

Appendix 1: Extended methods

MRI acquisition

MRI was performed using a 1.5 T system (Gyrosan Intera, Philips, Best, The Netherlands) with a circular polarised surface coil using identical sequences for all participants and all time points. The MRI pulse sequence protocol included a sagittal 3D water excitation Fast Low Angle Shot (FLASH) sequence with repetition time (TR)/echo time (TE)/flip angle of 20 ms/7.9 ms/25° and a sagittal T2*-weighted 3D gradient echo (GRE) sequence with TR/TE/ flip angle of 20 ms/15 ms/50°. Both series were acquired with a 15 cm x 15 cm field of view (FOV), 1.5 mm slice thickness, and 0.29 mm x 0.29 mm pixel size. In addition, a sagittal and coronal dual echo turbo spin echo (DETSE) sequence, with a TR/TE of 2900 ms/15 ms and 80 ms, 15 cm x 15 cm FOV, 3 mm slice thickness, 0.6 mm gap and 0.59 mm x 0.59 mm pixel size, and sagittal and coronal Short Tau Inversion Recovery (STIR) sequences with a TR/TE/TI of 2900 ms/15 ms/160 ms, 15 cm x 15 cm FOV, 3 mm slice thickness, 0.6 mm gap and 0.29 mm x 0.29 mm pixel size were acquired.

All participants had scheduled MRI at baseline and follow-ups at 2 and 5 years. The first 63 enrolled participants were scheduled for frequent MRIs, at additionally 3-, 6- and 12-months follow-up. Of those, 29 were from the rehabilitation and optional delayed ACLR group.

Patient acceptable symptomatic state and treatment failure

The item used to assess the patient acceptable symptomatic state: *Considering your knee function, do you feel that your current state is satisfactory? With knee function, you should take into account all activities during your daily life, sport and recreational activities, your level of pain and other symptoms, and also your knee-related quality of life.'*

The item used to assess treatment failure: *If you answered 'No' to the previous question, would you consider your current state as being so unsatisfactory that you think the treatment has failed?*