotibial tract - <u>Other</u> insertion: gluteal tuberosity of the femur (posterior) 
Action	- Abduction & Medial rotation of hip joint. Also they prevent tilt of the pelvis on raising the other limb from ground 		- Extension & lateral rotation of the hip joint. -Through its attachment to iliotibial tract . -it stabilizes the femur on the tibia during standing.
Nerve	Superior gluteal nerve. L4,5,S1		Inferior gluteal nerve. L5,S1,2
Pictures			
			

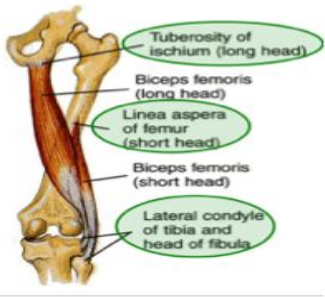
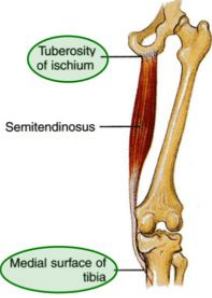
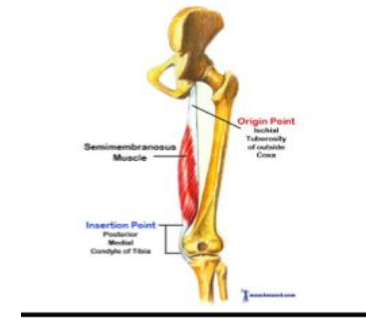

Small Muscles (Lateral Rotators):

Muscles	Piriformis	Superior Gemellus	Obturator Internus	Inferior Gemellus	Quadratus femoris
Origin	Pelvic surface of middle 3 sacral vertebrae	Upper part of lesser sciatic notch 	Inner surface of the side wall of the pelvis	Lower part of lesser sciatic notch	Ischial tuberosity
Insertion	Greater trochanter	Into tendon of obturator internus	Into the medial surface of the Greater trochanter	Into tendon of obturator internus	Quadratus tubercle. 
Action	All have SIMILAR ACTION: <ul style="list-style-type: none"> • Lateral rotation of the hip joint. • Control movement of the hip joint. 				
Nerve	Anterior rami of S1,2	Nerve to obturator Internus		Nerve to quadratus femoris	
Pictures					
	 <p>Greater trochanter</p>				

Nerves:

Nerve	Course	Branches	Picture
Superior gluteal nerve	Passes through greater sciatic foramen, above piriformis, then between gluteus medius and minimus	Muscular: to gluteus medius, minimus and tensor fasciae lata Articular: to hip joint	
Inferior gluteal nerve	Passes through greater sciatic foramen, below piriformis, then deep to gluteus maximus	muscular to gluteus maximus	
Nerve to quadratus femoris	passes through greater sciatic foramen, below piriformis	Muscular: to quadratus femoris and inferior gemellus Articular: to hip joint	
Posterior cutaneous nerve of thigh	Passes through greater sciatic foramen, below piriformis, then descends deep to deep fascia.	Cutaneous branches to: gluteal region, back of scrotum (labium majus) back of thigh & upper part of back of leg.	
Sciatic nerve (L4 and 5; S1, 2, and 3)	passes through greater sciatic foramen, below piriformis, then superficial to: ischial spine, superior gemellus, tendon of obturator internus, inferior gemellus, quadratus femoris & adductor magnus.(posteriorly)	- No branches in gluteal region, - Divides into tibial and common peroneal nerves, in the lower third (Middle) of back of thigh	

Back of the thigh (hamstrings)

Muscles	Biceps femoris	Semitendinosus	Semimembranosus	Adductor magnus (hamstrings part)
Origin	The long head: the ischial tuberosity. The short head: the linea aspera .	Ischial tuberosity	Ischial tuberosity	Ischial ramus and ischial tuberosity
Insertion	Mainly into the head of the fibula.	Upper part of the medial surface of the shaft of the tibia (SGS) SGS: same insertion and same action (flexes knee joint) S: Sartorius G: Gracilis S: semitendinosus	Posterior surface of the medial condyle of the tibia. (forms the oblique popliteal ligament) which reinforces the capsule on the back of the knee joint.	Adductor tubercle of the medial condyle of the femur
Action	-Flexion of knee -Lateral rotation of flexed leg. <u>-The long head extends the hip</u>	-Flexes and medially rotates the leg at the knee joint -Extends the of the hip joint	Flexes and medially rotates the leg at the knee joint Extends the thigh at the hip.	Extends the thigh at the hip joint
Nerve	<u>The long head:</u> tibial part of sciatic <u>the short head:</u> the common peroneal part of the sciatic.	Tibial portion of the sciatic		
Pictures				
Profunda femoris artery	It has 4 perforating branches that provides a rich blood supply to this compartment (go back to VASCULAR ANATOMY OF THE LOWER LIMB)			
Profunda femoris vein	It drains the greater part of the blood from the compartment			

MCOs

Q1: Which is NOT part of small muscles of gluteal region?

- A. Quadratus femoris
- B. Obturator internus
- C. Gluteus minimus
- D. Piriformis

Q2: a structure passing through greater sciatic ONLY.

- A. Pudendal nerve
- B. Sciatic nerve
- C. Internal pudendal vessels
- D. Tendon of obturator internus

Q3: a structure passing through lesser sciatic ONLY.

- A. Posterior c. nerve of thigh
- B. Pudendal nerve
- C. Tendon of obturator internus
- D. Nerve to obturator internus

Q4: a common structure between greater & lesser sciatic.

- A. Internal pudendal vessels
- B. Tendon of obturator internus
- C. nerve to quadratus femoris
- D. superior gluteal nerves

Q5: which one is supplied by (N to obturator Internus) ?

- A. Superior Gemellus
- B. Obturator Internus
- C. A&B
- D. Inferior Gemellus & Obturator Internus

Q6: which of the following supplies the piriformis

- A. Anterior rami of S1,2
- B. Superior gluteal nerve
- C. Sciatic nerve
- D. Posterior rami of S1,2

Q7: Nerve that supply the gluteus Maximus muscle ?

- A. Superior gluteal nerve
- B. femoral nerve
- C. sciatic nerve
- D. inferior gluteal nerve

Q8: Gluteus maximus main insertion ?

- A. iliotibial tract
- B. Anterior surface of the greater trochanter
- C. Quadratus tubercle.
- D. lesser trochanter

Q9: the origin of piriformis is ?

- A. Pelvic surface of middle 3 sacral vertebrae
- B. Middle part of the gluteal surface of ilium
- C. Ischial ramus and ischial tuberosity
- D. Greater trochanter

Q10: Superior gemellus is supplied by ?

- A. superior gluteal nerve
- B. inferior gluteal nerve
- C. nerve to obturator internus
- D. sciatic nerve

Q11: which muscle inserts in the anterior border of greater trochanter ?

- A. Piriformis
- B. gluteus maximus
- C. gluteus minimus
- D. gluteus medius

Q12: which structure passes in both greater and lesser sciatic foramina?

- A. superior gluteal nerve
- B. piriformis
- C. superior gluteal vessels
- D. pudendal nerve

1) C
2) B
3) C
4) A
5) C
6) A
7) D
8) A
9) A
10) C
11) C
12) D

SAOs

Q1: name four of the structures passing below piriformis muscle


Q2: List three lateral rotators of hip joint

Q3: what is the name of the nerve that supplies the hamstrings


Q4: list the hamstrings muscles from lateral to medial

(1) Sciatic nerve, inferior gluteal nerves and vessels, nerve to quadratus femoris, pudendal nerve
(2) Gluteus maximus, inferior Gemellus, Quadratus femoris
(3) tibial nerve except for the short head of biceps femoris which is supplied by common peroneal (Fibular) nerve
(4) Biceps femoris, semitendinosus, semimembranosus

This lecture is done by:

 Bader Alrayes

 Taif Almutairi

 Banan alqhadi

Team leaders:
Mayasem Alhazmi
Fahad Alajmi