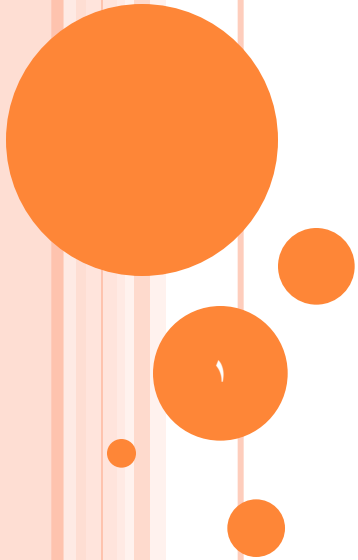


بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



LABORATORY

RHS 221

Manual Muscle Testing

Theory – 1 hour

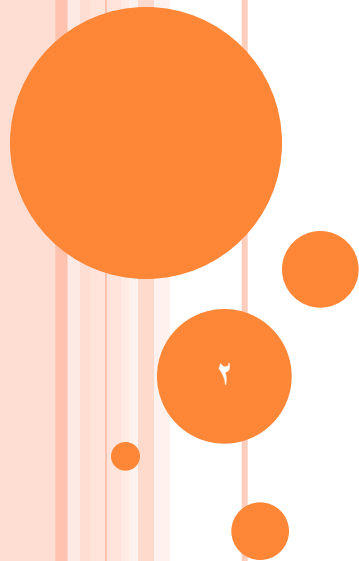
practical – 2 hours

Dr. Ali Aldali, MS, PT

Tel# 4693601

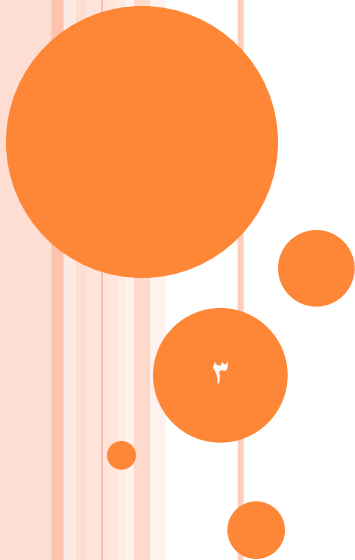
Department of Physical Therapy

King Saud University

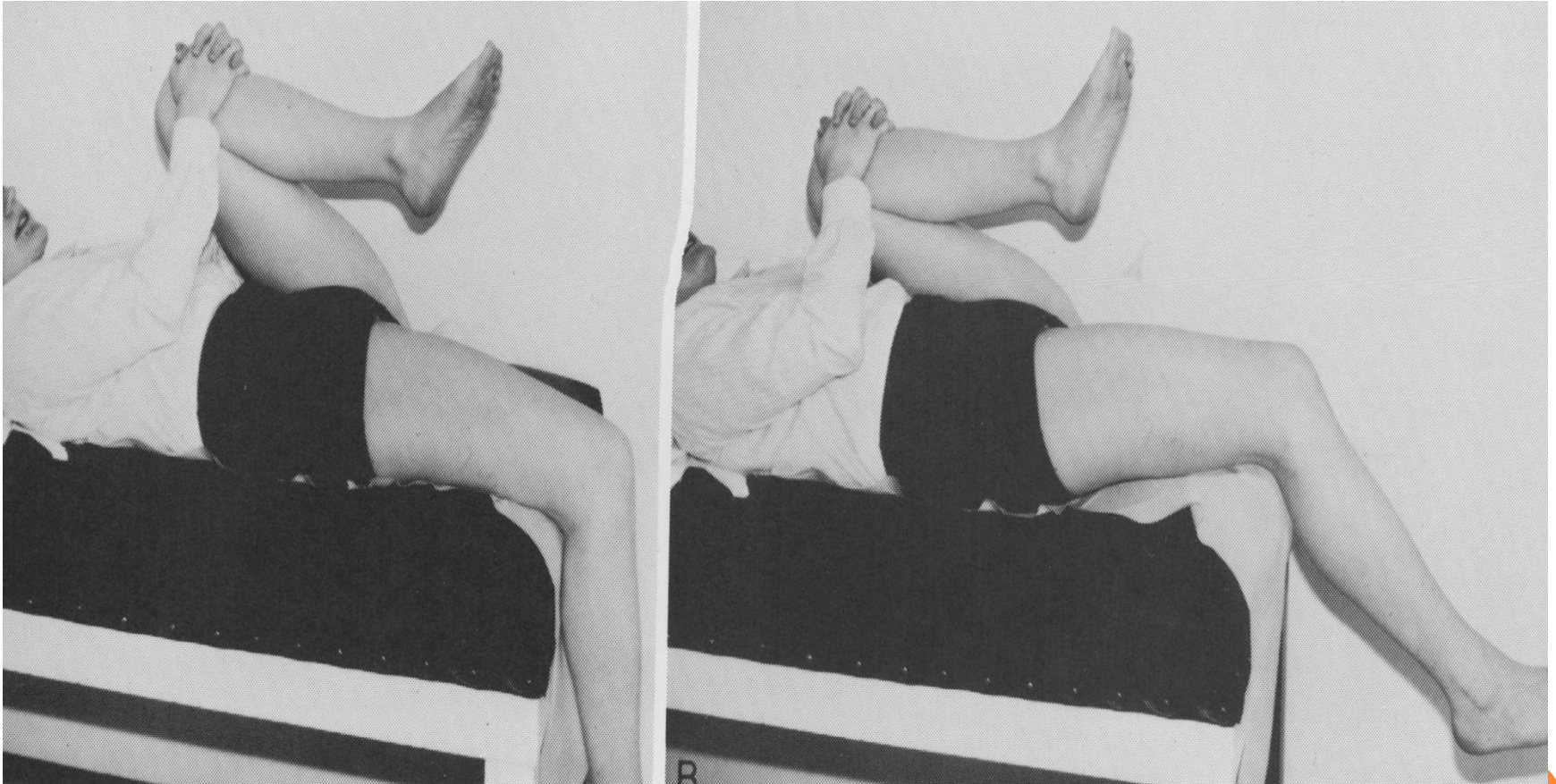


TESTING OF PELVIS MUSCLES

- **Elevation of the Pelvis.**
- **Test for Leg Length Discrepancy.**
- **Measurement of circumference of the knee joint.**



RESTRICTED RECTUS FEMORIS



RESTRICTED HAMSTRINGS



RESTRICTED GASTROCNEMIUS

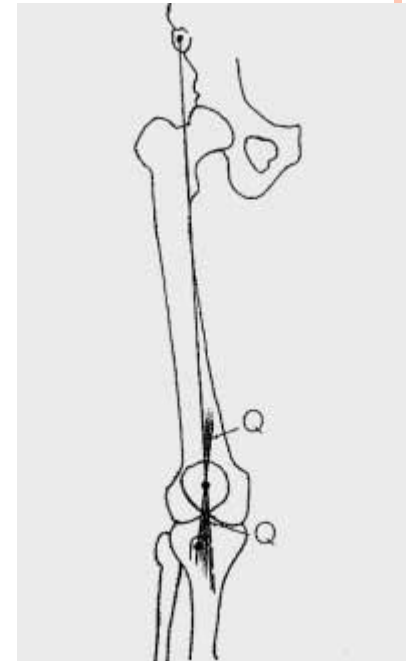


GLUTEUS MEDIUS WEAKNESS

- May result in excessive medial rotation of femur during stance
- May result in excessive valgus at knee
- May increase Q angle
- May result in tracking and alignment problems

Q ANGLE MEASUREMENTS

- The angle between the extended anatomical axis of the femur & the line between the center of the patella & the tibial tubercle.
- Normal Q angle
 - **In flexion**
 - Males
 - 13 degrees
 - Females
 - 18 degrees
 - **In extension**
 - 8 degrees
- A normal range for the Q angle in standing is between 18 and 22 degrees. Women are usually at the higher end of the range due to their naturally wider pelvis



Q ANGLE MEASUREMENTS

- A line was drawn from the middle of the patella to the center of the tibial tubercle, and a second line from the middle of the patella to the center of the anterior-superior iliac spine (ASIS) on the pelvis.
- The angle between these two lines, the Q angle, was measured with a goniometer. On the radiographs, skin markers were used to determine the same two lines.

ELEVATION OF THE PELVIS

1. Prime mover/agonist: Quadratus lumborum

origin

insertion

Quadratus lumborum

Ilium crest
(Iliolumbar ligament)

Rib 12(lower border)
L1-l4 TP.

2. Synergist/ Accessory muscles:

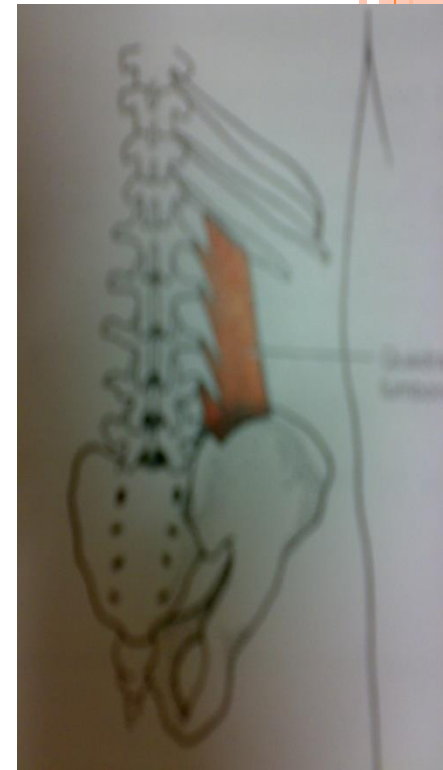
Latissimus dorsi & iliocostalis lumborum.

3. Nerve supply:

Lumbar plexus T12-L3.

4. Range of motion:

Approximates pelvis to lower ribs.



ELEVATION OF THE PELVIS

5. Fixation:

a. Weight of pelvis and legs.

6. Effect of weakness/contracture/shortening:

effect of weakness: - decrease the ability to hike the pelvis
on one side.
- unilateral pelvis drooping.

7. Factor limited range of motion:

None

8. Substitution:

Trunk lateral flexion by using the abdominal muscles.

ELEVATION OF THE PELVIS

9. Procedures:

a- patient position (pt): Supine or (prone decrease friction)

b- Therapist Position:

inner hand:

Outer hand:

Direction of Resistance :

Instruction to patient:

c- grading system:

Normal(5), Good(4), Fair(3), Poor(2), Trace(1),
Zero(0)

make sure patient tolerates maximal resistance
plus hold 3 sec.

e. Palpation site:

TEST FOR LEG LENGTH DISCREPANCY

- There are two ways of measurement by using **Tape**:
- Actual leg length is measurement of length from the ASIS (anterior superior iliac spine) of the ilium to the medial malleolus. This measurement called from **Fix point to fix point**.
- It is possible also to measure it from the umbilicus to the medial malleolus. This measurement called from **Non-Fix point to fix point**.

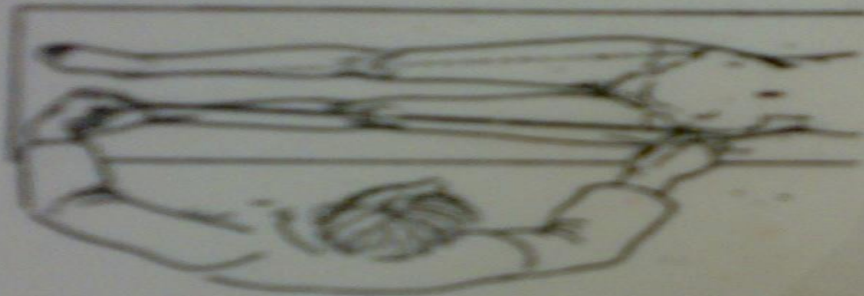
TEST FOR LEG LENGTH DISCREPANCY

- Patient lies supine on a table with trunk, pelvis, and legs in straight alignment and legs close together. The distance from ASIS to the medial malleolus is measured on right and left.
- Or from the umbilicus to the medial malleolus is measured on right and left.
- To determine the reason of shorted leg: the patient lies in crock lying position by support his feet on the surface of table with knees and hips flexed. Make good observation on the knees level. (tibia and femur bone)

TEST FOR LEG LENGTH DISCREPANCY

deformity in the hip joint. During inspection, pelvic obliquity manifests itself as uneven anterior or posterior superior iliac spines while the patient is standing.

Have the patient lie supine with his legs in as neutral position as is possible, and take a measurement from the umbilicus (or xiphisternal junction) to the medial malleoli of the ankle (from a nonfixed point to a fixed bony point). Unequal distances signify an apparent leg length discrepancy, particularly if the true leg length measurements are equal.



Measure from one fixed bony point to another to find true leg length.



True leg length discrepancy.



A. Tibial length discrepancy. B. Femoral length discrepancy.



TEST FOR LEG LENGTH DISCREPANCY



True leg length measurement is taken from the hip to the ankle.



An apparent leg length discrepancy is indicated when the measurement from the hip to the heel is not equal to the measurement from the hip to the ankle.



When the measurement from the hip to the heel is not equal to the measurement from the hip to the ankle, a leg length discrepancy is present.

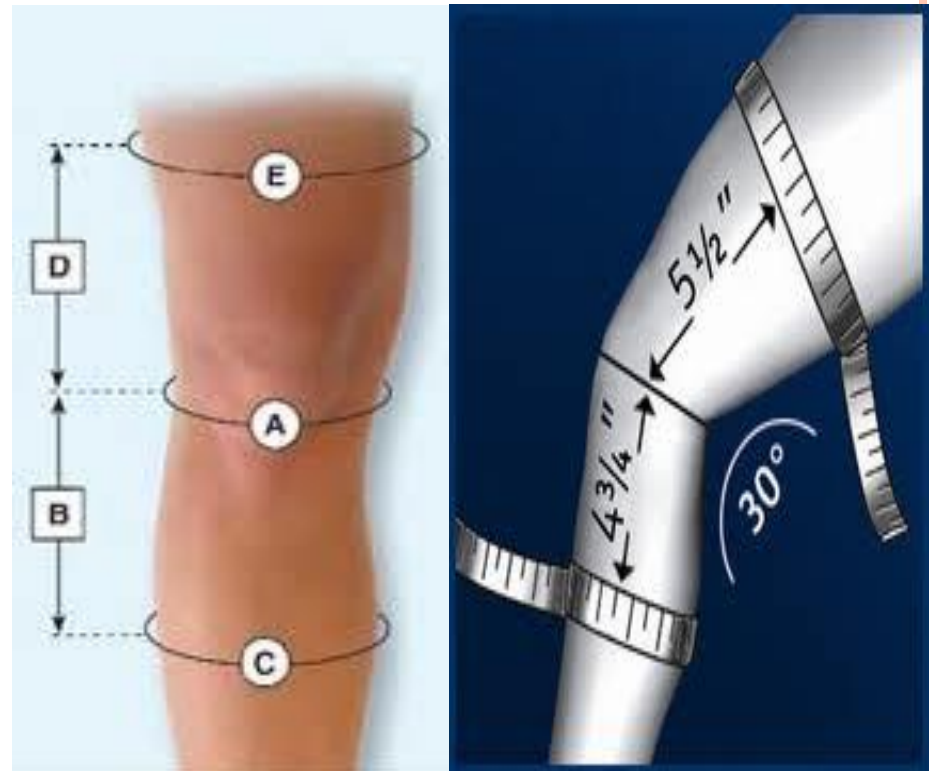
MEASUREMENT OF CIRCUMFERENCE OF THE KNEE

- Swelling around the knee joint

1. At middle of patella
2. Below the patella 5cm
3. Above the patella 5cm

- Muscle atrophy:

1. Above the patella 10cm
2. Above the patella 15cm
3. Above the patella 20cm
4. Above the patella 25cm



Thank You