| First author | Proj. | Pub | Tesla | Obs | Seg | Main Finding(s) |
|---|---|---|---|---|---|---|
| **Childhood** | | | | | | |
| Wirth (32) | #1 | FP | 1.5 | LO | M | LO increase in deep cartilage T2 (MFTC) in adolescents (not sf, and not in mature athletes) |
| Wirth (41) | #2§ | FP | 3.0 | BL | M | BL regional variation of sf & deep TFTJ T2 in healthy subjects ; no dependence on sex or age (ref values =) |
| Wirth (42) | #2§ | FP | 3.0 | LO | M | Knees with incidence risk or with early ROA (OP, no JSN) display longer BL sf and deep T2 than healthy knees |
| Wirth (43) | #2§ | FP | 3.0 | LO | M | Greater deep (but not sf) MFTC T2 LO increase in ROA knees with than without progression (no BL difference) |
| Maschek (46) | #2§ | Abs | 3.0 | BL | M | BL peripheral and sf T2 discriminates better between healthy/ROA strata than central or sf T2 |
| Wirth (50) | #2§ | Abs | 3.0 | BL | M | LIA of sf & deep T2 equally sensitive to healthy/ROA knee BL differences as subregional analysis (but more flexible) |
| Wirth (48) | #2§ | Abs | 3.0 | LO | M | LIA shows significant diff. in LO sf and deep T2 change between ROA strata (regional values do not) |
| Culvenor (51) | #1 | FP | 1.5 | LO | M | FPJ T2 sex diff. in adolescents (FPJ), but greater LO T2 increase in FPJ T2 in male than female mature athletes |
| Culvenor (52) | #1 | FP | 1.5 | LO | M | No sign. diff. in T2 LO change between uninjured controls and subjects with PCL injury > 5y ago |
| **Growing up** | | | | | | |
| Eckstein (55) | #3§ | FP | 3.0 | LO | M | No sign. diff. in BL (sf or deep) or LO T2 change between knees at risk of ROA incidence vs. healthy ref. knees |
| Wirth (49) | #3§ | FP | 3.0 | LO | M | KLG0 knees with CL JSN display greater deep T2 increase than KLG0 knees without CL ROA (and longer BL sf T2) |
| Roemer (63) | #3§ | FP | 3.0 | BL | M | BL structural pathology (MOAKS) not associated with LO change in FTJ T2 in knees without ROA |
| Roemer (64) | #3§ | FP | 3.0 | BL | M | BL deep T2 greater in those with cartilage damage worsening; BL sf T2 in those with BML worsening (MOAKS) |
| Adolescence | | | | | | |
| Wirth (65) | #4§ | Abs | 3.0 | LO | M | KLG1 knees: BL T2 not associated incident JSN, but sf and deep T2 LO increase greater in incident JSN knees |
| Fürst (66) | #5§ | FP | 3.0 | BL | A | Method for MESE T2 extraction from HR-GE segmentation; MESE does not fully expand to bone interface |
| Fürst (67) | #5§ | FP | 3.0 | LO | A | BL sf MFTC T2 elevated in knees with (JSW) progression, but 12M LO change in MFTC (sf or deep) T2 is not |
| **Reaching Maturity** | | | | | | |
| Eckstein (77) | #6 | Abs | 1.5/3 | BL | M | T2 inter-site (1.5/3.0T) consistency greater, but test-retest repeatability similar to that of cartilage thickness |
| Maschek (78) | #6 | Abs | 1.5/3 | LO | M | Short term (6M) decrease in deep MFTC T2 associated with MCTF cartilage progression (but no other measure) |
| Bax (79) | #6 | Abs | 3.0 | BL | M | Only weak correlations between MFTC and LFTC T2 and knee alignment |
| **Reaching young adulthood** | | | | | | |
| Maschek (95) | #7 | Abs | 0.5-7 | BL | M | T2 decrease from 0.55 to 7.0T, but sf vs. deep diff. similar; highest test retest repeatability at 3.0 (and 1.5) T. |
| Eckstein (80) | #7§ | Abs | 3.0 | BL | A | Direct automated T2 analysis (CNN) of MESE MRI superior to registration of HR-GE-based MESE segmentation |
| Wirt (81) | #7§ | FP | 3.0 | LO | A | Automated T2 analysis (CNN) shows high segmentation similarity, T2 accuracy, and agreement of clinical BL (sf) LO (deep) T2 findings in an "early" OA model (KLG0 knees with vs. without CL JSN) vs manual segmentation |
| Wisser (82) | #7§ | Abs | 3.0 | BL | A | Automated T2 analysis (CNN) shows high similarity & accuracy, and high clinical agreement, of elevated T2 in knees with MOAKS (MFTC, LFTC) cartilage lesions vs. those without, compared with manual analysis |

**Middle Adulthood**

| | | | | | | |
|---|---|---|---|---|---|---|
| Eckstein (84) | #3/ #7 | FP | 1.5 | LO | A | Automated T2 analysis (CNN) shows high segmentation similarity, T2 accuracy & agreement of BL and LO T2 findings (deep LFTC) in ACL deficient knees. Yet, no BL and LO difference found between non-op. instable non-op. stable, op., and healthy volunteer knees, using either (automated vs. manual) segmentation method |
| Brisson (85) | #3/ #7 | Abs | 1.5 | LO | M | No diff. in T2 the above post-ACL-injury cohort between those treated with intense physical rehab. vs. SOC |
| Liphardt (86) | #8 | Abs | 3.0 | LO | M | Sf MT elevated in 12 ISS crew members post- vs. pre-flight, but no effect in the deep layer or other FTJ plates |

**The "Golden" Age**

| | | | | | | |
|---|---|---|---|---|---|---|
| Chaudhari (23) | - | FP | 3.0 | BL | M | Optimized qDESS is validated it against gold standard measurement of cartilage thickness and T2 |
| Chaudhari (87) | - | Abs | 3.0 | BL | M | Intervendor variability for T2 is greater than for cartilage thickness, but test-retest repeatability is acceptable |
| Eckstein (25) | #9 | FP | - | - | - | <30 min imaging protocol suggested for studies of early and advanced OA, including qDESS |
| Eckstein (89) | #9 | FP | - | - | - | Value & precision chain consisting of mechanism of action (MOA) of the drug (DMOAD), patient selection, a multifaceted imaging protocol, a (regulatory compliant) analysis tool, and appropriate endpoints |
| Herger (26) | #10 | FP | 3.0 | BL | M | BL T2 reduced in the deep TFTJ layer of ACL-deficient knees compared with contralateral and healthy knees |
| Wirth (92) | #7/ 10 | FP | 3.0 | BL | A | Automated analysis (CNN) shows high segmentation similarity & high T2 accuracy, and confirms above findings |
| Herger (91) | #10 | Abs | 3.0 | LO | M | LO T2 change over 2y does not differ between ACL-deficient, contralateral, and healthy knees |