

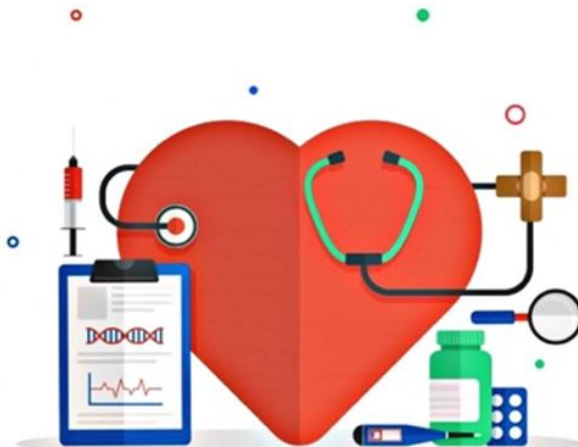
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اصنع يومك بكلمة :
لا يمكننا أن نبدأ من جديد ولكن يمكننا أن نبدأ الآن لنحصل على
نهاية جيدة ..



Clinical Skills

Musculoskeletal block



Clinical skills team438
King saud university

1- Intramuscular injection and Subcutaneous Injection

Materials:

- Alcohol Swab
- Clean gloves
- Syringe.
- Sterile gauze.
- Adhesive Tape.
- Drug.

Intramuscular (IM) injection site:

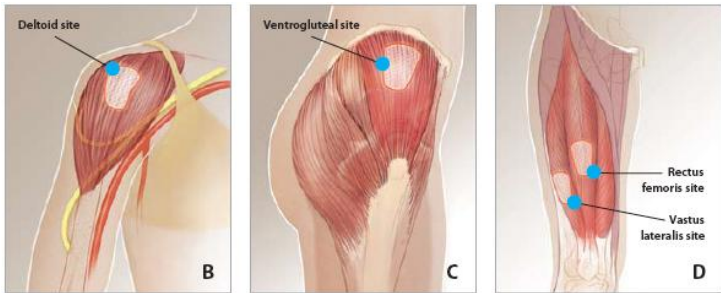
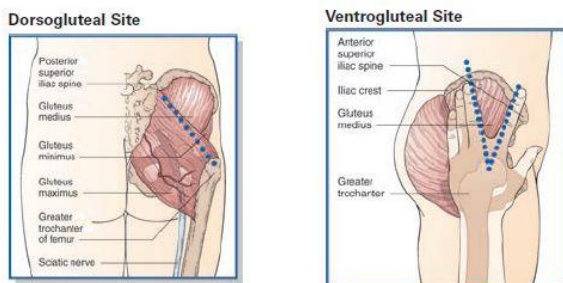


FIGURE 1B, C, D. Potential sites for intramuscular injection: Deltoid, ventrogluteal, rectus femoris, and vastus lateralis sites



Subcutaneous (SC):



Preparation

1. Introduce yourself to the patient, confirm his ID, explain the procedure, and Get his consent.
2. Check the doctor's order with the drugs to be administered to ensure correct drug and dose.
3. **Wash hands, Prepare the materials.**
(Medication should be drawn up into the syringe beforehand and **expiration dates checked.**)
4. **Put on clean gloves,** positions the patient appropriately according to the injection site and expose the site. (Maintain the patient's privacy and dignity).

Hello, I'm (student name), I'm First year medical student. could you tell me your name and age? or ID number if it is written (confirm ID).

Today I am here to do a simple Procedure which is (intramuscular injection or subcutaneous injection) Is that okay with you? Are ready and comfortable to begin?

could you please lay down and expose the upper arm for me ?

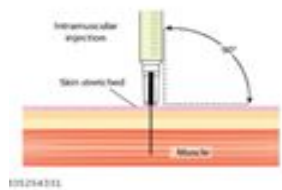
1- Intramuscular injection and Subcutaneous Injection

The procedure

5. Select the injection site. (select a site free of skin lesions, swelling, tenderness, and one that has not been used frequently).
6. Clean the site using an expanding circular motion or a single wiping method from distal to proximal. **Do 3 times with different alcohol swab.** Let it air dry.
7. Hold the syringe (from its barrel) like a pencil or dart with **your dominant hand**, open its cap and place a sterile gauze between 4th and 5th finger.

8. Intramuscular (IM):

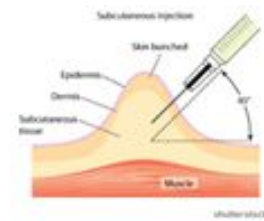
-with **non-dominant hand**, taut the muscle at the injection site, insert the needle at a **90 degree** angle to the patient's skin in a quick and firm motion.



- With **non-dominant hand**, pull on the syringe's plunger to ensure that you have not entered a blood vessel (if you aspirate blood, withdraw the needle; repeat the procedure at another site with new needle).
- inject the drug **very slowly** then quickly remove the needle while applying pressure with sterile gauze and maintain gentle pressure for a minute, then secure it by adhesive tape.

Subcutaneous (SC):

-Grasp the skin between the thumb and index finger with **non-dominant hand**, and pinch up.



-Insert the needle at a **45-90 degree** angle accordingly to the patient's skin in a quick and firm motion; release the skin that you are grasping.

- With **non-dominant hand**, pull on the syringe's plunger to ensure that you have not entered a blood vessel (if you aspirate blood, withdraw the needle; repeat the procedure at another site with new needle).
- Inject the drug **very slowly**, take the gauze and quickly remove the needle while applying pressure, maintain gentle pressure for a minute, then secure it by adhesive tape.

After the procedure

9. Ensure that the patient is comfortable and thank them
10. Dispose sharps and waste material according to infection control standards, Remove gloves and wash hands, Document the procedure.

Helpful Videos:



ملاحظة: قد تختلف هذه الفيديوهات في بعض الأشياء وخصوصا مسحة الكحول 3 مرات وال**dominant and non dominant hand** عليك اتباع الطريقة التي في الأعلى والتي في هذا الملف .

2- Muscle power and strength examination

Preparation

1. Introduce yourself to the patient.
2. Confirm patient's ID.
3. Explain the procedure to the patient and re-assure him. Make sure that the patient is aware of how the procedure will be carried out.
4. Get patient's consent.
5. Prepare the necessary materials.
6. Ensure the privacy of the patient.
7. Ask the patient to expose those parts of the body where the testing needs to be done i.e. the arms and the legs.

Hello, I'm (student name), I'm First year medical student. could you tell me your name and age? or ID number if it is written (confirm ID).

Today I am here to do a simple Procedure which is (muscle power and strength examination) Is that okay with you? Are ready and comfortable to begin?

Positing of the patient and The procedure

8. The patient should be in the lying and or sitting position. **Best at 45 degrees**
9. Wash your hands
10. Before you start testing for strength and power for each muscle group. Note the appearance or muscularity of the muscle (wasted, highly developed, normal) **"inspection is very important step don't forget it"** Feel the **tone** of the muscle (flaccid, clonic, normal)
11. Start to test the strength of each muscle group systematically

2- Muscle power and strength examination

Power in the upper limb

1. Starting with the **deltoids**. Ask the patient to **raise both their arms in front of them simultaneously as strongly as they can** while the examiner provides resistance to this movement. Compare the strength of each arm.

Make sure you put pressure on the shaft of the humerus NOT on forearm



2. Next, ask the patients to **extend and raise both arms in front of them as if they were carrying a pizza**. Ask the patients to **keep their arms in place while they close their eyes and count to 10**. Normally their arms will remain in place. If there is upper extremity weakness there will be a **positive pronator drift**. In which the affected arm will pronate and fall. This is one of the most sensitive tests of upper extremity weakness.



A: Normal

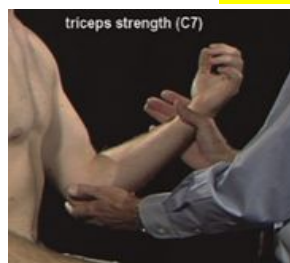


B: Abnormal

3. Test the strength of lower arm flexion by holding the patient's wrist from above and instructing them to **flex their hand up to their shoulder**. Provide resistance at the wrist. Repeat and compare to the opposite arm. This tests the **biceps muscle**.



4. Now have the patient **extend their forearm** against the examiner's resistance. Make certain that the patient's their extension from a fully flexed position because this part of the movement is most sensitive to a loss in strength. This tests the **triceps**. Note any asymmetry in the other arm.



2- Muscle power and strength examination

Power in the upper limb

5. Test the strength of wrist extension by asking the patient to extend their wrist while the examiner resists the movement. This tests the **forearm extensors**. Repeat with the other arm.



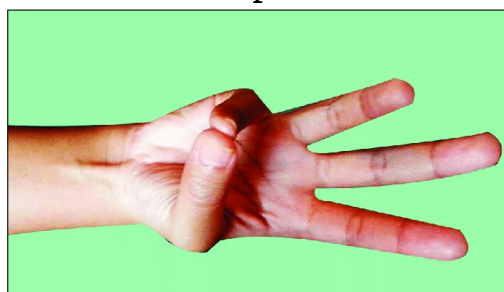
6. Examine the patient's hands and test the patient's grip by having the patient **hold the examiner's fingers in their fist tightly** and instructing them not to let go while the examiner attempts to remove them. Normally the examiner cannot remove their fingers. This tests the **forearm flexors** and the intrinsic hand muscles. Compare the hands for strength asymmetry.



7. Test the **intrinsic hand muscles** once again by having the patient abduct or "fat out" all of their fingers. Instruct the patient to not allow the examiner to compress them back in. Normally, one can resist the examiner from replacing the fingers



8. To complete, test the strength of the **thumb opposition** by telling the patient to touch the tip of their thumb to the tip of their little finger. Apply resistance to the thumb with your index finger. Repeat with the other thumb and compare.



2- Muscle power and strength examination

Power in the Lower limb

1. Inspection and tone

2. Start with the **flexion of the hip** by asking the patient to lie down and raise each leg separately while the examiner resists. Repeat and compare with the other leg. This tests the **iliopsoas muscles**.



3. Test the **adduction of the legs** by placing your hands on the inner thighs of the patient and asking them to bring both legs together. This tests the **adductors of the medial thigh**.



4. Test the **abduction of the legs** by placing your hands on the outer thighs and asking the patient to move their legs apart. This tests **the gluteus maximus and gluteus minimus**.



2- Muscle power and strength examination

Power in the Lower limb

5. Next, test the **extension of the hip** by instructing the patient to **press down on the examiner's hand** which is placed underneath the patient's thigh. Repeat and compare to the other leg. This tests the **gluteus maximus**.



6. Test **extension at the knee** by placing one hand under the knee and the other on top of the lower leg to provide resistance. Ask the patient to "**kick out**" or **extend the lower leg at the knee**. Repeat and compare to other leg. This tests the **quadriceps muscle**.



7. Test **flexion at the knee** by holding the knee from the side and applying resistance under the ankle and instructing the patient to **pull the lower leg toward their buttock** as hard as possible. Repeat with the other leg. This tests the **hamstrings**.



8. Test **dorsiflexion of the ankle** by holding the top of the ankle and have the patient **pull their foot up towards their face** as hard as possible. Repeat with the other foot. This tests the **muscles in the anterior compartment of the lower leg**.



2- Muscle power and strength examination

Power in the Lower limb

9. Test the **plantar flexion** by holding the bottom of the foot, ask the patient to "press down on the gas pedal" as hard as possible. Repeat with the other foot and compare. This tests the **gastrocnemius and soleus muscles** in the posterior compartment of the lower leg.



10. To complete the power exam of the lower extremity ask the patient to move the large toe against the examiner's resistance "up towards the patient's face". This tests the **extensor hallucis longus muscle**.



After the examination

11. Wash hands.

12. Ensure the comfort of the patient and answer any question or concerns he/she may have.

13. Document the procedure.

14. Present your findings in a systematic manner and offer a differential diagnosis.

Okay are you comfortable?
Thank you, do you have any questions?

3- knee Examination

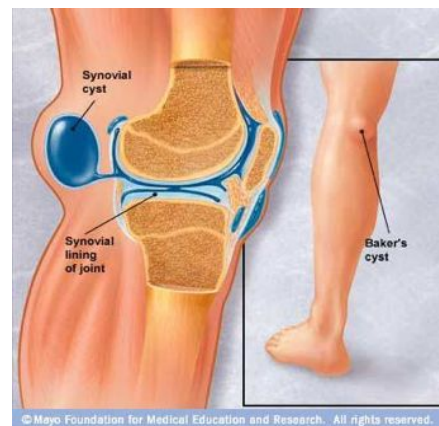
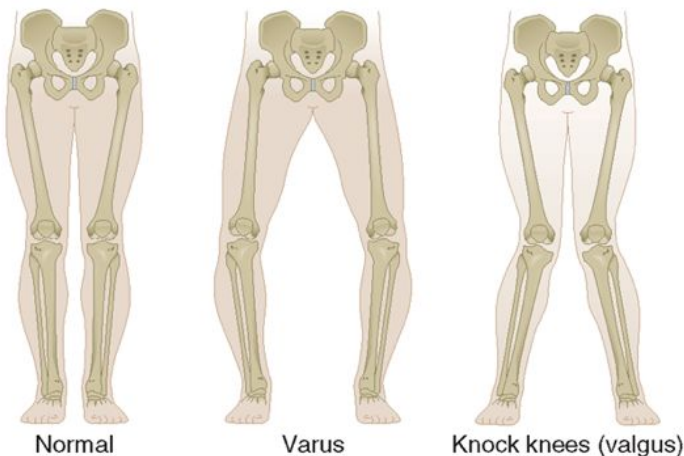
Preparation

1. Introduce yourself to the patient.
2. Confirm patient's ID.
3. Explain the procedure to the patient.
4. Get patient's consent.
5. Wash hands.
6. Appropriately expose the patient's both knees

Hello, I'm (student name), I'm First year medical student. could you tell me your name and age? or ID number if it is written (confirm ID).
Today I am here to do a simple Procedure which is (knee examination) Is that okay with you?
Are ready and comfortable to begin?

Inspection

7. Ask the patient to walk. Observe any limp or obvious deformities such as scars or muscle wasting. Check if the patient has a varus (*bow-legged*) or valgus (*knock-knees*) deformity. Also observe from behind to see if there are any obvious popliteal swellings such as a Baker's cyst



8. Ask the patient to lie on the bed to allow a further general inspection. Look for asymmetry, redness, muscle wasting, scars, rashes, or fixed flexion deformities

3- knee Examination

Palpation All examination steps should be applied to both knees separately

9. Check and assess the knee joint **temperature** using the back of your hands and compare with the surrounding areas of the leg.
10. Palpate the **border of the patella** for any tenderness بالإبهام, **behind the knee** for any **swellings** بالسيبابة, along all of the **joint lines** for tenderness and at the **point of insertion** of the patellar tendon.

Border of the patella



Joint lines



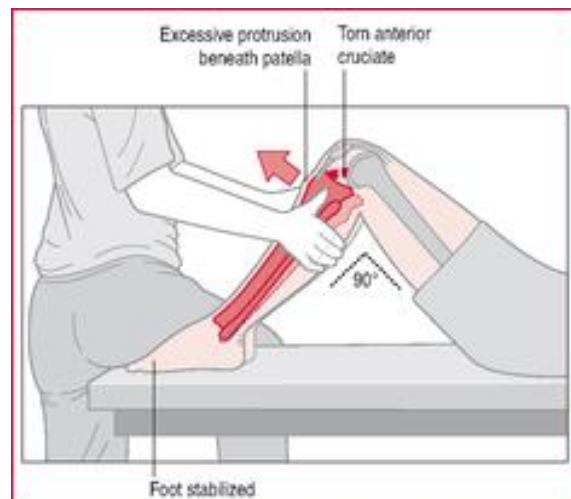
Point of insertion



11. Tap the patella to see if there is any **effusion** deep to the patella.
12. Check and assess the movements of the knees. and possible pain and crepitation during **flexion, and extension**. The other hand on the knee

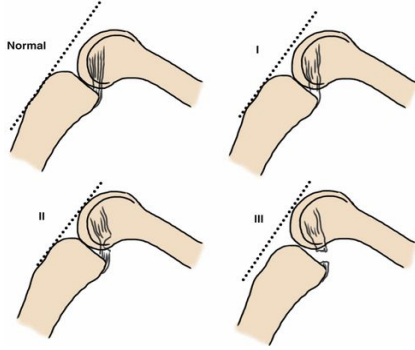
Special Tests to Assess the Cruciate Ligaments

13. **Anterior Drawer Test:** Flex the knee to **90** degrees and sit on the patient's foot. Pull forward on the tibia just distal to the knee. There should be no movement. If there is however, it suggests **Anterior Cruciate Ligament (ACL)** damage.



Special Tests to Assess the Cruciate Ligaments

14. **posterior Drawer Test:** Flex the knee to 90 degrees and observe from the side for any posterior lag of the joint, this suggests **Posterior Cruciate ligament** damage. Don't try to push the leg



Special Tests to Assess the Collateral Ligaments

15. **lateral and Medial Stress:** Hold the leg with the knee flexed to 15 degrees and apply Lateral and Medial Stress on the knee. Any excessive movement suggests **collateral ligament** damage.

Lateral stress is to test the **medial** collateral ligament

*note the hand on the lateral side of knee



Medial stress is to test the **lateral** collateral ligament

*note the hand on the medial side of knee



16. **Mcmurray's Test:** Hold the knee up and fully flexed, with one hand over the knee joint itself and the other on the sole of that foot. Stress the knee joint by medially and laterally moving the foot. Any pain or a click is a positive test, confirming **meniscal damage**.



Note the hand of the examiner on this picture, it is on the sole of the patient because she is pushing the tibia against the femur

After the examination

17. Ensure that the patient is comfortable.

18. Make explanations to the patient, answer his/her questions and discuss management plan.

19. Wash hands.

20. Document the procedure.

Helpful videos >

<https://youtu.be/B76oGAFKb28>

<https://youtu.be/lwDFPAyGGgI>

<https://youtu.be/c3643PM0a2o> 1:50

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وتطور من عملنا صارحونا بكل صراحة



Good Luck!