

Appendix 1 The additional details about the tissue processing for histological analysis

The infrapatellar fat pad (IPFP) samples were collected immediately after surgery and fixed in 4% paraformaldehyde, for 48 hours at room temperature. After fixation, the tissues were dehydrated through graded ethanol series, cleared in xylene, and embedded in paraffin blocks. Serial sections of 5 μm thickness were prepared using a microtome. For Sirius Red staining, the sections were deparaffinized in xylene, rehydrated through descending ethanol concentrations, and stained with Sirius Red solution for 60 minutes at room temperature, followed by rinsing with running water. Nuclei were stained using Mayer's hematoxylin for 8–10 minutes and subsequently rinsed with running water for 10 minutes. Routine dehydration and clearing were performed, and the sections were sealed with neutral resin for imaging. Digital images of the stained sections were captured using Digital pathological scanners.

Table S1 Comparing the area under the ROC curve between PDFF, T2*, Hypointense signal grade of IPFP, and the combination of PDFF and T2*

Characteristic	P values
PDFF vs. T2*	0.02266*
PDFF vs. hypointense signals grade of IPFP	0.00049*
PDFF vs. combination of PDFF and T2*	0.56644

Data are calculated using DeLong test. *, $P < 0.05$. ROC, receiver operating characteristic; PDFF, proton density fat fraction; IPFP, infrapatellar fat pad.