Additional File 3:
Additional information on research measures

MUSCLE FUNCTION TESTING:

Isometric strength of the knee extensor muscles will be determined (best of 3 attempts) during a static maximal voluntary contraction. Peak power output and fatigue will be determined during 20 maximal isokinetic knee extensions at an angular velocity of 90°/s, which ensures all muscle fibres of the quadriceps muscle group are recruited [34]. All muscle function testing will be performed using an isokinetic dynamometer (HUMAC Norm, CSMi Solutions, MA, US).

QUANTITATIVE SENSORY TESTING (QST):

Pressure pain threshold (PPT)

PPT involves gently pressing on one place with a small handheld instrument called an algometer. A finger-width, soft rubber probe gently presses down and gradually increases pressure. The participant presses a button to stop the test as soon as the feeling of pressure become one of pain. The algometer is removed as soon as the button is pressed. The PPT measurements may be performed 3 times each at 3 different places:- on the forearm (brachioradialis muscle), knee (medial joint line, inside surface of the knee) and leg muscle (anterior tibialis). The pain from PPT should be mild, as we are asking only about the first feeling of pain. Each PPT lasts for less than 30 seconds. The participants will be familiarised with the test before it is administered so that they know what to expect and how we would like them to respond.

Temporal summation (TS)

TS involves a blunt metal wire with a small weight attached that has been built into a pen-shaped device, and this is applied to the skin. The feeling is one of sharpness, but the skin is not broken. The test is applied 5cm above the knee cap, on the skin at the bottom of the front of the thigh. The participant is stimulated once by the device and asked to rate their pain/discomfort from 0-10. They then have 10 applications in the same place, at a rate of 1 per second, and are asked to rate the average feeling. Two TS measurements will be done. A large majority of healthy participants and people with knee pain rate pain as less than 4/10 from TS, and each TS measurement lasts for less than 30 seconds. The given scores will be noted.

Conditioned Pain Modulation (CPM)

PPT will be measured on the proximal anterior tibialis. A manual blood pressure sphygmomanometer will be applied to the opposite upper limb, and inflate to above the systolic pressure. The participant will squeeze a ball in their hand and inform researcher once the pain or discomfort in the upper limb reaches 4/10. PPT will be measured at the proximal anterior tibialis anterior as described earlier.