

Examination of the Hip

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Orthopedic Examination

- The system to use:
 - Look
 - Feel
 - Move
 - Special tests

Look

- General → on patient.
- General → local (hip, thigh, leg): *expusor : mid thigh to umbilical*
 - Position.
 - Major deformity, swelling.
 - Extra: cast, splint, traction, dressing ...
- Anatomic local:
 - Skin: swelling, scars, color, hair, dryness ...
 - Subcut.: LN, veins, nerves, tendons ...
 - Muscles: bulk, wasting, twitches ...
 - Bones: landmarks, swelling, angulation, deformity.
 - Joints: position, swelling, redness...

Look

- General → on patient :
 - Lying comfortably in bed not in pain



Look

- General → on patient :
- Lying uncomfortably in bed, in pain, with L hip abducted and externally rotated



Look

- General → on patient :
- Lying uncomfortably in bed with Rt hip adducted & internally rotated, and Lt hip abducted & externally rotated.



Look

- General → on patient :
- Sitting uncomfortably on a wheel chair, with both hips adducted (scissoring) and Lt hip extended.



Look

- General → local (hip-thigh-LL):
- Position
 - Abduction / Adduction
 - Flexion / Extension
 - External / Internal Rotation



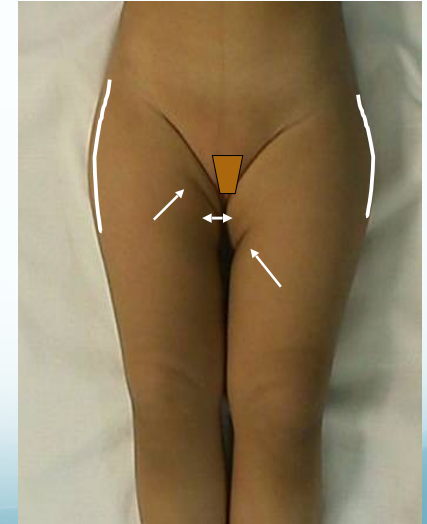
Look

- General → local (hip-thigh-LL):
- Lumbar lordosis



Look

- General → local (hip-thigh-LL):
- Major deformity-swelling:
 - Lateralized contour
 - Asymmetrical skin folds
 - Wide perineum
 - Masses



Look

Wide Perineum



Lateralized Contour

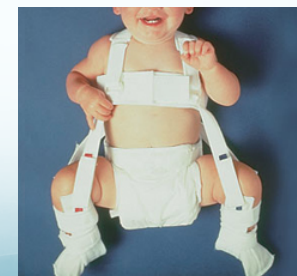


Look

- General → local (hip-thigh-LL):
- Extra:
 - Cast
 - Splint



Mamoun Kremli



Look

- General → local (hip-thigh-LL):
- Extra:
 - Skin traction
 - Skeletal traction



Look

- General → local (hip-thigh-LL):
- Extra:
 - Orthotics
 - AFO
 - KAFO
 - HKAFO
 - Dressings



Look

- General → local (hip-thigh-LL):
- Extra:
 - Orthotics
 - AFO
 - KAFO
 - HKAFO
 - Dressings



Look

- Anatomic local:
 - Skin: swelling, scars, color, hair, dryness ...
 - Subcut.: LN, veins, nerves, tendons ...
 - Muscles: Quadriceps/Gluteii: bulk, wasting, twitches..
 - Bones: landmarks, swelling, angulation and deformity.
 - Joints: position, (hip too deep to see swelling)

(Do not forget the posterior aspect) !!!
(All patients have a posterior aspect) !!!

Look

- General → on patient.
- General → local (hip, thigh, leg):
 - Position.
 - Major deformity, swelling.
 - Extra: cast, splint, traction, dressing ...
- Anatomic local:
 - Skin: swelling, scars, color, hair, dryness ...
 - Subcut.: LN, veins, nerves, tendons ...
 - Muscles: bulk, wasting, twitches ...
 - Bones: landmarks, swelling, angulation, deformity.
 - Joints: position, swelling, redness...

Feel

- **Tenderness:**
 - Generalized
 - Specific *Localized*
- **Temperature: compare distal/proximal, Rt / Lt.**
- **Anatomic:**
 - Skin: dryness, hyper/hypoesthesia, scars
 - Subcut.: LN, nerves, vessels, tendons, nodules
 - Muscle: tone, bulk, twitches, gaps, tenderness
 - Bone: landmarks (ASIS, Gr Tr. , Isch. Tub.) tenderness, mass, crepitus
 - Joint: swelling, effusion, crepitation, synovial thickening, joint line tenderness (hip joint too deep to elicit)

*Iliac crest
ASIS
Inguinal Lig
Ilio-psoas muscle
Medially → abductor
Boltok → maximus
may add lumbar spine*

MOVE

- **Active** Vs. **Passive**
- **Start with active to screen for pain**
- Usually passive unless there is a specific reason:
 - Need to assess the painless / painful range of motion
 - Need to assess muscle power

Move

- Must differentiate between true hip joint motion and pelvic motion
- Must stabilize the pelvis in neutral position

**Patients with fixed flexion of the hip
Could still bring the thigh and leg down when supine
By tilting the pelvis forwards**

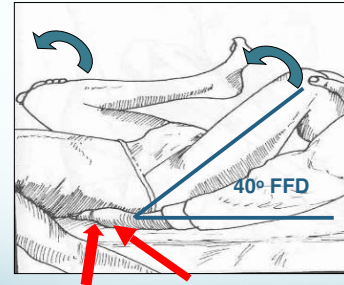
Move

- Must differentiate between true hip joint motion and pelvic motion
- Must stabilize the pelvis in neutral position

This causes increased lumbar curvature
“Lumbar lordosis”

Move – Flexion

- Initial (resting) position could only be determined by a special test: Thomas Test



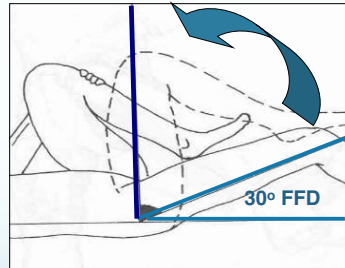
1. Check for Lumbar lordosis
2. Flex other hip fully
3. Lumbar lordosis disappears
4. Check position of hip
5. Flex hip to check range

Move – Flexion

- Initial (resting) position could only be determined by a special test: Thomas Test

Range of motion of Rt hip:
(Flexion: 30°-90°)

- From 30° Fixed Flexion
- To 90° Flexion



Move – Flexion / Extension

- Initial (resting) position could only be determined by a special test: Thomas Test



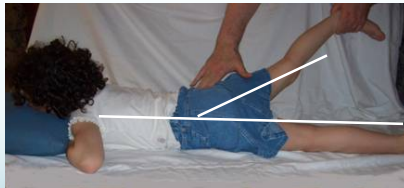
Move – Extension

30°

- In Lateral Position:



- In Prone Position:



Move - Extension

- In presence of fixed flexion deformity:
 - Extension is already in “minus”
- No need to assess !

Move – Abduction / Adduction

Control Pelvis

45°

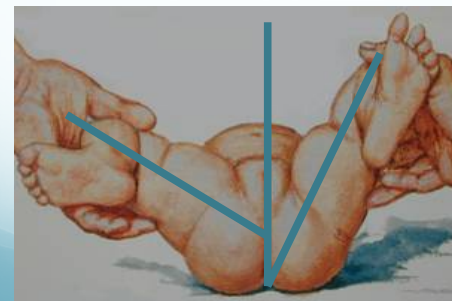
15°

- Must stabilize and prevent pelvic motion
 - Performing the motion on both hips simultaneously.
 - Anchoring the knee of the other side over the edge of the examination table
 - Feeling ASIS to assess pelvic motion

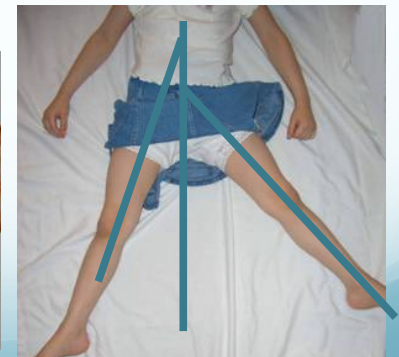
Move – Abduction / Adduction

- On both hips simultaneously
 - Stabilizes pelvis and compares both sides

In Flexion



In Extension



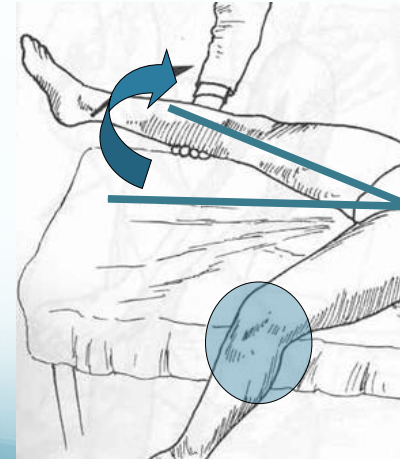
Move – Abduction / Adduction

- On both hips simultaneously
 - Stabilize pelvis and compare both sides



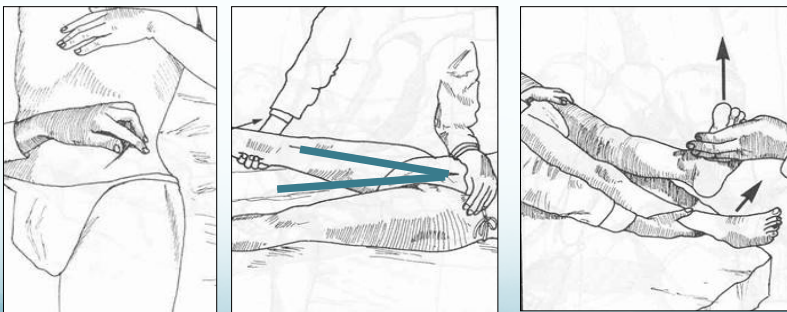
Move – Abduction / Adduction

- Stabilizing the other hip at the edge of couch



Move – Abduction / Adduction

- Holding ASIS to assess beginning of pelvic motion



Move – internal / external rotation

30°-40°

80° | 90°

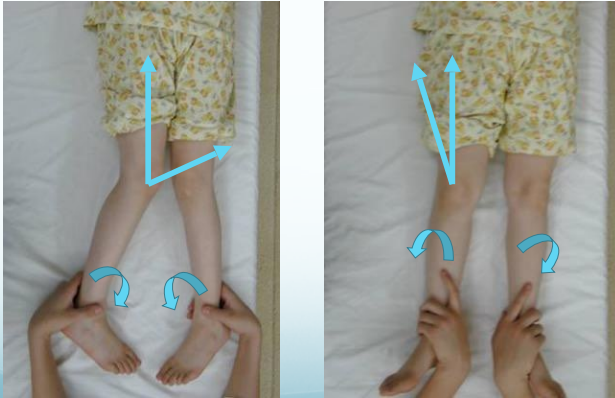
- Must stabilize and prevent pelvic motion
- Performing the motion on **both** hips simultaneously.

In extension
or flexion

Move – internal / external rotation

1) Patient supine & hips extended

Where is the patella facing



Move – internal / external rotation

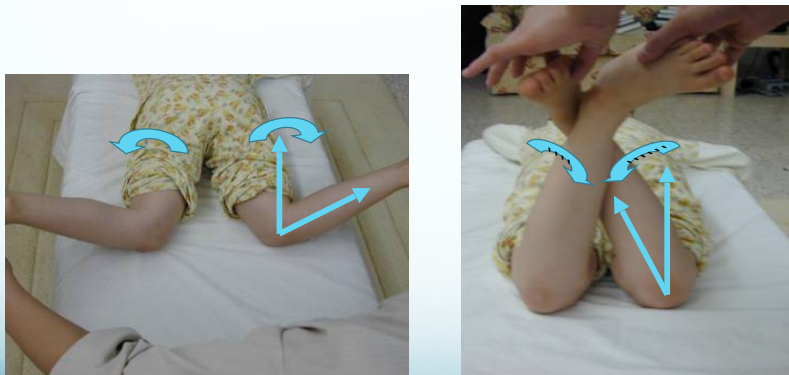
2) Patient supine & hips flexed

The leg is the pointer



Move – internal / external rotation

3) Patient prone – hips extended



Special tests

- Thomas test
- Trendelenburgh test
- Leg length assessment
- Instability tests in neonates: (Ortolani / Barlow)
- Gait – walking

①

Thomas Test

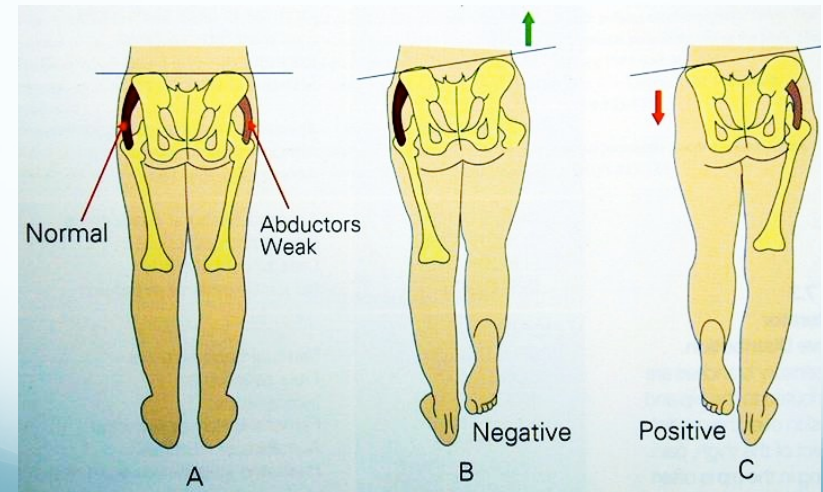
Assess lordosis before

- Precaution → when knee has fixed flexion deformity
- Solution → keep knee outside edge of couch

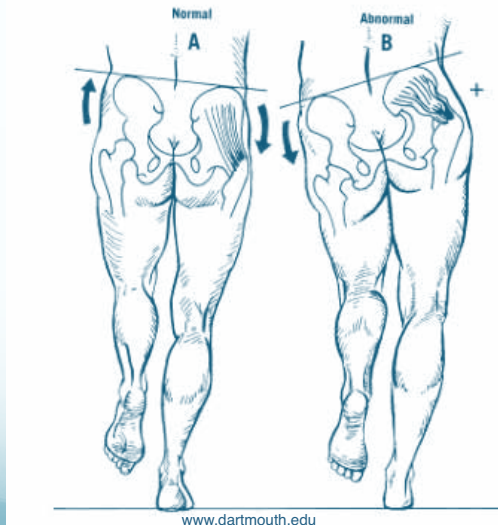


②

Trendelenburgh test



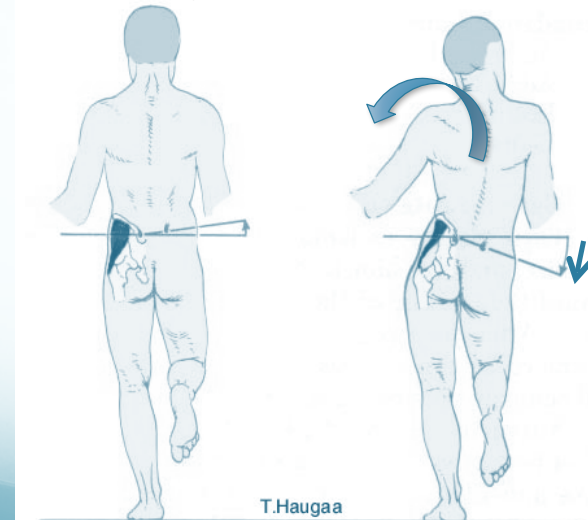
Trendelenburgh test



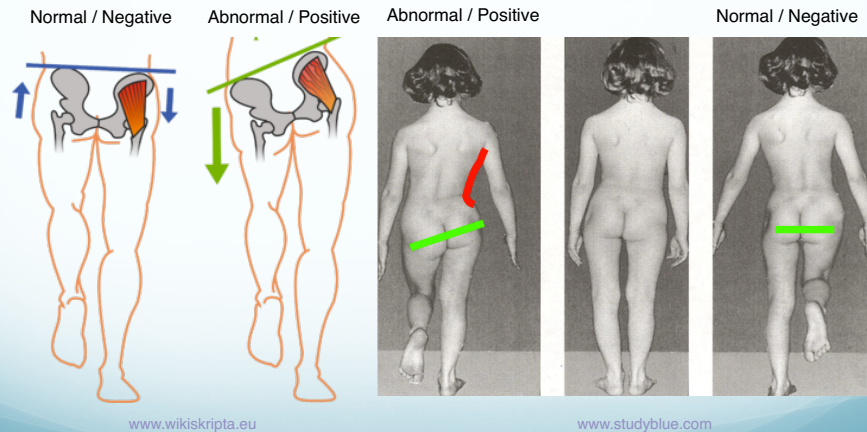
Trendelenburgh test

Normal / Negative

Abnormal / Positive



Special Tests - Trendelenburgh test



Trendelenburgh test



Trendelenburgh test

- You are testing the hip the patient is standing on !
- Normally the pelvis tilts down on the weight-bearing hip
- This is performed by the hip abductors
- Positive Trendelenburgh is when:
 - the pelvis on the non weight-bearing hip tilts down, &
 - the trunk has to tilt to the weight-bearing side

Trendelenburgh test

- Causes of Positive Trendelenburgh:
 - Weak hip abductors:
 - paralyzed / wasted
 - Mechanically inefficient hip abductors:
 - distance between origin & insertion reduced (e.g. coxa vara)
 - Unstable pivot of motion:
 - hip subluxation / dislocation
 - Inhibited hip abductors: painful to move
 - trauma (sprains) / infection / irritation / tumor
 - Reduced range of motion:
 - hip incongruent / stiffness / OA

**Almost any disease
in the hip**

Leg length assessment

Galleazzi test



Both heels have to be at the same level

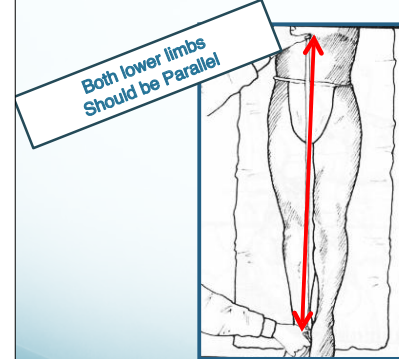


www.aafp.org

Leg length assessment

Apparent Length

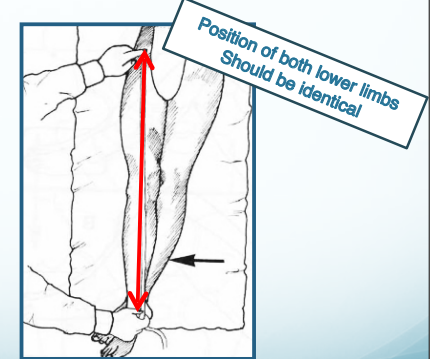
Midpoint to Medial Malleolus



Affected by pelvic tilt

True Length

ASIS to Medial Malleolus

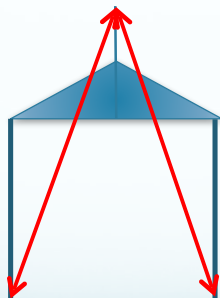


Not affected by pelvic tilt

Leg length assessment

Apparent Length

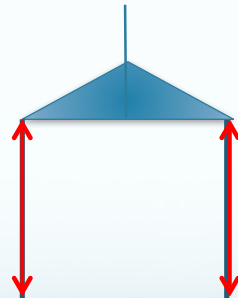
Midpoint to Medial Malleolus



Affected by pelvic tilt

True Length

ASIS to Medial Malleolus

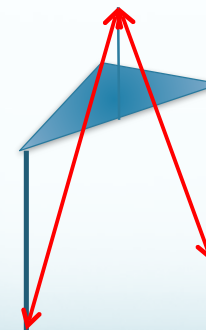


Not affected by pelvic tilt

Leg length assessment

Apparent Length

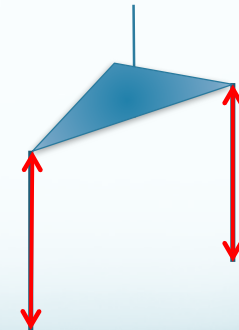
Midpoint to Medial Malleolus



Affected by pelvic tilt

True Length

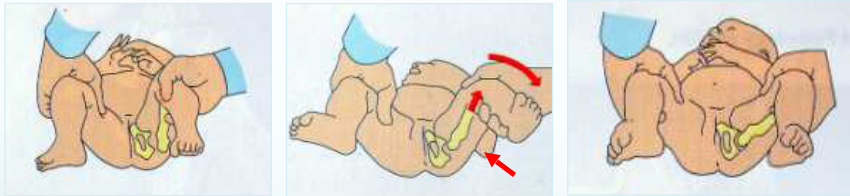
ASIS to Medial Malleolus



Not affected by pelvic tilt

Neonatal Examination for CDH

- Ortolani Test: (reduces a dislocated hip)

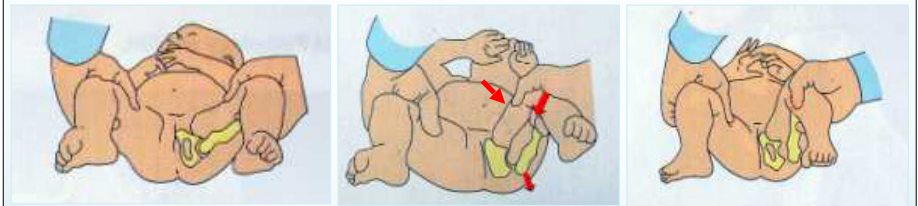


Feel a clunk

Not hear a click !

Neonatal Examination for CDH

- Barlow Test: (dislocates a reduced hip)!



Feel a clunk

Not hear a click !

Ortolani / Barlow



Ortolani / Barlow



Special Tests: Gait

The Normal Gait Cycle

Special Tests: Gait

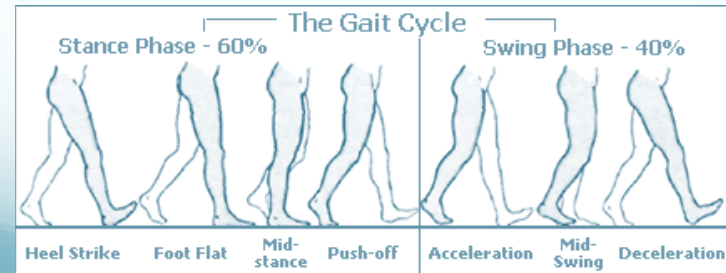
The Normal Gait Cycle

Stance phase (60%)

- Heel strike
- Foot flat - mid-stance
- Push off

Swing phase (40%)

- Acceleration
- Mid-swing
- Deceleration



<http://www.root2being.com/foot-function.html>

Special Tests: Gait

Gait	Explanation
Normal	Normal stance and swing phases
Antalgic	Painful to weight-bear – short stance phase
Lurch	Shortening – painless limping – normal stance period
Circumduction	Stiff hip – motion of pelvis compensates
High Step	Foot drop – more hip & knee flexion needed to free toes from ground
Tip-toe	Heel off the ground

Summary

- System of clinical examination in orthopedics
 - Look, Feel, Move, Special tests
 - Sub-system helps not to forget a step
- Important considerations when exposing hip
- In “Move”, must stabilize pelvis
- Special tests
 - Thomas, Trendelenburgh, instability, length
- Gait

Clinical Examination Stations – Hip

Student's Name: Student's Acad. Number:

- This patient has pain in the right hip - Examine the hip

→ stand beside the affected side

Item	Procedure	Weight	Marks
Look	• General statement on the patient	1	
	• General on hip: Position/ Swelling & deformity/ Attitude & extra	1	
	• Anatomical: skin, subcutaneous	1	
	• Muscles: Quadriceps, Gluteus Maximus	1	
	• Bony landmarks: ASIS, Iliac crest, Lumbar lordosis	1	
	• Look at the back	1	
Feel	• Tenderness: Generalized / Specific points of tenderness	1	
	• Bony landmarks: ASIS, Iliac crest, Lumbar lordosis	1	
	• Temperature: Compare both sides, proximal and distal	1	
	• Muscles: Quadriceps, Gluteus Maximus	1	
Move	✗ Active: General screening for pain ✗	1	
	• Abduction / Adduction (compare with other side):  ■ Both together ■ Anchor one side at edge of table Any one ■ Hold ASIS → drop the other leg below the bed Put my hand to both ASIS side stop abduction when I feel movement	2	
	• Flexion (compare with other side): Passive ← انحنى رجلي Anterior aspect of thigh should touch the abdomen Active → انحنى رجلي 120°	1	
	• Extension (compare with other side): انحرى رجلي واطبقها انحرى	1	
	• External / Internal rotation: In extension, (both together) انحرى easy in children	2	If the foot is a reference means the hip is not symmetrical eg: OA
	• External / Internal rotation: In flexion (compare with other side): انحرى مع رجلي Checked with knee joint		
Special tests	• Thomas test I put my hand below his back "hyperlordosis" Indication: R/L Flexion deformity The pt in supine position flex the normal leg in max. the hyperlordosis will disappear the test will be positive if the other leg flex also	2	
	• Trendelenburg test Indication: to examine Abductor mechanism when pt stand I put my hand in Pelvis and ask the pt to stand on affected leg not reliable in children or OA with pain Positive if the Pelvis tilt down	2	
	• Leg length: True / Apparent Pull down the tibia ASIS to ASIS Anterior to ASIS do it in both legs and compare	1	
Gait	• Walking	1	
Overall	• Attitude with patient	1	
Total Marks		24 (20)	

Name of Examiner: Signature: