

Appendix 2

Trunk and lower extremity physical examination measures

Lumbar flexion and extension AROM ²³	Participant was standing with feet hip width apart and knees extended. Inclinometers at the thoracolumbar (TL) junction and S2 were zeroed in neutral then recorded at maximal forward or backward bend sliding hands down the back of thighs. Total AROM was S2 measure subtracted from TL junction.
Hip flexion PROM ²³	Participant was supine with hips and knees extended. The PT passively flexed the hip allowing the knee to flex until resistance was felt and further motion caused posterior tilting of pelvis.
Hip internal and external rotation PROM ^{31,23}	Patient was prone with hips and knees extended. The PT flexed the knee to 90 and zeroed inclinometer on the medial tibia in a vertical position then stabilized the posterior pelvis as they internally or externally rotated the hip until resistance and further motion would cause pelvic rotation.
Straddle flexibility	Participant was supine with hips flexed so that their ischial tuberosities contacted the wall with knees extended. Keeping knees extended and heels in contact with the wall they opened into horizontal abduction. The thigh angle relative to horizontal was measured with an inclinometer at the medial femoral condyle for each side and subtracted from 180 degrees.
Hamstring flexibility ³²	Participant was supine and the inclinometer was zeroed on the anterior distal tibia. The PT flexed the hip with the knee extended until pelvis posterior tilted with continued hip flexion.
Hip extension MMT ²⁶	Participant was prone knee flexed to 90°, they extended thigh through full hip range then resistance was applied proximal to knee on posterior thigh.

<p>Hip abduction MMT²⁶</p>	<p>Participant was sidelying with bottom leg flexed and top hip in slight extension. They abducted the top leg through full range in neutral rotation and resistance was applied above the knee on lateral thigh.</p>
<p>Hip adduction MMT²⁶</p>	<p>Participant was sidelying with top leg supported in abduction by the PT. They adducted the bottom leg in neutral rotation and resistance was applied above the knee on medial thigh.</p>
<p>Hip internal and external rotation MMT²⁶</p>	<p>Participant was seated at on edge of table, hip at 90° and lower leg vertical. They internally or externally rotated their hip then the PT stabilized the distal thigh as the apply resistance at the lateral or medial aspect of distal leg in direction of external or internal rotation.</p>
<p>Leg lowering lower abdominal MMT²⁶</p>	<p>Participant was supine with arms folded across their chest. The PT flexed hips to 90 degrees with knees extended then participant flattened their back into the table by posteriorly tilting. The PT then removes support, and they slowly lowered the legs until the PT felt the pelvis anteriorly rotated or lumbar spine extended. The angle of the legs relative to horizontal was measured with the inclinometer on distal anterior.</p>
<p>Single limb balance (eyes closed)³⁹</p>	<p>Participant stood on one leg with other hip flexed to 90 degrees and arms crossed. Once they felt stable, they closed their eyes and time started with the best of two trials recorded. Time was stopped if the participant hopped or moved about on the standing foot, touched the non-weight bearing foot to the ground or uncrossed their arms.</p>
<p>Accelerated 3-minute step test³⁴</p>	<p>Participants resting heart rate was recorded in sitting. can wear athletic shoes or be barefoot. A metronome was set to to12 beats per minute. Participants stepped up and down from a 12” (30-cm) step for 3 minutes. Heart rate was taken again immediately after and then in sitting 1-minute after finishing (recovery heart rate).</p>

AROM, active range of motion, PROM, passive range of motion; MMT, Manual muscle testing. MMT graded as normal (full AROM against gravity and able to hold with maximal resistance), good (full AROM against gravity and able to hold with moderate resistance), fair (full AROM against gravity), or fair minus (greater than 50% of AROM against gravity).²⁶