

## TRICALS Quick reference Isometric Strength Test Protocol (Supine Position)

### Shoulder Flexion

The arm is lifted so the shoulder is flexed in 90 degrees relative to the trunk. The elbow is extended and the thumb is pointing upwards. The hand held dynamometer is placed just above the elbow joint on the lateral epicondyle of the humerus.



### Elbow Flexion

The elbow is flexed to 90 degrees and the thumb is pointing upwards. The distal radius is palpated and the hand held dynamometer is placed lateral on that point, just proximal to the wrist joint. The evaluator is exerting a pulling movement. During this specific measurement is often occurs that the subject is sliding on the treatment table.

In this case the subject should be stabilised to ensure a reliable measurement. This can be done by asking the subject to bent the knee en rest with the foot on the treatment table. The evaluator can now stabilise the subject with his trunk and still perform the measurement as previously described.



### Elbow Extension

The elbow is flexed to 90 degrees and the thumb is pointing upwards. The distal ulna is palpated and the hand held dynamometer is placed lateral on that point, just proximal to the wrist joint. The evaluator is exerting a pushing movement.

It is important that during the test the upper arm and elbow rest on the mattress of the treatment table.



### Wrist Extension

Just as during the previous tests the elbow is flexed to 90 degrees and the thumb is pointing towards the ceiling. The back of the hand lies in the extension of the forearm. The fingers are bent into a fist if possible. With the contralateral hand -that is the hand that is not holding de hand held dynamometer- the evaluator grasps the palmar side of the forearm. The hand held dynamometer is placed just below the knuckles of the fingers on the back of the hand and the evaluator exerts a pushing movement.



### First Dorsal Interosseous

Pay attention! The finger pad has to be installed to test this muscle group. The elbow is flexed to 90 degrees. The forearm is placed in pronation so the back of the hand is pointing upwards. The subject is asked to spread the fingers maximally. Using his contralateral hand the evaluator fixes the ulnar side of the subject's hand just below MTC 5, the knuckle of the little finger. The hand held dynamometer *with the finger attachment* is placed on the lateral thumb side of the index finger, just proximal of the interphalangeal joint.



### Hip Flexion

The knee is raised until the hip is flexed 90 degrees relative to the trunk. It is important that the foot does not touch the treatment table. The hands rest at the sides of the thighs. The knee of the raised leg hangs loosely in flexion. The subject is asked to move the knee in the direction of the chest. The hand held dynamometer is placed suprapatellar to the flexed knee. That is at the end of the upper leg, towards the knee. The evaluator exerts a pushing movement and stands in line of the motion.



### Ankle Dorsiflexion

The ankle is placed in neutral dorsiflexion so the foot is perpendicular to the lower leg. Just like during the other measurements, it is important that the hand held dynamometer is placed accurately. In this case, the hand held dynamometer should be placed between the cuneiform bones and the metatarsal joints, so on the metatarsal bones. The evaluator exerts a pulling movement.

It is quite possible that during this test the subject is sliding on the treatment table. In that case the evaluator stabilises the contralateral foot of the subject with his knee, still performing the measurement as previously described.



### Knee Extension

The subject is asked to sit on the edge of the treatment table with the back of the knees just not touching the edge. The height of the treatment table is set so that the feet float at least 20 centimetres above the ground. The knees are in 90 degrees of flexion. The hand held dynamometer is placed on the ventral side of the lower leg just proximal to the malleoli. The evaluator squats in front of the subject and exerts a pushing movement, using the weight of his body to exert enough resistance.



### Knee Flexion

The subject is sitting on the edge of the treatment table in the same position as during the knee extension test. The hand held dynamometer is placed on the dorsal side of the lower leg just proximal to the malleoli, right on the Achilles tendon. The evaluator squats in front of the subject and exerts a pulling movement. The upper leg of the subject should keep contact with the treatment table during the test.



### Grip strength

The subject is sitting on the edge of the treatment table with the feet touching the ground. Grip strength is measured with a Jamar grip dynamometer. The elbow is flexed at 90 degrees and touching the flank. The dynamometer is placed in the hand to be tested with the dial facing towards the evaluator. The subject is instructed to squeeze the dynamometer as hard as possible.

