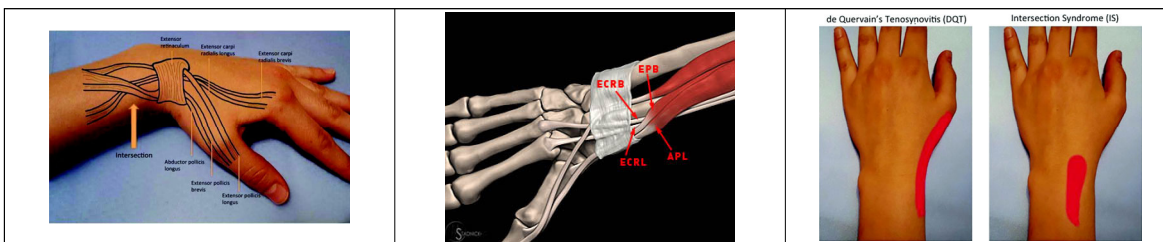
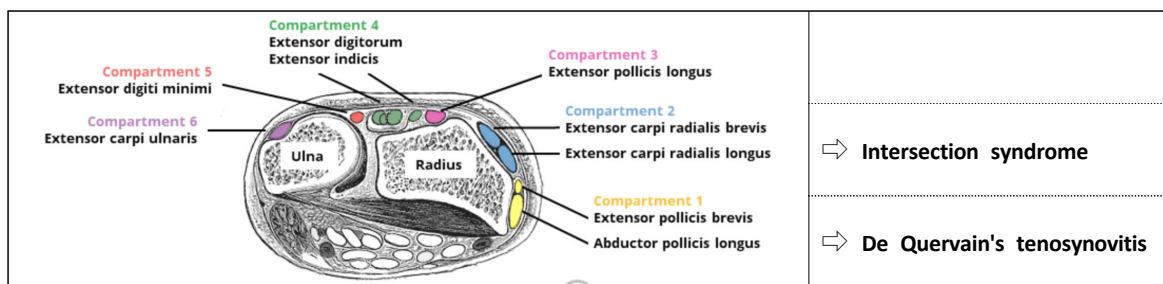


A 30-year-old male who works as an administrative assistant at a hospital presents to your office with pain and tenderness over the radial side of his wrist. During the exam, you place the patient's thumb flexed into the palm of his hand with his fingers making a fist over his thumb. You then ulnar deviate his wrist and it elicits increased pain. Which tendon is most likely causing the pain?

- A. Extensor Pollicis Longus + Extensor Pollicis Brevis
- B. Abductor Pollicis Longus + Extensor Pollicis Brevis
- C. Abductor Pollicis Longus + Abductor Pollicis Brevis
- D. Extensor Carpi Radialis Longus + Extensor Carpi Radialis Brevis

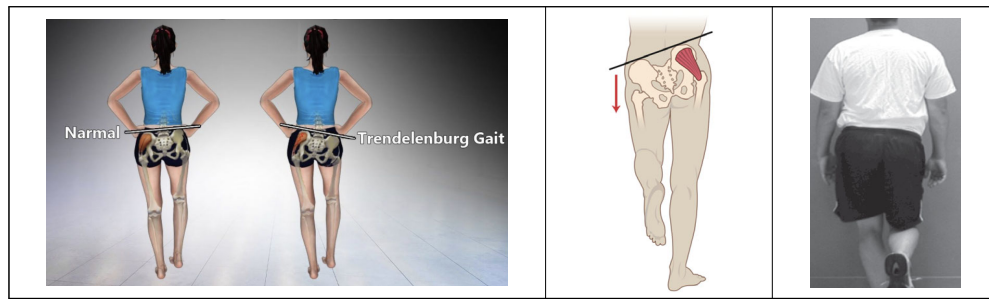
- **De Quervain's tenosynovitis** is caused by repetitive or direct trauma to the sheath of the Abductor pollicis longus (APL) and Extensor pollicis brevis (EPB) tendons causing a tenosynovitis and inflammation. This involves the first compartment of the wrist.
- **Physical Exam:** The provocative test used to diagnose this tenosynovitis is called the Finkelstein's test. The patient's thumb is flexed into the palm of the hand with the fingers making a fist over the thumb. The examiner then ulnar deviates the wrist. If this produces pain, the test is positive and diagnostic for De Quervain's tenosynovitis. No imaging is necessary.
- **Treatment:** Conservative treatment includes immobilization of the thumb in a thumb spica splint, anti-inflammatories and at times a corticosteroid injection. If conservative treatment fails, surgical treatment is an option to release the tendon from the sheath.



A musician presents with insidious onset of dorsal wrist pain that is worse with use of the hand and wrist. You diagnose her with intersection syndrome, which occurs when the abductor pollicis longus (APL) and extensor pollicis brevis (EPB) cross over which muscles:

- A. Extensor carpi radialis longus and brevis
- B. Extensor digitorum
- C. Extensor pollicis brevis
- D. Flexor pollicis brevis and longus


- **Intersection syndrome** involves the second dorsal compartment of the wrist. It occurs where the abductor pollicis longus (APL) and extensor pollicis brevis (EPB) cross over the extensor carpi radialis longus (ECRL) and brevis (ECRB).
- Pain and swelling occur 4-8cm proximal to the wrist.
- Crepitus may be palpable with flexion and extension of the wrist.



A 55-year-old woman has undergone a right total hip replacement surgery. The physical exam notes the left hip now drops during right stance phase of the gait cycle. Where is the muscle weakness?

- A. Left gluteus medius
- B. Left obturator externus
- C. Right gluteus medius
- D. Right obturator externus

- The **Trendelenburg gait** is caused by weakness of the hip abductors.
- Trendelenburg gait involves the contralateral hip to drop during ipsilateral stance phase due to weakness of the gluteus medius. The ipsilateral gluteus medius is too weak to hold up the contralateral side. If the right gluteus medius is weak, during right stance phase, the left hip will drop.
- The preservation of the gluteus medius muscle during total hip arthroplasty is therefore regarded to be crucial for postoperative abduction force and functional outcome.

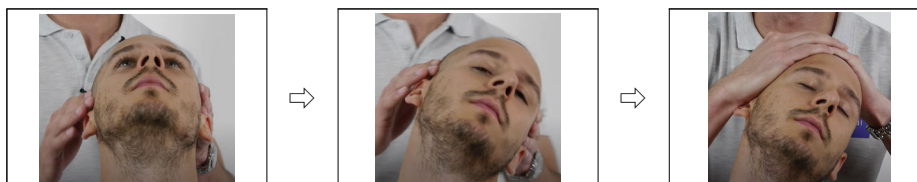
Shoulder abduction test	The test is positive if	Indication
	<input type="checkbox"/> the patient reports a decrease of radicular pain or symptoms in a dermatomal region	<input type="checkbox"/> A positive test may indicate cervical root irritation in C4 – C6.

What is the name of the clinical sign shown above?

- A. Spurling sign
- B. Rowe sign
- C. Lift-off sign
- D. Bakody sign

- This sign is called the shoulder abduction relief sign or Bakody sign. Individuals with pathology at C5-6 feel relief of their symptoms in this position, which is thought to be due to decreased traction on the C5, C6 nerve roots.
- **Cervical nerve roots** are each composed of fibers from a dorsal root that carries primarily sensory information and a ventral root that carries primarily motor information.
- **Cervical radiculopathy** is the clinical description of when a nerve root in the cervical spine becomes inflamed or damaged, resulting in a change in neurological function. Neurological deficits, such as numbness, altered reflexes, or weakness, may radiate anywhere from the neck into the shoulder, arm, hand, or fingers.

Spurling's Test



Purpose	<ul style="list-style-type: none"> • a.k.a. Maximal Cervical Compression Test and Foraminal Compression Test • Used during a assessment of the cervical spine when looking for cervical nerve root compression causing Cervical Radiculopathy.
Technique	<ul style="list-style-type: none"> • There are different ways described in the literature to perform the Spurling's test. • The version that provoked arm symptoms the best was with the neck in extension, lateral flexion and axial compression.



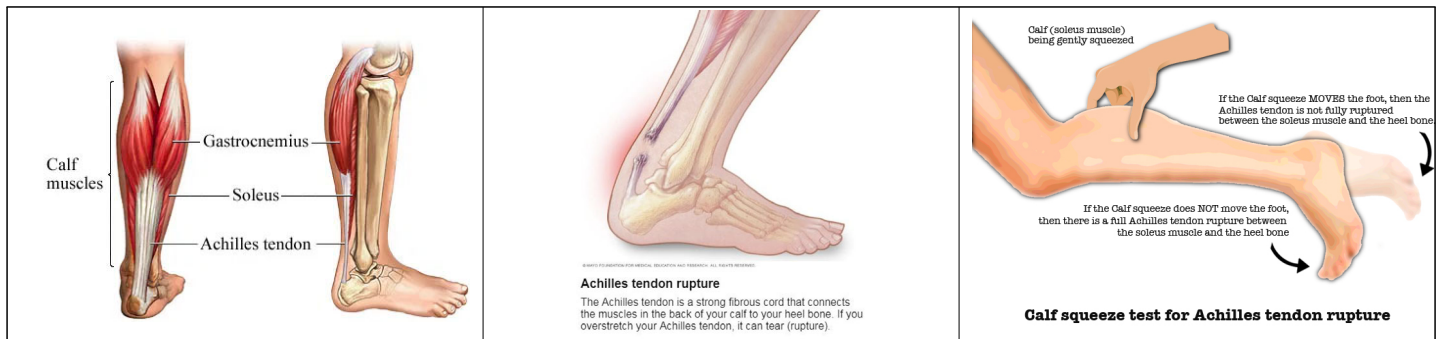
- **Heterotopic Ossification (HO)** is the abnormal growth of bone in the non-skeletal tissues including muscle, tendons or other soft tissue. When HO develops, new bone grows at three times the normal rate, resulting in jagged, painful joints.
- Prevalence
 - Following lower extremity amputation: 7%
 - Following TBI: 11% (ranges reported from 10-20%) - Hip > elbow
 - Following SCI: 20% (ranges reported from 20-40%)
 - Following THA: 55%
 - Following elbow fracture/dislocation: 90% / Following forearm fracture: 20%

Heterotopic ossification most commonly develops after arthroplasty of the:

- A. Shoulder
- B. Knee
- C. Hip
- D. Elbow

- The most common postsurgical site for heterotopic ossification (HO) after arthroplasty is the hip.
- The hip is also the most common site of HO occurrence in patients with spinal cord injury (SCI) or traumatic brain injury (TBI).

Calf muscles = Gastrocnemius + Soleus



A 46-year-old healthy male recreational athlete presents to your clinic with a 3-day-old right Achilles tendon rupture. He inquires about his treatment options. You tell him:

- A. Re-rupture rates using functional bracing are similar to re-rupture rates after surgery.
- B. Surgical repair has consistently better functional outcomes than conservative measures
- C. Treatment with non-weight bearing serial casting is superior to functional bracing.
- D. Patients in his age group are not surgical candidates.

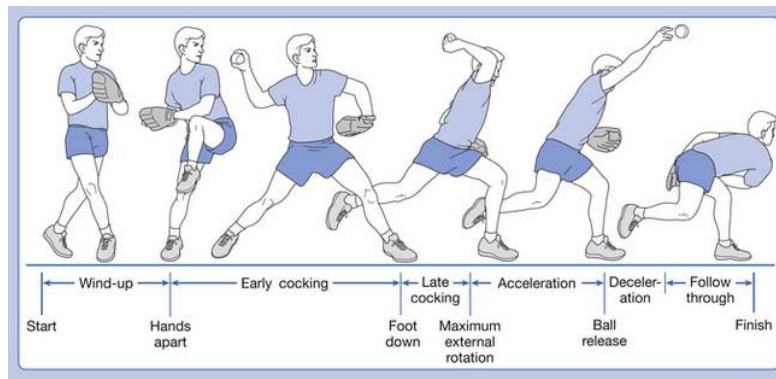
- Debate surrounds whether surgical or non-operative management of Achilles ruptures is most appropriate. However, the literature is increasingly clear that conservative treatment with **functional bracing** features similar re-rupture rates, similar functional outcomes, and lower complication rates compared to **surgical interventions**.
- Progressive serial casting was previously the preferred method of conservative management; however, functional bracing allows for faster progression of therapy and activities and a lower rate of re-rupture.



The _____ examines the integrity of the Achilles tendon by squeezing the calf. It is performed as a clinical test to identify the presence of a complete Achilles rupture.

- A. Thompson test

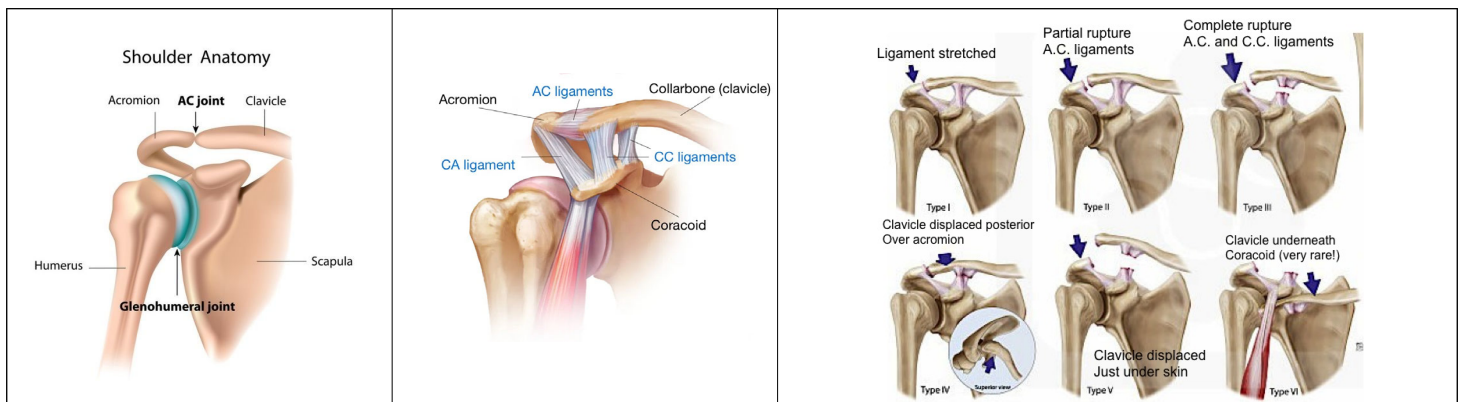
- B. Thomas Test



The majority of throwing injuries in baseball pitchers occur during which phases of throwing?

- Between wind-up and early cocking
- Between early cocking and late cocking
- Between maximum external rotation and maximum internal rotation
- Between maximum internal rotation and deceleration

- The greatest amount of torque occurs just before maximum shoulder internal rotation and the greatest force occurs between maximum shoulder internal rotation and ball release. Additionally, the majority of shoulder injuries occur at this point because the body attempts to slow down the arm from high rotational velocities.
- Potential injuries** include: Superior Labral Anterior Posterior (SLAP) due to high tensile forces during deceleration; Supraspinatus and Infraspinatus injuries due to large eccentric forces about the rotator cuff (RC); Subacromial Impingement due to maximal humeral head superior shear forces with concomitant weak RC muscles; and posterior shoulder tightness & capsular tightness because muscles that slow horizontal adduction and internal rotation of humerus will create a large torque to overcome muscle forces on posterior RC and joint capsule.



A 14-year-old quarterback suffers a type V acromioclavicular (AC) joint separation after being sacked. What is the recommended treatment for this athlete?

- Activity modification, cryotherapy, rest, and sling for comfort for 1-2 weeks
- Referral to orthopaedic surgery for open reduction and internal fixation
- Ultrasound guided AC corticosteroid injection
- Figure of eight sling to realign the clavicle

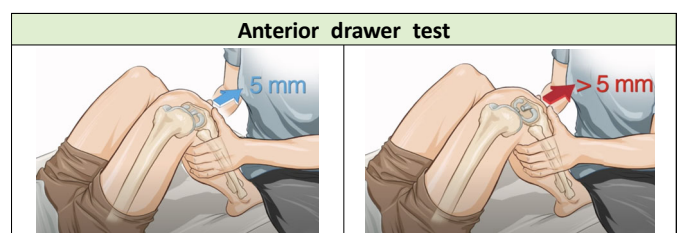
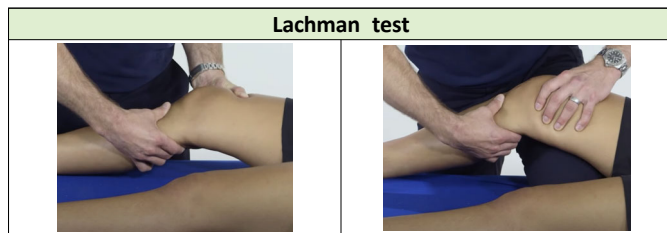
- In type V AC separations, the coracoclavicular and acromioclavicular ligaments are both torn. Additionally, the coracoclavicular ligament distance is greater than 100% compared to the contra-lateral side (usually associated with rupture of delto-trapezial fascia, resulting in a subcutaneous distal clavicle) and a surgical correction is indicated.
- Answer choice A describes treatment for a type I AC separation. There is no indication for a figure of eight sling to reduce the separation or an injection of corticosteroid to reduce pain.
- Grades I - III are usually treated non-operatively. Some patients with grade III AC separations may be candidates for early surgical reconstruction. The more severe sub-types of shoulder separation (IV through VI) usually require surgery due to the severe displacement of the clavicle causing pain and pressure on the nearby trapezius muscle.



A 23-year-old college football player presents to you with a complaint of right knee pain after planting his foot to cutting left in an attempt to avoid a tackle. On exam you note limited weight bearing on ambulation, swelling, decreased range of motion, a positive ballottement test, and a negative Lachman's test. Which ligament is most likely injured?

- A. Medial collateral ligament (MCL)
- B. Posterior cruciate ligament (PCL)
- C. Anterior cruciate ligament (ACL)
- D. Lateral collateral ligament (LCL)

- A plant-and-cut maneuver is a common mechanism of injury for an anterior cruciate ligament rupture, and typically results in immediate pain, subjective instability, and hemarthrosis (swelling and positive Ballottement test). Anterior cruciate ligament injuries are found in 62%-77% of acute knee hemarthroses; although Lachman's test was negative, it is often difficult to determine joint stability in the acute phase.
- Isolated **lateral collateral ligament** injuries are less common and would typically involve a varus stress to the knee. A **medial collateral ligament** injury can result from valgus strain during a cut or a medially-directed external blow; however, similar to tibial plateau fractures, it is a much less common cause of acute hemarthrosis (only a possibility if the deep articular-sided bands are ruptured), and pain would be expected to be more focally located at the medial knee. A **posterior cruciate ligament** injury is a much less common cause, and the mechanism would typically involve knee hyperflexion or a posteriorly-directed external blow to the tibia.



Lachman test, Anterior drawer test	
Acute ACL injury	Chronic ACL injury
not accurate	more accurate

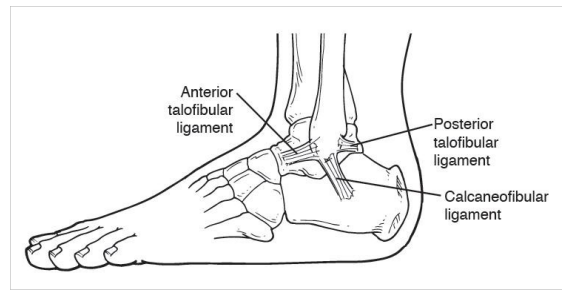
Which clinical test is most sensitive and specific for an anterior cruciate ligament tear?

- A. Pivot shift
- B. Lachman
- C. Anterior drawer
- D. Posterior drawer

	Lachman test	Anterior drawer test	Pivot shift test
Sensitivity	85% ^[1]	68% ^[2]	24% ^[1]
Specificity	94% ^[1]	79% ^[2]	98% ^[1]

[1] Benjaminse A. Gokeler A, van der Schans CP / [2] Kim SJ, Kim HK.

- The pivot shift test, Lachman test, and anterior drawer test are all clinical tests for anterior cruciate ligament (ACL) tears.
- The posterior drawer test is a clinical test for posterior cruciate ligament (PCL) tears.
- The Lachman test is the most sensitive and specific test for the diagnosis of an ACL tear, particularly with acute injuries. The Lachman test is performed with the knee positioned at approximately 150° of flexion. The femur is stabilized with one hand while the other hand applies pressure to the posterior aspect of the proximal tibia and the examiner attempts to translate the tibia anteriorly.

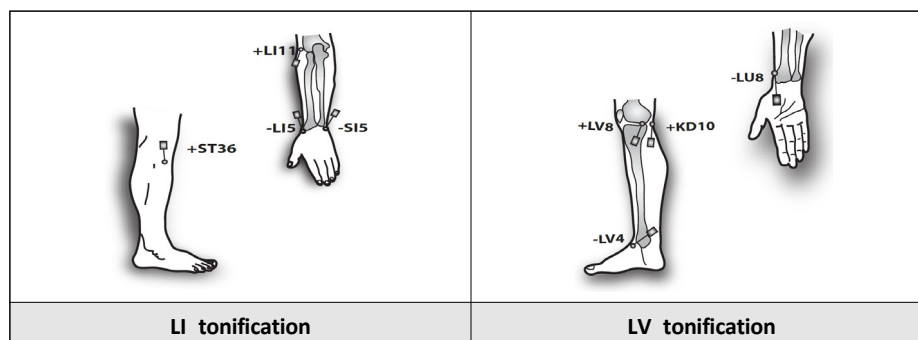


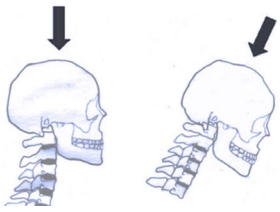
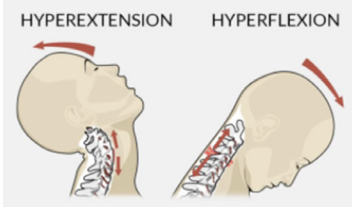
A 15-year-old male presents to your clinic with a complaints of recurrent right ankle sprains and pain. Radiographs are negative for any abnormalities. Your next step is to:

- A. Start physical therapy
- B. Order a brace and return him to play
- C. Make him weight bearing in a walking boot
- D. Refer him to orthopedic surgery

- Chronic ankle instability may occur in up to a third of individuals with an acute lateral ankle sprain. As he has not attempted therapy yet, neuromuscular-based **physical therapy** should be considered as the first line of treatment.
- Bracing** may also provide benefit, but should not be considered as a replacement for physical therapy. Immobilization with a **walking boot** may be indicated if he were having symptoms that intruded on his activities of daily living, such as walking with a limp. **Orthopedic consultation** may be needed if he continues to have symptoms despite rigorous adherence to conservative measures.

甲 갑	乙 을	丙 병	丁 정	戊 무	己 기	庚 경	辛 신	壬 임	癸 계
I	II	III	IV	V	VI	VII	VIII	IX	X
+ wood	- wood	+ fire	- fire	+ earth	- earth	+ metal	- metal	+ water	- water
GB	LV	SI	HT	ST	SP	LI	LU	UB	KD

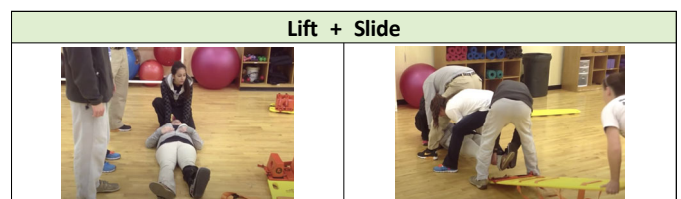
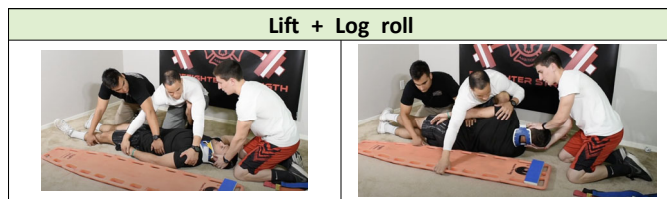


<h3 style="text-align: center;">Cervical Cord Neuropraxia</h3> <ul style="list-style-type: none"> ♦ Cervical cord “pinch” <ul style="list-style-type: none"> – Reduced AP diameter and in-folding of ligamentum flavum ♦ Axial load with hyperextension or flexion ♦ Sx last 10 min-48 hrs ♦ Pressure on cord causes local increase in intracellular calcium ♦ Mixed neuro findings in 2 limbs or all four 		
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Which of the following mechanisms of injury can result in cervical cord neuropraxia?

- A. Lateral rotation
- B. Traction
- C. Lateral flexion
- D. Axial compression

- **Cervical cord neuropraxia** (cervical cord “pinch”) refers to a temporary cessation of spinal cord function after an impact to the cervical spinal cord that usually resolves within 10 minutes to 48 hours. Several authors have postulated a link between cervical cord neuropraxia and developmental narrowing of the spinal canal.
- Cervical cord neuropraxia can be caused by hyperflexion, hyperextension, and axial compression forces.



Which is the best spine-board transfer technique to minimize movement at C5-6 level and achieve spinal immobilization after an on-the-field spine injury?

- A. Lift and log roll
- B. Lift and push
- C. Lift and slide
- D. Lift and pull

- Comparison Studies of the two techniques with C5-6 instability, **log roll** and **lift and slide** were equally effective in restricting sagittal plane motion to <4 degrees.
- However, log roll resulted in approximately 4 degrees more axial rotation and lateral flexion and 4 mm of medial lateral translation between C5-6

Hip dislocation	
Posterior dislocation	Anterior dislocation
most common	rare
→ sciatic nerve injury	→ femoral nerve injury

With an anterior dislocation of the hip, which nerve palsy is most likely to present?

- A. Sciatic
- B. Femoral
- C. Posterior tibial
- D. Peroneal

- A femoral nerve palsy is the most common motor nerve injury, while other nerve injuries are less frequent with anterior than posterior dislocations.