Ahead of the Pain: Temporal Precursors to Osgood-Schlatter Disease in Male Premier League Academy Footballers – A Nested Case-Control Study

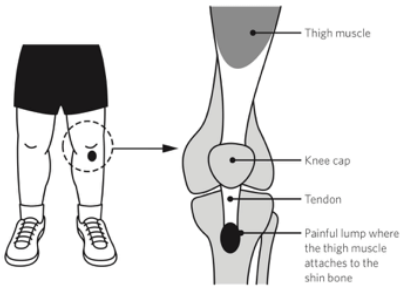
Supplementary Material

METHODS

Osgood Schlatter's Disease Previous History Survey

Question 1: Full Name

Question 2: Do you recall having knee pain, specifically in this area below the kneecap, at the top of your shin, during or after training when you were younger?



(Accompanying diagram image)

Response Options: "Yes", "No", "Unsure"

Question 3: If answered "YES" above, what age group were you when you experienced this pain?

Osgood Schlatter's Disease Diagnosis

Clinical diagnosis was confirmed via a combination of self-reported pain by the player and medical assessment by a trained member of the medical team at the academy. Diagnosis was based on localised tibial tuberosity pain, tenderness on palpation, pain on quadriceps stretch or contraction, and activity-related symptoms lasting >7 days (1, 2). Functional pain at the tibial tuberosity was then assessed during a squat movement in which the player reported pain on an 11-point numeric pain rating scale ranging from 0 (no pain) to 10 (worst pain imaginable). Once the medical professional was satisfied that the complaint was Osgood-Schlatter's Disease, this was then recorded as such on the online database (Smartabase, Fusion Sport, Brisbane, Australia). Radiographic imaging is not routinely required unless atypical features or red flags are present (3) and there was no requirement in the included participants.

Physical Tests

Countermovement Jump Height

Countermovement jump height was established as the maximum vertical jump height in centimetres, collected via the OptoJump system (OptoJump, Microgate, Bolzano, Italy). Players performed a short standardised physical warm up before stepping onto the jump platform. With hands on hips, the player was instructed to jump ‘as quickly and as high as possible’ before landing in an ‘athletic position’. Three maximal jumps were recorded with 10 second rest between trials. The maximum jump height from the three trials was recorded.

Range of Motion

Range of motion capabilities were assessed by trained medical and performance staff, following standardised procedures at the club, in conjunction with the strength testing. Research has shown that when performed by a trained assessor, universal goniometer assessments show good to excellent reliability (4, 5), which is proven to be improved through training and the following of a standardised procedure (6).

Hip internal and external rotation was assessed with the player in a prone position with knees flexed at 90 degrees. A goniometer was placed on the inferior pole of the patella whilst the assessor passively moves the limb through internal rotation. End range is determined when visible movement of the pelvis is seen, indication lateral rotation of the spine. The process is then repeated through external rotation.

Hamstring flexibility was assessed in supine position with one leg flat and the other flexed 90 degrees at the hip and 90 degrees at the knee. The foot is then raised passively by a practitioner until the practitioner feels resistance, or the athlete reports strong, but tolerable, stretching sensation in the hamstring musculature.

Ankle range of motion was assessed via the weight-bearing dorsiflexion test. The player was instructed to place their foot on a measuring board and cued to touch the wall with their knee. The assessor was careful to ensure there was no rotation at the hip during the test. The assessor watches for knee contact with the wall and ensures the heel does not raise. The player then moves further back in 1 cm increments repeating the test until the player cannot touch the wall

without the heel raising. The score is then taken as the last successful attempt and recorded in centimetres.