Table S5. Measurement protocol for lower limb range of motion

Hip flexion

1) Subject in supine, hip joint in comfortable relaxed position, knee joint extension, in measurement limb, hip and knee flexion until lumbar region contact the base of table fully in non-measurement limb.
2) Abdominal band for secondary sensor at the level of xiphoid process, pelvic strap are mounted.
3) Primary sensor attached on the predetermined site on the thigh cuff is turned on and set to 0°.
4) After the subject flexes the hip joint and knee joint on the examined side as much as possible, the angle on the primary sensor is recorded.
5) Primary sensor returns to neutral position of 0°.
6) Measurement is repeated 3 times and the average is calculated.

Hip extension

1) Subject in prone position with the head turned opposite side of measurement, hip comfortable relaxed position, knee joint extension, ankle plantarflexion, feet out of the measurement table.
2) Abdominal band for secondary sensor at the level of xiphoid process, lumbar strap are mounted.
3) Primary sensor attached on the predetermined site on the thigh cuff is turned on and set to 0°.
4) After the subject extends the hip joint as much as possible while maintaining the knee joint in extension on the examined side, the angle on the primary sensor is recorded.
5) Primary sensor returns to neutral position of 0°.
6) Measurement is repeated 3 times and the average is calculated.

Hip abduction and adduction

1) Subject in side-lying position with lumbar extension, hip joint neutral, knee joint extension. The ipsilateral arm holds the edge of the table for safety and the contralateral arm held the head.
2) Truncal strap is belted.
3) Sensor attached on the predetermined site on the thigh cuff is turned on and set to 0°.
4) At the ready position, the primary sensor is attached to the molded device and confirmed to be set to 0°.
5) After the subject abducts/adducts the hip joint as much as possible while maintaining the knee joint in extension on the examined side, the angle on the primary sensor is recorded.
6) Sensor returns to the neutral position of 0°.
7) Measurement is repeated 3 times and the average is calculated.

Hip internal/external rotation

1) Subject in prone with the head turned to the opposite side of measurement, with hip joint relaxed comfortable position, knee joint 90° flexion, ankle joint neutral position in measurement limb, hip joint relaxed comfortable position, knee joint extension, ankle joint plantarflexion in non-measurement limb.
2) Hip strap is belted.
3) Primary sensor attached on the predetermined site on tibial band is turned on and set to 0°.
4) At the ready position, the primary sensor is attached to the molded device and confirmed to be set to 0°.
5) After the subject maintains 90° of flexion of the knee joint and internally/externally rotates the hip joint as much as possible, the angle on the primary sensor is recorded.
6) Primary sensor returns to the neutral position of 0°.
7) Measurement is repeated 3 times.

Knee flexion

1) The subject is in prone position.
2) Sensor is attached at the predetermined site on molded band.
3) Velcro fixes the pelvis.
4) Each pushing force is applied and repeated 3 times.

Ankle inversion/eversion

1) Subject in prone with the head turned to the opposite side of the measurement, hip joint comfortable relaxed position, knee joint 90° flexion, ankle joint neutral position in measurement side, hip joint comfortable relaxed position, knee joint extension, ankle joint plantarflexion in non-measurement side.
2) The acrylic plate is mounted on foot for the primary sensor, tibial band is belted for the secondary sensor.
3) Rectangular acrylic device with string for lower leg fixation and hip strap is applied.
4) Sensors attached predetermined site on the molded device is turned on and set to 0°.
5) At the ready position, the primary sensor is attached to the molded device and confirmed to be set to 0°.

Table S5. Continued

6) After the subject maintains 90° of flexion of the knee joint and performs ankle joint inversion/eversion as much as possible, the angle on the primary sensor is recorded.
7) Primary sensor returns to the neutral position of 0°.
8) Measurement is repeated 3 times and the average is calculated.

Ankle dorsiflexion/plantarflexion (with knee flexion of 90°)

1) Subject in prone with the head turned to the opposite side of measurement, with hip joint comfortable relaxed position, knee joint 90° flexion, ankle joint neutral position
2) The acrylic plate is mounted on the foot.
3) Rectangular acrylic device with string is applied for lower leg fixation.
4) Sensor is attached on the predetermined site on molded device while maintaining 90° knee flexion.
5) Velcro fixes the thigh.
6) Each pushing force is applied and repeated 3 times.

Ankle dorsiflexion/plantarflexion (with knee flexion of 0°)

1) Subject in prone with the head turned to the opposite side of measurement, with hip joint relaxed comfortable position, knee joint extension, ankle joint neutral position, feet out of the measurement table.
2) The acrylic plate is mounted on the foot and the sensor is attached on the predetermined site on molded device.
3) Velcro fixes the thigh.
4) Each pushing force is applied and repeated 3 times.