MEDICAL EDUCATION RESOURCE

Joints of Lower Limb: FAQs,MCQs and VIva Voce

? Frequently Asked Questions — Joints of Lower Limb

Hip Joint

1. What type of joint is the hip joint?
? Synovial **ball-and-socket joint**.

2. What is the strongest ligament of the hip?
? **Iliofemoral ligament (Y-shaped ligament of Bigelow).**

3. What prevents hyperextension at the hip?
? **Iliofemoral ligament.**

4. Which artery supplies the head of the femur in adults?
? **Medial circumflex femoral artery** (via retinacular branches).

5. Which nerve supplies the hip joint?
? **Femoral, obturator, superior gluteal, and nerve to quadratus femoris.**

6. What is the function of the ligament of the head of femur?
? Carries a small artery from the **obturator artery**; provides blood supply in children.

7. Why is posterior dislocation of hip common?
? The posterior capsule is **weak and thin**, unlike the anterior capsule.

8. What causes avascular necrosis of the femoral head?
? Damage to the **retinacular branches** of the medial circumflex femoral artery.

9. What is coxa vara?
? **Decreased** neck-shaft angle (<125°).

10. What is coxa valga?
? **Increased** neck-shaft angle (>135°).

Knee Joint

11. What type of joint is the knee?
? **Synovial condylar (modified hinge)** joint.

12. Which bones form the knee joint?
? **Femur, tibia, and patella.**

13. What is the function of the patella?
? Increases the **leverage of quadriceps femoris** and protects the knee.

14. Which ligament prevents forward displacement of tibia?
? **Anterior cruciate ligament (ACL).**

15. Which ligament prevents backward displacement of tibia?
? **Posterior cruciate ligament (PCL).**

16. Which meniscus is more frequently injured and why?
? **Medial meniscus** — attached to MCL, less mobile.

17. What is the "unhappy triad"?
? Injury to **ACL, MCL, and medial meniscus.**

18. What is the function of popliteus?
? **Unlocks the knee** by laterally rotating femur on tibia.

19. What is the locking mechanism of the knee?
? **Medial rotation of femur** during terminal extension.

20. What is the blood supply of the knee joint?
? **Genicular anastomosis** around the joint.

21. What is Housemaid's knee?
? **Prepatellar bursitis.**

22. What is Clergyman's knee?
? **Subcutaneous infrapatellar bursitis.**

Ankle Joint

23. What type of joint is the ankle?

? **Synovial hinge joint.**

24. What movements occur at the ankle?

? **Dorsiflexion and plantar flexion.**

25. What is the axis of movement of the ankle joint?

? Transverse line joining **tips of malleoli**.

26. Which position is the ankle joint most stable in?

? **Dorsiflexion** — the talus fits tightly into the tibiofibular mortise.

27. Which ligament prevents over-eversion?

? **Deltoid (medial) ligament.**

28. Which ligament prevents over-inversion?

? **Lateral ligament** (anterior talofibular, calcaneofibular, posterior talofibular).

29. What is Pott's fracture?

? Fracture of both malleoli due to twisting injury (external rotation and eversion).

Tibiofibular Joints

30. What type of joint is the superior tibiofibular joint?

? **Plane synovial joint.**

31. What type of joint is the inferior tibiofibular joint?

? **Syndesmosis (fibrous joint).**

32. What is the main stabilizing ligament of the inferior tibiofibular joint?

? **Interosseous tibiofibular ligament.**

33. What is a high ankle sprain?

? Injury to the **inferior tibiofibular syndesmosis**.

Foot Joints

34. What type of joint is the subtalar (talocalcanean) joint?

? **Plane synovial joint.**

35. What type of joint is the talocalcaneonavicular joint?
? **Modified ball-and-socket joint.**

36. What type of joint is the calcaneocuboid joint?
? **Saddle-type synovial joint.**

37. What is the spring ligament?
? **Plantar calcaneonavicular ligament** — supports head of talus and medial arch.

38. What movements occur at subtalar and midtarsal joints?
? **Inversion and eversion.**

39. Which muscles cause inversion?
? **Tibialis anterior and tibialis posterior.**

40. Which muscles cause eversion?
? **Peroneus longus, brevis, and tertius.**

41. What forms the transverse tarsal (midtarsal) joint?
? **Talonavicular and calcaneocuboid joints.**

42. What type of joints are the metatarsophalangeal joints?
? **Condyloid synovial joints.**

43. What type of joints are the interphalangeal joints?
? **Hinge synovial joints.**

Arches and Support Mechanisms

44. What maintains the medial longitudinal arch?
? **Spring ligament, tibialis posterior, plantar aponeurosis.**

45. What maintains the lateral longitudinal arch?
? **Long and short plantar ligaments, peroneus longus and brevis.**

46. What maintains the transverse arch?
? **Peroneus longus tendon and adductor hallucis (transverse head).**

47. What is pes planus?
? **Flat foot** due to collapse of medial arch.

48. What is pes cavus?

? **High-arched foot** due to exaggerated longitudinal arch.

49. What is talipes equinovarus?

? **Clubfoot** — plantarflexed, inverted, and adducted foot.

Gait and Functional Questions

50. What is the stance phase of gait?

? Period when **foot is in contact with ground** (?60% of cycle).

51. What is the swing phase?

? Period when **foot is off the ground** (?40% of cycle).

52. What is Trendelenburg gait?

? Pelvic drop on opposite side due to **superior gluteal nerve palsy.**

53. What is foot drop?

? Inability to dorsiflex due to **deep peroneal nerve lesion.**

54. What is the key muscle for unlocking the knee?

? **Popliteus.**

55. Which joint contributes most to inversion and eversion?

? **Subtalar joint.**

56. What law describes joint innervation by nerves of acting muscles?

? **Hilton’s Law.**

57. Which joint is responsible for dorsiflexion and plantar flexion?

? **Ankle joint.**

58. Which joint contributes to rotation of tibia during flexion?

? **Knee joint.**

59. What is the functional importance of locking of knee?

? Provides **stability in standing** with minimal muscular effort.

60. Which muscle is called “the key of the knee”?

? **Popliteus muscle.**

Summary of Clinical Correlations

- **ACL rupture:** Anterior drawer test positive.
- **PCL rupture:** Posterior drawer test positive.
- **Deltoid ligament injury:** Over-eversion strain.
- **Lateral ligament injury:** Over-inversion strain.
- **Plantar fasciitis:** Heel pain on first step.
- **Hallux valgus:** Lateral deviation of great toe with bunion.
- **Housemaid’s knee:** Prepatellar bursitis.
- **Baker’s cyst:** Posterior swelling in popliteal fossa.
- **Flat foot:** Collapsed medial arch.

? Multiple Choice Questions — Joints of Lower Limb

Hip Joint

1. The hip joint is what type of synovial joint?
A. Hinge
B. Pivot
C. Ball-and-socket
D. Saddle
? **Answer:** C — permits multiaxial movements.

2. The strongest ligament in the human body is:

A. Ligamentum teres

B. Iliofemoral ligament

C. Ischiofemoral ligament

D. Pubofemoral ligament

? **Answer:** B — prevents hyperextension.

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3. Posterior dislocation of hip joint damages which nerve?

A. Obturator

B. Femoral

C. Sciatic

D. Superior gluteal

? **Answer:** C — sciatic nerve lies behind the hip joint.

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4. Avascular necrosis of femoral head occurs due to injury of:

A. Obturator artery

B. Medial circumflex femoral artery

C. Lateral circumflex femoral artery

D. Inferior gluteal artery

? **Answer:** B — main arterial supply via retinacular branches.

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5. Which movement is limited by ischiofemoral ligament?

A. Flexion

B. Extension

C. Lateral rotation

D. Abduction

? **Answer:** C — it tightens during medial rotation.

Knee Joint

6. The type of joint at the knee is:

A. Simple hinge

B. Condylar (modified hinge)

C. Ball-and-socket

D. Saddle

? **Answer:** B.

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7. The anterior cruciate ligament prevents:

A. Backward displacement of tibia

B. Forward displacement of tibia

C. Backward displacement of femur

D. Rotation of tibia

? **Answer:** B.

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8. The posterior cruciate ligament is attached to:

A. Lateral femoral condyle

B. Medial femoral condyle

C. Tibial tuberosity

D. Patella

? **Answer:** B.

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9. The medial meniscus is attached to which ligament?

A. Fibular collateral ligament

B. Tibial collateral ligament

C. Posterior cruciate ligament

D. Transverse ligament

? **Answer:** B.

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10. Which muscle unlocks the knee joint?

A. Gastrocnemius

B. Biceps femoris

C. Popliteus

D. Sartorius

? **Answer:** C — by lateral rotation of femur on tibia.

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11. Which structure is intracapsular but extrasynovial?

A. Menisci

B. Cruciate ligaments

C. Collateral ligaments

D. Patellar ligament

? **Answer:** B.

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12. The “unhappy triad” involves injury to:

A. ACL, MCL, and lateral meniscus

B. PCL, MCL, and medial meniscus

C. ACL, MCL, and medial meniscus

D. ACL, LCL, and medial meniscus

? **Answer:** C.

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13. Housemaid’s knee involves which bursa?

A. Prepatellar

B. Suprapatellar

C. Subcutaneous infrapatellar

D. Deep infrapatellar

? **Answer:** A.

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14. The key muscle for knee stability during walking is:

A. Vastus medialis

B. Sartorius

C. Biceps femoris

D. Popliteus

? **Answer:** A — prevents patellar maltracking.

Ankle Joint

15. Type of ankle joint:

A. Ball-and-socket

B. Hinge

C. Saddle

D. Plane

? **Answer:** B.

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16. The ankle joint is most stable in:

A. Plantar flexion

B. Dorsiflexion

C. Mid-position

D. Pronation

? **Answer:** B — anterior part of talus is wider and fits tightly.

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17. Deltoid ligament prevents:

A. Inversion

B. Eversion

C. Dorsiflexion

D. Rotation

? **Answer:** B.

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18. Most commonly injured ligament in ankle sprain:

A. Posterior talofibular

B. Calcaneofibular

C. Anterior talofibular

D. Deltoid

? **Answer:** C.

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19. Pott's fracture involves:

A. Fracture of fibular neck

B. Bimalleolar fracture

C. Calcaneal fracture

D. Navicular fracture

? **Answer:** B — from eversion injury.

Foot and Tarsal Joints

20. The subtalar joint is which type?

A. Hinge

B. Plane synovial

C. Saddle

D. Pivot

? **Answer:** B.

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21. The talocalcaneonavicular joint is:

A. Plane

B. Hinge

C. Modified ball-and-socket

D. Condylar

? **Answer:** C.

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22. The spring ligament connects:

A. Talus to calcaneus

B. Calcaneus to navicular

C. Navicular to cuboid

D. Talus to navicular

? **Answer:** B — plantar calcaneonavicular ligament.

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23. The chief inverter of the foot is:

A. Tibialis anterior

B. Peroneus longus

C. Extensor digitorum longus

D. Peroneus tertius

? **Answer:** A.

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24. The chief evertor of foot is:

A. Tibialis anterior

B. Tibialis posterior

C. Peroneus longus

D. Flexor hallucis longus

? **Answer:** C.

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25. The calcaneocuboid joint is:

A. Saddle-type

B. Plane

C. Condylar

D. Hinge

? **Answer:** A — functionally plane.

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26. The medial longitudinal arch is supported by:

A. Long plantar ligament

B. Short plantar ligament

C. Spring ligament

D. Transverse metatarsal ligament

? **Answer:** C.

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27. The long plantar ligament forms a tunnel for:

A. Tibialis posterior tendon

B. Peroneus longus tendon

C. Flexor hallucis longus tendon

D. Flexor digitorum longus tendon

? **Answer:** B.

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28. Flat foot occurs due to:

A. Weak tibialis posterior

B. Tight peroneus longus

C. Paralysis of tibialis anterior

D. Contracture of gastrocnemius

? **Answer:** A.

Forefoot and Toes

29. Metatarsophalangeal joints are of what type?

A. Hinge

B. Saddle

C. Condyloid

D. Plane

? **Answer:** C.

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30. Interphalangeal joints are of what type?

A. Condyloid

B. Hinge

C. Plane

D. Saddle

? **Answer:** B.

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31. Deep transverse metatarsal ligament function:

A. Stabilizes ankle

B. Maintains transverse arch

C. Prevents dorsiflexion

D. Prevents inversion

? **Answer:** B.

Gait and Movements

32. During stance phase, heel strike is followed by:

A. Toe off

B. Foot flat

C. Mid-swing

D. Terminal swing

? **Answer:** B.

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33. During swing phase, foot is cleared by action of:

A. Peroneus longus

B. Gastrocnemius

C. Tibialis anterior

D. Soleus

? **Answer:** C.

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34. Locking of the knee is due to:

A. Medial rotation of femur

B. Lateral rotation of femur

C. Flexion of tibia

D. Contraction of biceps femoris

? **Answer:** A.

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35. Unlocking of the knee is done by:

A. Vastus medialis

B. Sartorius

C. Popliteus

D. Gastrocnemius

? **Answer:** C.

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36. Trendelenburg gait is due to paralysis of:

A. Gluteus maximus

B. Gluteus medius

C. Tensor fasciae latae

D. Quadriceps

? **Answer:** B.

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37. Foot drop is due to lesion of:

A. Tibial nerve

B. Superficial peroneal nerve

C. Deep peroneal nerve

D. Obturator nerve

? **Answer:** C.

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38. High-stepping gait occurs in:

A. Cerebellar ataxia

B. Deep peroneal nerve injury

C. Tabes dorsalis

D. Hemiplegia

? **Answer:** C.

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39. The stance phase constitutes approximately what percentage of gait cycle?

A. 20%

B. 40%

C. 60%

D. 80%

? **Answer:** C.

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40. Popliteus is known as:

A. Unlocker of knee

B. Key of knee

C. Locking muscle

D. None

? **Answer:** B — “key of the knee joint.”

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41. Medial rotation of tibia occurs in:

A. Flexion

B. Extension

C. Plantar flexion

D. Dorsiflexion

? **Answer:** A.

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42. Inversion occurs mainly at:

A. Ankle joint

B. Subtalar joint

C. Tibiofibular joint

D. Knee joint

? **Answer:** B.

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43. The nerve supply to ankle joint includes:

A. Femoral and obturator

B. Deep peroneal and tibial

C. Sciatic and femoral

D. Superficial peroneal only

? **Answer:** B.

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44. The Q-angle is increased in:

A. Genu valgum

B. Genu varum

C. Club foot

D. Flat foot

? **Answer:** A.

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45. The knee joint is supplied by:

A. Only femoral nerve

B. Only tibial nerve

C. Genicular branches of several nerves

D. Popliteal artery alone

? **Answer:** C.

Clinical Combinations

46. Damage to the medial circumflex femoral artery leads to:

A. Ischemic necrosis of gluteus maximus

B. Avascular necrosis of femoral head

C. Varus deformity

D. Weak hip flexion

? **Answer:** B.

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47. The artery in ligamentum teres of femur is a branch of:

A. Femoral artery

B. Obturator artery

C. Internal pudendal artery

D. Superior gluteal artery

? **Answer:** B.

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48. Dorsalis pedis pulse is felt:

A. Behind medial malleolus

B. Lateral to extensor hallucis longus tendon

C. Medial to extensor digitorum longus

D. In sinus tarsi

? **Answer:** B.

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49. Genu recurvatum means:
A. Hyperflexion at knee
B. Hyperextension at knee
C. Valgus deformity
D. Varus deformity
? **Answer:** B.

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50. The plantar aponeurosis helps maintain:
A. Lateral arch
B. Medial arch
C. Both longitudinal arches
D. Transverse arch
? **Answer:** C.

These **50 MCQs** cover all essential anatomical, functional, and clinical facts from the *Joints of Lower Limb* chapter — ideal for MBBS professional exams, NEET-PG, and viva practice.

> **? Viva Voce — Joints of the Lower Limb**

HIP JOINT

1. What type of joint is the hip joint?
? Synovial **ball-and-socket** joint.

2. What bones form the hip joint?
? **Head of femur** and **acetabulum** of hip bone.

3. Which structure deepens the acetabulum?
? **Acetabular labrum.**

4. Which part of the acetabulum is non-articular?
? **Acetabular notch and fossa.**

5. Name the ligaments of the hip joint.
? Iliofemoral, pubofemoral, ischiofemoral, ligamentum teres, and transverse acetabular ligament.

6. Which is the strongest ligament of the body?
? **Iliofemoral ligament (Y-shaped of Bigelow).**

7. Which ligament prevents hyperextension at the hip?
? **Iliofemoral ligament.**

8. What is the main blood supply to the femoral head?
? **Medial circumflex femoral artery (retinacular branches).**

9. Which nerve supplies the hip joint?
? **Femoral, obturator, superior gluteal, and nerve to quadratus femoris.**

10. Why does posterior dislocation of hip occur commonly?
? Because the **posterior capsule is weak and thin**.

KNEE JOINT

11. What type of joint is the knee?
? **Condylar (modified hinge)** synovial joint.

12. What bones form the knee joint?
? Femur, tibia, and patella.

13. Which muscle acts as the chief extensor of the knee?
? **Quadriceps femoris.**

14. What is the role of patella?
? Increases leverage of quadriceps and protects the joint.

15. Name the intracapsular structures of the knee joint.
? **Cruciate ligaments and menisci.**

16. Which meniscus is commonly torn?

? **Medial meniscus** — because it's fixed to MCL.

17. What is the function of menisci?

? Deepen articular surface, absorb shock, and stabilize joint.

18. What is "locking" of the knee?

? Medial rotation of femur on tibia during terminal extension ? stability in standing.

19. Which muscle unlocks the knee?

? **Popliteus.**

20. What is the blood supply of the knee joint?

? **Genicular anastomosis.**

21. What is the "unhappy triad"?

? Injury to **ACL, MCL, and medial meniscus.**

22. Which nerve supplies the knee joint?

? **Femoral, tibial, obturator, and common peroneal nerves.**

23. What is Housemaid's knee?

? **Prepatellar bursitis.**

24. What is Clergyman's knee?

? **Subcutaneous infrapatellar bursitis.**

ANKLE JOINT

25. What type of joint is the ankle?

? **Hinge** synovial joint.

26. What bones form the ankle joint?

? Lower ends of **tibia and fibula** with **talus**.

27. What are the movements of the ankle?

? **Dorsiflexion and plantar flexion.**

28. Which ligament prevents over-eversion?

? **Deltoid ligament.**

29. Which ligament prevents over-inversion?

? **Lateral ligament (esp. anterior talofibular).**

30. In which position is the ankle most stable?

? **Dorsiflexion.**

31. What is Pott's fracture?

? Fracture of both malleoli due to twisting/eversion injury.

TIBIOFIBULAR JOINTS

32. What type of joint is the superior tibiofibular joint?

? **Plane synovial joint.**

33. What type is the inferior tibiofibular joint?

? **Fibrous syndesmosis.**

34. What is the main ligament stabilizing the inferior tibiofibular joint?

? **Interosseous tibiofibular ligament.**

35. What happens in high ankle sprain?

? Tear of inferior tibiofibular syndesmosis ? widened mortise.

FOOT JOINTS

36. Which joint allows inversion and eversion?

? **Subtalar and transverse tarsal joints.**

37. What type is the talocalcaneonavicular joint?

? **Modified ball-and-socket.**

38. Which ligament supports the head of the talus?

? **Plantar calcaneonavicular (spring) ligament.**

39. What type of joint is the calcaneocuboid joint?

? **Saddle-type.**

40. What movements occur at the metatarsophalangeal joints?

? Flexion, extension, abduction, and adduction.

41. What type of joint is the interphalangeal joint?

? **Hinge** type.

42. What maintains the arches of the foot?

? **Shape of bones, ligaments, and muscles.**

ARCHES OF FOOT

43. Which is the highest arch?

? **Medial longitudinal arch.**

44. What ligament maintains the medial arch?

? **Spring ligament.**

45. Which muscles maintain the medial arch?

? **Tibialis posterior, flexor hallucis longus, abductor hallucis.**

46. Which structure maintains the lateral arch?

? **Long and short plantar ligaments, peroneus longus and brevis.**

47. Which structure maintains the transverse arch?

? **Peroneus longus tendon and adductor hallucis (transverse head).**

48. What is flat foot (pes planus)?

? Collapse of medial arch due to ligament and muscle weakness.

49. What is pes cavus?

? Exaggerated longitudinal arch.

50. What is talipes equinovarus?

? Clubfoot — plantarflexed, inverted, and adducted foot.

GAIT

51. What is gait?

? Rhythmic, alternating movement of limbs that moves the body forward.

52. Name two phases of gait cycle.

? **Stance phase** and **Swing phase.**

53. Which phase constitutes 60% of the gait cycle?

? **Stance phase.**

54. What causes Trendelenburg gait?

? Paralysis of **gluteus medius/minimus** (superior gluteal nerve palsy).

55. What causes foot drop?

? Paralysis of **dorsiflexors** (deep peroneal nerve injury).

56. What is waddling gait?

? Bilateral weakness of hip abductors.

57. What is antalgic gait?

? Shortened stance on painful limb (seen in arthritis or fracture).

58. What is ataxic gait?

? Unsteady gait due to cerebellar or sensory pathway lesion.

59. What muscle initiates knee flexion while walking?

? **Popliteus.**

60. What is locking of knee?

? Medial rotation of femur during final extension, stabilizing the joint.

61. What is unlocking of knee?

? Lateral rotation of femur by **popliteus** during flexion initiation.

62. What is genu valgum?

? Knees close together (knock knees).

63. What is genu varum?

? Knees apart (bow legs).

64. Which condition increases Q-angle?

? **Genu valgum.**

65. Which condition decreases Q-angle?

? **Genu varum.**

APPLIED CLINICAL VIVA

66. What is anterior drawer test?

? Tests integrity of **ACL** — tibia moves forward abnormally.

67. What is posterior drawer test?

? Tests integrity of **PCL** — tibia moves backward abnormally.

68. Why is medial meniscus more prone to injury?

? It's firmly attached to the **MCL** and capsule, making it less mobile.

69. What is Baker's cyst?

? Herniation of synovial membrane into popliteal fossa.

70. What is plantar fasciitis?

? Inflammation of plantar aponeurosis ? heel pain on first step in morning.

71. What is calcaneal spur?

? Bony outgrowth from calcaneal tuberosity due to chronic traction by plantar fascia.

72. What is the "key of the knee"?

? **Popliteus muscle.**

73. Which ligament maintains the talus in place?

? **Spring ligament.**

74. Where can the pulse of dorsalis pedis artery be felt?

? **Lateral to the tendon of extensor hallucis longus** on dorsum of foot.

75. What law explains joint nerve supply?

? **Hilton's Law** — the nerves supplying the muscles acting on a joint also supply the joint and its overlying skin.