راهنمای انجام معاینات پیش از ورزش رقابتی

با سلام

فرم های معاینات پیش در سه فرم الف ۱و۲و۳ طراحی شده است که به شرح ذیل آمده است. علاوه بر آن برای هر ورزش فرم تخصصی ب پیوست شده است.

فرم الف۱. برای انجام معاینات پیش از ورزش در سطوح عالی (تیم های ملی و باشگاهی بین المللی) طراحی شده است و شامل فسمت های شرح حال پر شونده توسط ورزشکار، شرح حال پزشکی، تن سنجی (شامل اندازه گیره دو کمپارتمانی چربی بدن)، ثبت آسیب ها، سابقه دارویی و مکمل، معاینات عمومی، معاینه قلبی، تفسیر EKG و انجام اکوکاردیوگرافی توسط متخصص قلب، ۵ ایستگاه معاینات ارتوپدی ورزشی و تست های ورزشی می باشد.

فرم الف ۱,۵ فرم الف ۱ بدون تست های ورزشی است و نسخه خلاصه تراز فرم الف ۱ ولی کاملتر از فرم الف ۲ است.

فرم الف۲. برای انجام معاینات پیش از ورزش در سطوح حرفه ای و نیمه حرفه ای (بازیکنان سطوح رقابتی ملی و منطقه ای) طراحی شده است و شامل فسمت های شرح حال پر شونده توسط ورزشکار، شرح حال پزشکی، تن سنجی (شامل اندازه گیره دو کمپارتمانی چربی بدن)، ثبت آسیب ها، سابقه دارویی و مکمل، معاینات عمومی، معاینه قلبی، تفسیر EKG توسط متخصص قلب، ۵ ایستگاه معاینات ارتوپدی ورزشی و تست های ورزشی می باشد.

فرم الف۳. برای انجام معاینات پیش از ورزش در سطوح غیر حرفه ای (بررسی کلی سلامت) طراحی شده است و شامل فسمت های شرح حال پر شونده توسط ورزشکار، شرح حال پزشکی، تن سنجی، ثبت آسیب ها، سابقه دارویی و مکمل، معاینات عمومی و تفسیر EKG توسط پزشک در صورت لزوم می باشد.

پیشنهاد می شود برای ارائه هزینه به ورزشکار براساس آخرین نسخه کتاب ارزشیابی نسبی خدمات عمل شود

منبع معاینات:

Dvorak J, Junge A, Grimm K. F-MARC football medicine manual. : FIFA; 2009. 2nd ed. Zurich: FIFA Medical Assessment and Research Centre (F-MARC); 2009. p. 254.

و سایر مطالعات منتشر شده در نشریات معتبر.

Examination of the spine

Spinal form

The player stands with the back towards the physician. The physician identifies the spinal process of the seventh cervical vertebra and palpates the spinal process of the thoracic and lumbar spine with the index finger. Visual and palpated deviations from normal are identified as related to the curvature of the spine (thoracic kyphosis, lumbar hyper-lordosis, flat back in the region of thoracic and/or lumbar spine scoliosis).

Pelvic level

The player stands in an upright position with his feet parallel and as close together as possible. From behind, the physician places both hands on the pelvic crest. If there is any difference between the levels of the two sides of the pelvic crest, boards are placed under one foot so that the levels are equalised and the difference can be determined.

C7 palpation

Thoracic palpation

Examination of pelvic level

Example of leg length difference

Lumbar palpation

Example of flat thoracolumbar spine

Example of flat thoracolumbar spine

Example of lumbar hyperlordosis

Sacroiliac joint

The player lies in a supine position on an examination table with both legs extended. The physician palpates the inferior borders of both medial malleoli, and assesses the symmetry of their position. The player is then asked to sit up, keeping his legs extended on an examination table. During the movement, the physician keeps his thumbs on the bony landmarks and assesses again the symmetry of the malleoli. A change in the position of the malleoli towards each other (from supine to long sit) is an indication of a sacroiliac joint dysfunction (hypo-mobility or blockage).

Sacroiliac joint testing

Cervical spine range of motion

The player sits in an upright position. The physician stands behind the player. The physician fixes the left shoulder with one hand and with the other hand he rotates the cervical spine to the right; exploring the full range of motion. The range of motion is normal when 90° is measured. If rotation is below 60° then rotation out of flexion is to be performed or further assessment of the cervical spine is needed. The examination is repeated for the left side accordingly.

Cervical spine range of motion

Cervical spine range of motion

Example of cervical spine hypermotility
(rotation more than 90°)

Spinal flexion (stand and reach test)

The player stands with his feet as close together as possible and his knees extended. He bends forward as far as possible, keeping his legs straight. He has to remain in this bent position for approximately five seconds, before the physician measures the distance between fingertip and floor in centimetres.

Good flexibility of lumbar spine and hip muscles

Hypomobility (normally 0-10 cm distance)

Examination of the upper extremity

The following four global active tests represent a quick functional screening to detect potential asymmetries and limitations in the movements of the upper extremity, and to note any symptoms which may require further investigations.

Active elevation

The player sits in an upright position on the edge of the examination table. He is asked to fully elevate both arms above his head with extended elbows and the hands in a thumbs-up position to the maximum position. A normal range of motion is about 180°.

Active elevation of the shoulders and arms

Active external rotation

The player sits in an upright position on the edge of the examination table. He is asked to flex his elbows and to grasp both hands behind his neck. He should then move back both elbows ("opening position") as far as he can, followed by the opposite movement ("closing movement").

Active external rotation

Active internal rotation

The player sits in an upright position on the edge of the examination table and is asked to flex his elbows and to bring both hands behind his body. The back of the hands should point to the spine, and the player should attempt to position both thumbs as high as he can.

Active internal rotation

Active "compression"

The player sits in an upright position on the edge of the examination table and is asked to flex his right elbow and to bring his right hand to his left shoulder. He should then repeat the movement with his left arm. In this position, the shoulder joint and its capsular structures are compressed and stressed.

Active compression

Examination of the hip, groin and thigh

Hip flexion

The player lies in a supine position on the examination table. The player is then asked to flex and elevate his left knee towards his chin. First the active flexion and then the passive flexion are measured. Hip flexion measurements usually range between 90° (active) and 130-140° (passive). The examination is then repeated for the right leg.

Active hip flexion

Passive hip flexion

Hip extension

The player lies in a prone position on the examination table. He is then asked to elevate his right leg with a straight knee. The range of motion of the hip extension is recorded. The active range should be between 10 and 40°; passive motion should add approximately 10°. The examination is then repeated for the left leg.

Active hip extension

Passive hip extension

Inward rotation

The player lies in a supine position on the examination table with his right hip joint and knee joint bent at 90°, so that the thigh lies in a neutral position (i.e. no ab- or adduction components). The physician stabilises the right knee with his left hand. With his right hand, the physician then rotates the foot outwards in an arc (axis of rotation is the thigh), placing the knee in a valgus position to achieve internal rotation of the hip. The angle between the median line of the body and the axis of the lower leg is measured using a goniometer. The normal range is between 30 and 45°. The examination is then repeated for the left leg.

Internal rotation

Outward rotation

The player lies in a supine position on the examination table with his right hip joint and knee joint bent at 90° so that the thigh lies in a neutral position (i.e. no ab- or adduction components). The physician stabilises the knee with his left hand. With his right hand, the physician then rotates the foot inwards in an arc (axis of rotation is the thigh), placing the knee in a varus position to achieve external rotation of the hip. The angle between the median line of the body and the axis of the lower leg is measured using a goniometer. The normal range is approximately 40 to 50°. The examination is then repeated for the left leg.

External rotation

Abduction

The player lies in a supine position on the examination table with his knees and hips extended. The physician stabilises the iliac crest using his left hand. The player abducts his left leg and the angle between the median line of the body and the axis of the lower leg is measured using a goniometer. Measurement normally ranges between 30 and 45°. The examination is repeated for the right leg.

Abduction

Tenderness on groin palpation

The player lies in a supine position on the examination table with both legs extended (optional with a pillow under the knees). The physician palpates bilaterally (starting from the pubic symphysis) along the bony landmarks, the surrounding soft tissues in the inguinal area, and records any symptoms or pain elicited by this palpation. Any tenderness in this region indicates a groin problem that may require further examinations.

Hernia

Examination of the inguinal region is either performed with the player laying or standing and the physician seated on a stool facing him. Observation of the groin area with the patient relaxed and then actively coughing may reveal a bulge or an abnormal motion. The physician should then stand to the side of the player with his fingers lightly applied to the groin, his left hand on the patient's left side and his right hand on the patient's right side. With his fingers placed over the femoral region, the external inguinal ring, and the internal ring, the physician should have the player cough. A palpable bulge or impulse located in any one of these areas may indicate a hernia. In the male, with the physician having returned to the sitting position, the scrotum on each side is inverted with the examining index finger entering the inguinal canal. The size of the external ring can be ascertained by palpating just lateral to the pubic tubercle.

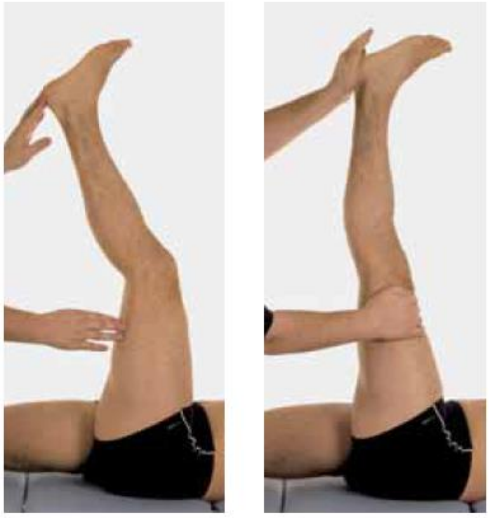
Adductor muscles

The player lies in a supine position on the examination table and is asked to place the soles of his feet against each another and bring his feet towards the buttocks. This position causes a maximal flexion and external rotation of the hip. If the player cannot achieve at least 45°, this indicates shortened or tight adductor muscles. In addition, pain elicited by this movement is recorded.

Adduction

Hamstring muscles

The player lies in a supine position on the examination table. The physician bends the left leg with flexed knee to 90° of hip flexion. Slowly, the knee is passively extended from 90° to 0°. If the player cannot achieve 90° hip flexion with an extended knee, the hamstrings on the left side are considered shortened or tight. In addition, pain elicited by this movement is recorded. The examination is then repeated for the right leg.



Hamstring muscles

Iliopsoas muscle

The player lies in a supine position on the examination table with his left leg bent over the end of the table in a resting position. The right hip is flexed to at least 90°. If the left hip flexes spontaneously, this indicates shortened or tight iliopsoas muscles on the left side. In addition, pain elicited by this movement is recorded. The examination is then repeated for the right leg.

Iliopsoas muscle

Rectus femoris muscle

The player lies in a supine position on the examination table with the right leg bent over the end of the table in a resting position. The right hip is flexed to at least 90°. The left knee is now flexed from 90 to 120°. If 120° cannot be achieved, this indicates a shortened or tight rectus femoris muscle on the left side. In addition, pain elicited by this movement is recorded. The examination is then repeated for the right leg.

Rectus femoris muscle

Tensor fascia latae muscle (iliotibial band)

The player is lying on his left side on the examination table. The lower leg is slightly flexed in order to maintain stability. The player is asked to first hold the right leg in a horizontal position (hip extension and neutral abduction), and then to drop it towards the edge of the table until the point the leg stops to move. If the right knee does not reach the edge of the table, this indicates a shortened or tight tensor fascia latae muscle (iliotibial band) on the right side. In addition, pain elicited by this movement is recorded. The examination is then repeated for the left leg.

Tensor fascia latae muscle test

Examination of the knee

Knee joint axis

The player stands with his feet as close together as possible. The knees are fully extended. The axis of the knee joint and the lower leg is visually assessed for each leg. If there is no contact between the epicondyli of the femur, this indicates a genu varum. When contact between the epicondyli of the femur can only be accomplished with a distance between the malleoli, this indicates a genu valgum.

Genu varum

Genu valgum

Flexion

The player lies in a supine position on the examination table and is asked to move his right heel to his buttocks (active flexion). Then the physician slightly lifts the heel of the player from the examination table and further flexes the knee (passive flexion). The examination is then repeated for the left knee.

Extension

The player lies in supine position on the examination table with extended knees. The player is asked to extend his right knee further with the thigh on an examination table (active extension). Then the physician slightly lifts the heel of the player from the table and further extends the knee (passive extension). The examination is then repeated for the left knee.

Lachman test

The player lies in a supine position on the examination table with his right knee in 20-30° flexion. The physician fixes the distal femur of the right knee from the lateral side with one hand and proximal tibia from the medial side with the other hand. The player is asked to relax, especially his leg muscles. The physician makes a swift drawer movement with the upper tibia from its resting position in the ventral direction. The examination is then repeated for the left knee.

A difference in the drawer movement between the two legs of 5mm or more is pathological. The test should be considered normal when there is no difference between the right and left side.

Lachman test

Anterior drawer sign

The player lies in a supine position on the examination table with the right knee joint bent at 90° and the tibia in neutral rotation. The physician sits on the front of the player's foot with both hands around the upper tibia. The player is asked to relax, especially his leg muscles. The physician then carries out a ventral drawer movement. The examination is then repeated for the left knee.

More than 5mm movement or a difference in the anterior drawer movement as compared to the other leg is a pathological result. Anterior laxity with a stiff end point that is equal for the right and left knee is considered normal. An anterior drawer with the tibia in external rotation is a sign of instability of the medial collateral ligament and joint capsule. An anterior drawer with the tibia in internal rotation is a sign of an anterior cruciate ligament injury.

Anterior drawer test

Posterior drawer sign

The player lies in a supine position on the examination table with the right knee joint bent at 90° and the tibia in neutral rotation. The physician sits on the player's forefoot with both hands around the upper tibia. The player is asked to relax, especially his leg muscles. The knee should be checked for spontaneous posterior drawer. The physician then pushes with both hands on the upper tibia to perform the posterior drawer. The examination is then repeated for the left knee.

More than 5mm movement or a difference in the posterior drawer movement as compared to the other knee is a pathological result.

Posterior drawer test

Valgus stress in extension

The player lies in a supine position on the examination table with both knee joints fully extended. The physician puts one hand on the right lateral femoral condyle above the joint line and the other hand medial around the right ankle. He then applies a medially directed stress to the knee joint. The examination is then repeated for the left knee.

More than 5mm movement is a pathological result. An increased valgus in extension is a sign of a medial collateral ligament injury and concomitant injury to the postero-medial capsule which might also include an anterior cruciate ligament injury.

Valgus stress in extension

Varus stress in extension

The player lies in supine position on the examination table with both knee joints fully stretched and the thigh muscles completely relaxed. The physician places one hand on the right medial femoral condyle above the joint line and the other hand lateral around the right ankle. Then the physician applies a laterally directed stress to the knee. The examination is repeated for the left knee accordingly.

More than 5mm movement is a pathological result. An increased varus in extension is a sign of lateral collateral ligament injury and concomitant injury to the posterolateral capsule which might also include an anterior cruciate ligament injury.

Varus stress in extension

Valgus stress in flexion

The player lies in a supine position on the examination table with the right knee in 30° flexion and with the thigh muscles completely relaxed. The physician puts one hand on the lateral femoral condyle above the joint line and the other hand medial around the right ankle. He then applies a medially directed stress to the knee joint. The examination is then repeated for the left knee.

More than 5mm movement is a pathological result and a sign of medial collateral ligament injury.

Valgus stress in flexion

Varus stress in flexion

The player lies in a supine position on the examination table with the right knee in 30° flexion and with the thigh muscles completely relaxed. The physician places one hand on the right medial femoral condyle above the joint line and the other hand lateral around the right ankle. Then the physician applies a laterally directed stress to the knee. The examination is then repeated for the left knee.

More than 5mm movement as compared to the other side is a pathological result. Note, however, that there is always some laxity in this test. Side-to-side comparison is essential. An increased varus is a sign of a lateral collateral ligament injury.

Varus stress in flexion

Meniscus test

The player lies in a supine position on the examination table with the right knee in 90° flexion and with the thigh muscles completely relaxed. The physician monitors the joint line with a pincer grip (thumb and index finger palpating the medial and lateral joint space), and progressively flexes the knee, performing internal and external tibia rotation. These passive rotation motions are performed with as much flexion as possible (towards end-range flexion, the menisci – especially their posterior horns - are compressed and stressed with additional rotations). If pain or symptoms are elicited by these movements, this indicates a possible meniscus problem.

Meniscus test in knee flexion with tibia in internal rotation

Meniscus test in knee flexion with tibia in external rotation

Examination of the lower leg, ankle and foot

Tenderness of Achilles tendon

The player lies in a prone position on the examination table with his feet overlapping the table. The physician carefully palpates the right Achilles tendon between the heel (calcaneus; tendinous insertion) and the lower border of the calf muscle (musculotendinous insertion). The palpation can elicit pain or symptoms of the Achilles tendon structure: tenderness, thickening and crepitus ("crackling" feeling) may be found. These are pathological findings which require further examination.

Triceps surae muscle

The player stands in a step position facing a wall. He is asked to press the heel of the posterior leg against the floor (the foot should be perpendicularly positioned to the wall). He places his hands on the wall in front of him. He then moves his trunk slowly forward – with his back straight – until he feels the calf muscle of the posterior leg stretched to a point that hinders movement (the heel must remain in contact with the floor, the knee extended). If a dorsal extension in the ankle joint of about 30° cannot be achieved, this indicates a shortened or tight triceps surae muscle on the right side. The examination is then repeated for the other leg.

Triceps surae muscle test

Anterior drawer sign of the ankle

The player lies in a supine position on the examination table with the ankle in 10° plantar flexion (relaxed position). The physician lifts the right leg from the table, flexes the knee to 30°, holding the malleolus fork with one hand, and carries out an anterior drawer movement with the other hand around the talus and calcaneus. The examination is then repeated for the left ankle.

Any difference observed in the anterior drawer movement in comparison to the other ankle or greater than normal movement (3-5mm) on both sides is a pathological result.

Anterior drawer test normal finding

Anterior drawer test pathological finding

Dorsal flexion of the ankle

The player lies in a supine position on the examination table with both feet overlapping the table. The upper ankle of his right foot is in a neutral position and the knee joint is extended. The navicular tuberosity is palpated. The pivotal point of the goniometer lies on the medial side of the talus. The physician fixes the leg and moves the ankle joint dorsally and measures the angle between the axis of the tibia and the tuberosity of the navicular bone. The examination is then repeated for the left ankle.

Less than 15° dorsal extension indicates either a shortened triceps surae muscle or pathological changes of the ankle joint.

Dorsal flexion

Plantar flexion of the ankle

The player lies in a supine position on the examination table with both feet overlapping the table. The upper ankle of his right foot is in a neutral position and the knee extended. The tuberosity of the navicular bone is palpated. The pivotal point of the goniometer lies on the medial side of the talus. The physician fixes the leg and moves the ankle joint passively plantar, measuring the angle between the axis of the tibia and the tuberosity of the navicular bone. The examination is then repeated for the left ankle.

Less than 20° plantar flexion indicates either a muscular or articular problem.

Plantar flexion

Total supination in the foot joints

The player lies in a supine position on the examination table with both knees extended and both feet overlapping the table. The upper ankle of his right foot is in a neutral position. The physician carries out a passive supination movement of the front of the right foot. The angle between the sole of the foot (metatarsal heads) and the perpendicular to the body axis is measured using a goniometer. The examination is then repeated for the left ankle. More significant restrictions of joint mobility require individual assessment.

Total supination in the foot joints

Total pronation in the foot joints

The player lies in a supine position on the examination table with extended knees and the upper ankle of his right foot in a neutral position. The physician carries out a passive pronation movement of the front of the right foot. The angle between the sole of the foot (metatarsal heads) and the perpendicular angle to the body axis is measured using a goniometer. The examination is then repeated for the left ankle. More significant restrictions of joint mobility require individual assessment.

Total pronation in the foot joints

Metatarsophalangeal joint I

The player lies in a supine position on the examination table with relaxed, extended legs. The physician fixes the right ankle/foot with one hand and then moves the metatarsophalangeal joint I ("big toe joint"). The angle between the axis of the metatarsal bone and the axis of phalangeal bone is measured using a goniometer. The extension ranges between 70-90°, and the flexion should be around 45°. The examination is repeated for the left metatarsophalangeal joint I accordingly.

Metatarsophalangeal joint test

Adductor squeeze test

The most commonly used test in the assessment of groin pain is the adductor squeeze test. It is not specific for loading a specific anatomical structure; rather it is a test of load tolerance, and "willingness" to generate and subject the groin region to load. Note that pain-induced inhibition may be a significant contributor to the reduced score. The site of reported pain may be a clue to the structures suffering from excessive load and/or abnormal pathology.

Patients squeeze their knees together as hard as they can. Pain and weakness are then subjectively assessed. The adductor squeeze test is commonly performed in three positions (Fig. 29.6):

1. Legs extended, neutral rotation (Fig. 29.6a)—thought to be more specific for the adductor muscles
2. 45° hip flexion and 90° knee flexion (Fig. 29.6b)
3. 90° hip flexion, thighs vertical, knees relaxed, feet off the plinth (Fig. 29.6c).

The test can be performed subjectively with the examiner's fist placed between the knees and the strength assessed manually. While Holmich et al.[47] reported only moderate reliability in manually assessing the strength ("strong," "intermediate," or "weak") of a maximal bilateral hip adduction contraction among primarily young adult male soccer players, it is useful to obtain objective measures of hip adductor strength.

This is commonly performed with either a sphygmomanometer or dynamometer. Both methods have been shown to have good reliability[48–50] and provide an objective measure which can be monitored, or at least compared to a baseline in the event of an acute or gradual onset chronic injury.

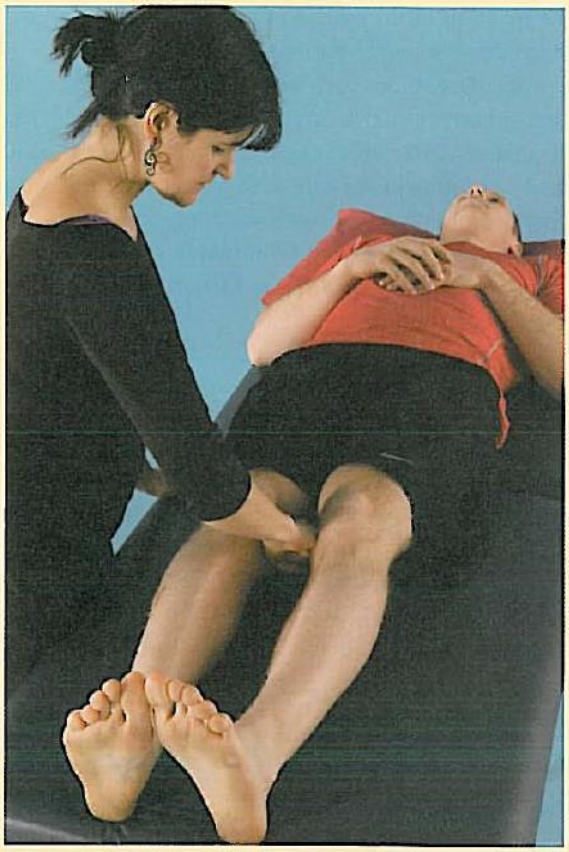
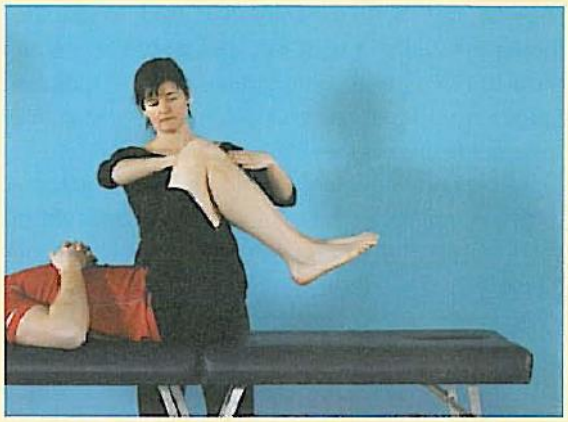


Figure 29.6 Adductor squeeze test—performed in three positions

(a) Legs extended, neutral rotation. Patients attempt to internally rotate their femurs to generate more power. Neutral rotation must be maintained

(b) 45° hip flexion and 90° knee flexion. Patient slides one heel towards buttock until medial malleolus level with opposite knee medial joint line, then flexes opposite knee to same range



(c) 90° hip flexion, thighs vertical, knees relaxed, feet off the plinth

The patient (rather than the practitioner) places a sphygmomanometer between the knees, thus ensuring it is in a comfortable position and more likely to be consistently placed in the same position, and then squeezes the cuff as hard possible. The highest pressure displayed on the sphygmomanometer dial (to the nearest 5 mmHg), and the site and side of any groin pain experienced during the test are recorded.[48]

The second technique to objectively measure adductor strength is with a hand-held dynamometer.[49–51] The dynamometer is slightly more accurate than the sphygmomanometer but is significantly more expensive, and probably a sphygmomanometer is adequate.

A number of studies have shown a positive correlation between groin pain and a positive adductor squeeze test. Verrall et al., in a study investigating AFL players, reported that assessing the presence or absence of pain on the squeeze test is specific (88%) in identifying longstanding groin pain (tenderness at the pubic symphysis and superior pubic rami for 6 weeks).[53]

Football players with groin pain produced significantly less force on the squeeze test when compared with asymptomatic players.[48, 52, 53] It cannot be determined whether the significantly reduced maximal force production on the squeeze test is because of muscle weakness or pain inhibition (or both). Likewise, the cause or effect relationship between reduced strength on the squeeze test and the presence of longstanding groin pain is yet to be demonstrated.

Crow et al.[51] and Engebretsen et al.[12] both found that adductor squeeze dynamometer strength was reduced prior to onset of groin injury. The adductor

squeeze test is now commonly used to monitor footballers during a season in an attempt to identify those at risk of developing groin pain. The study also found reduced adductor strength, measured manually, to be predictive of groin injury in footballers.

Weekly measurements with sphygmomanometer or dynamometer are taken, and any drop in strength value of >5–10% compared with pre-season non-injured values should alert the clinician to the possibility of groin pain developing, and consideration should be given to both reducing the physical training load and commencing treatment.[51]

Absolute values vary, but one study showed mean sphygmomanometer pressures at 0° and 30° hip flexion of >210 mmHg in patients without groin pain, and <185 mmHg in those with groin pain.[48] Allowing for measurement error and variation, a threshold of 200 mmHg may be useful clinically. A combination of this 200 mm threshold and reduction of >5% may be appropriate criteria.

Core test or Double-Leg Lowering Test. The DLL test evaluates the strength of the rectus abdominus and oblique muscles. To test lower abdominal strength, the subject was positioned supine on a treatment table, with the hip joint aligned with a goniometric grid positioned on a wall adjacent to the table. Before beginning the test, you place a standard sphygmomanometer, inflated to 40 mm Hg, under the subject's lumbar spine and used this to monitor the maintenance of posterior pelvic tilt. The subject received visual feedback by watching the pressure change on the sphygmomanometer dial. To begin the test trial, you passively assis the subject's legs into a position of 90 of hip flexion while the knees were actively fixed in full extension and the pelvis in a posterior tilt (Figure 4A). you then instruct the subject to maintain knee extension and posterior pelvic tilt while lowering both legs simultaneously to the table (Figure 4B). you visually determined the angle of the legs from horizontal and recorded the value when subjects lost control of the posterior pelvic tilt. Objectively, the loss of posterior pelvic tilt was determined by a 10–mm Hg decrease in pressure on the sphygmomanometer dial.

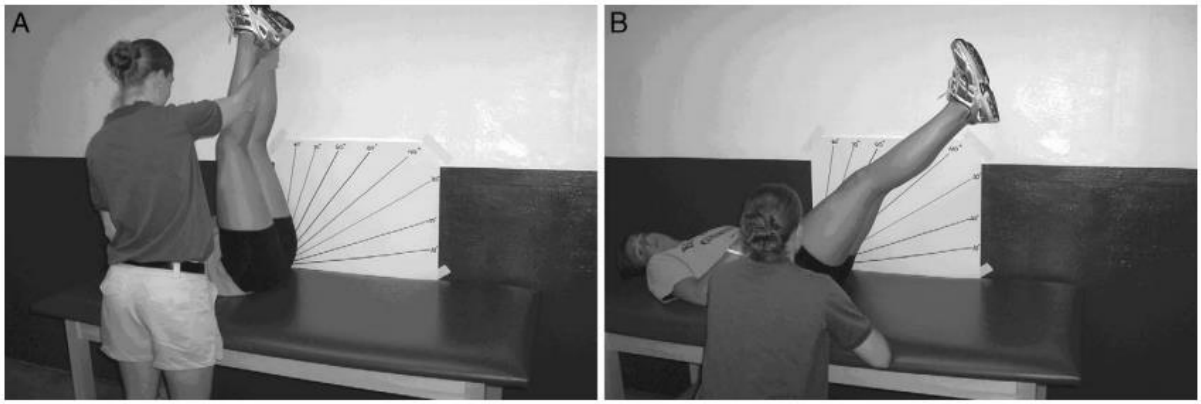


Figure 4. The double-leg lowering test. A, Starting position, with the subject instructed to maintain a neutral pelvis while lowering the legs independently. B, Ending position as determined by the investigator's inspection of the loss of pelvic neutral position. The angle of the thighs is recorded for data collection.

Hamstring cuff squeeze test

The test evaluates the strength of the hamstring muscles. To test hamstring strength, the subject was positioned supine hip joint and knee flexed at 90’ while the foot Is on a chair. Before beginning the test, you place a standard sphygmomanometer, inflated to 40 mm Hg, under the subject’s heel and then instruct the athlete to squeeze the cuff as much as possible and record the maximum pressure for both sides.

VO_2Max

تست آنالیز گازهای تنفسی در هنگام ورزش برای بررسی وضعیت آمادگی هوازی ورزشکاران به کار می رود و اطلاعات قابل عرضه به کادر پزشکی و فنی و بدنساز، شامل حداکثر توان هوازی، آستانه بی هوازی، وضعیت قلبی عروقی و شدت ورزش سوزاننده چربی می باشد.

Biofeedback

تست های EMG سطحی برای بررسی نسبت فعالیت عضلات چهارسر و همسترینگ به کار می روند و پیش بینی کننده احتمال آسیب لیگامانی و عضلانی در صورت عدم تعادل در فعالسازی هستند.

Sideline Concussion Assessment Tool -5th Edition (SCAT5)

پرسشنامه ای برای بررسی وضعیت ورزشکار پس از کانکاشن در ورزش های کانتکت است، وضعیت ورزشکار در چهار حوزه شناخت، حافظه توجه و تعادل مورد بررسی قرار می گیرد که که برای داشتن امکان مقایسه وضعیت ورزشکار پس از آسیب با حالت پایه لازم است که تست در ابتدای فصل و پیش از ضربه خوردن ورزشکار اندازه گیری شده باشد و این اهمیت انجام تست را در ورزشکاران پدر معاینات پیش از فصل نشان می دهد.

Foot Pronation Index

It is a clinical tool used to quantify the degree to which a foot is pronated, neutral or supinated. The patient should stand in their relaxed stance position with double

	-2	-1	0	+1	+2
Talar head palpation	Talar head palpable on lateral side/but not on medial side	Talar head palpable on lateral/slightly palpable on medial side	Talar head equally palpable on lateral and medial side	Talar head slightly palpable on lateral side/palpable on medial side	Talar head not palpable on lateral side/but palpable on medial side
Supra and infra lateral malleoli curvature (viewed from behind)	Curve below the malleolus either straight or convex	Curve below the malleolus concave, but flatter/more than the curve above the malleolus	Both infra and supra malleolar curves roughly equal	Curve below the malleolus more concave than curve above malleolus	Curve below the malleolus markedly more concave than curve above malleolus
Calcaneal frontal plane position (viewed from behind)	More than an estimated 5^{o} inverted (varus)	Between vertical and an estimated 5^{o} inverted (varus)	Vertical	Between vertical and an estimated 5^{o}everted (valgus)	More than an estimated 5^{o}everted (valgus)
Prominence in region of TNJ (viewed at an angle from inside	Area of TNJ markedly concave	Area of TNJ slightly, but definitely concave	Area of TNJ flat	Area of TNJ bulging slightly	Area of TNJ bulging markedly
Congruence of medial longitudinal arch (viewed from inside)	Arch high and acutely angled towards the posterior end of the medial arch	Arch moderately high and slightly acute posteriorly	Arch height normal and concentrically curved	Arch lowered with some flattening in the central position	Arch very low with severe flattening in the central portion - arch making ground contact
Abduction/adduction of forefoot on rearfoot (view from behind)	No lateral toes visible. Medial toes clearly visible	Medial toes clearly more visible than lateral	Medial and lateral toes equally visible	Lateral toes clearly more visible than medial	No medial toes visible. Lateral toes clearly visible.

limb support. The patient should be instructed to stand still, with their arms by the side and looking straight ahead. It may be helpful to ask the patient to take several steps, marching on the spot, prior to settling into a comfortable stance position. During the assessment, it is important to ensure that the patient does not swivel to

try to see what is happening for themself, as this will significantly affect the foot posture. The patient will need to stand still for approximately two minutes in total in order for the assessment to be conducted. The assessor needs to be able to move around the patient during the assessment and to have uninterrupted access to the posterior aspect of the leg and foot. If an observation cannot be made (e.g. because of soft tissue swelling) simply miss it out and indicate on the datasheet that the item was not scored. If there is genuine doubt about how high or low to score an item always use the more conservative score.

Calf endurance test

از ورزشکار می خواهیم که در حالیکه پای دیگر را از زمین بلند کرده است، با پای متحمل وزن به حداکثر تعدادی که می تواند روی پنجه بلند شود، عدد را برای هر طرف ثبت می کنیم.

Ankle Dorsiflexion lunge (big toe to wall)

1. Patient stands against wall with about 10cm between feet and wall.
2. They move one foot back a foot's distance behind the other.
3. They bend the front knee until it touches the wall (keeping the heel on ground).
4. If knee can not touch wall without heel coming off ground, move foot closer to wall then repeat.
5. If knee can touch wall without heel coming off ground, move foot further away from wall then repeat.
6. Keep repeating step 5 until can just touch knee to wall and heel stays on ground.
7. Measure either: a) Distance between wall and big toe (<9-10cm is considered restricted) **or** b) The angle made by anterior tibia/shin to vertical (<35-38 degrees is considered restricted)
8. Change the front foot and test the other side (symmetry is ideal)