# SUPPLEMENTARY DATA

## Results - Comparison with Control Groups

### Primary Outcome Measures

The change in VAS-pain (figure S8) was better for both TKA and HTO compared to KJD at both time points (all p<0.02), with the MD varying between -16.6 (HTO, 2 years) and -19.5 (TKA, 2 years). The original 2-year article (Jansen 2019a) corrects the comparisons for baseline values, which results in no statistically significant difference in 2-year VAS-pain change between KJD and HTO (p=0.120). The 1-year comparison between KJD and HTO (Van der Woude 2017b) was also reported not to be statistically significantly different (no p-value given).

The change in total KOOS (figure S9) after 2 years was significantly better for TKA than KJD (MD= -14.6; p=0.001) while there was no significant 1-year difference between TKA and KJD and no significant 1- and 2-year difference between HTO and KJD, with MDs between -8.0 (HTO, 1 year) and -10.0 (TKA, 1 year) and all p>0.05.

The mean JSW of the MAC (figure S10) is compared between KJD and HTO after 1 and 2 years. There was no significant difference after either 1 (MD=0.40; p=0.099) or 2 (MD=-0.05; p=0.853) years. Compared to the OAI, the mean JSW showed significantly better results 5 years after KJD (MD=1.06; p<0.001). Treatment with KJD, microfracture and debridement showed a greater increase in mean JSW after 4-7 years than microfracture and debridement alone (MD=2.10; p<0.001).

The mean MAC cartilage thickness (figure S11) shows a significantly better result over 5 years for KJD patients than the OAI (MD=0.48; p<0.001). For HTO-patients from the MRI RCT sub-cohort, a cartilage thickness decrease of around 0.2mm is reported (p<0.05), and the thickness increase observed in KJD patients is significantly better than HTO (p<0.01).

**Other Outcome Measures**

The 2-year SF-36 PCS change was better for TKA than KJD (MD=-12.6; 95%CI -18.9– -6.3; p<0.001), while the 1-year change in knee flexion was better for KJD than TKA (MD=7.0; 95%CI 1.0-13.0; p=0.027). The SF-36 PCS change was significantly better for HTO over 1 (MD=-5.0; 95%CI -9.3– -0.8; p=0.031) and 2 (MD=-5.4; 95%CI -10.1– -0.7; p=0.034) years, while the 1-year change in knee flexion was better for KJD than HTO (MD=6.0; 95%CI 0.5-11.5; p=0.042). Adding KJD to microfracture and debridement improved stair climbing (p<0.000). De decrease (improvement) in denuded bone was significantly more for KJD than HTO (p<0.01).

# SUPPLEMENTARY FIGURE LEGENDS

Figure S1: Change in Visual Analogue Score (VAS) of pain 1, 2, 5 and 9 years after treatment with knee joint distraction. References can be used multiple times because of division in patient cohort and years of follow-up. SD: standard deviation; CI: confidence interval.

Figure S2: Change in total Knee injury and Osteoarthritis Outcome Score (KOOS) 1 and 2 years after treatment with knee joint distraction. References can be used multiple times because of division in patient cohort and years of follow-up. SD: standard deviation; CI: confidence interval.

Figure S3: Change in mean joint space width (JSW) 1, 2, 5 and 7 years after treatment with knee joint distraction. References can be used multiple times because of division in patient cohort and years of follow-up. SD: standard deviation; CI: confidence interval.

Figure S4: Change in MRI cartilage thickness in the most affected compartment 1, 2 and 5 years after treatment with knee joint distraction. References can be used multiple times because of division in patient cohort and years of follow-up. SD: standard deviation; CI: confidence interval.

Figure S5: Change in total Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) score compared between knee joint distraction (KJD) and total knee arthroplasty (TKA) and between KJD and high tibial osteotomy (HTO), both 1 and 2 years after treatment. References can be used multiple times because of division in patient cohort. SD: standard deviation; CI: confidence interval.

Figure S6: Change in EuroQol 5D-3L (EQ5D) score compared between knee joint distraction (KJD) and total knee arthroplasty (TKA) and between KJD and high tibial osteotomy (HTO), both 1 and 2 years after treatment. References can be used multiple times because of division in patient cohort. SD: standard deviation; CI: confidence interval.

Figure S7: Change in minimum joint space width (JSW), compared between knee joint distraction (KJD) and high tibial osteotomy (HTO) at 1 and 2 years after treatment, and between KJD and the untreated

osteoarthritis initiative (OAI) cohort at 5 years after baseline. SD: standard deviation; CI: confidence interval.

Figure S8: Change in Visual Analogue Score (VAS) of pain compared between knee joint distraction (KJD) and total knee arthroplasty (TKA) and between KJD and high tibial osteotomy (HTO), both 1 and 2 years after treatment. References can be used multiple times because of division in patient cohort. SD: standard deviation; CI: confidence interval.

Figure S9: Change in total Knee injury and Osteoarthritis Outcome Score (KOOS) compared between knee joint distraction (KJD) and total knee arthroplasty (TKA) and between KJD and high tibial osteotomy (HTO), both 1 and 2 years after treatment. References can be used multiple times because of division in patient cohort. SD: standard deviation; CI: confidence interval.

Figure S10: Change in mean joint space width (JSW), compared between knee joint distraction (KJD) and high tibial osteotomy (HTO) at 1 and 2 years after treatment, between KJD and the untreated osteoarthritis initiative (OAI) cohort at 5 years after baseline, and between patients treated with KJD, microfracture and debridement and patients treated with microfracture and debridement alone after 4-7 years. For Aly 2011, p-values were used to calculate standard deviations (SD); for KJD the reported p-value of p<0.000 was assumed to be p=0.0001. CI: confidence interval.

Figure S11: Change in MRI cartilage thickness in the most affected compartment, compared between patients treated with knee joint distraction (KJD) and the untreated osteoarthritis initiative (OAI) cohort at 5 years after baseline. SD: standard deviation; CI: confidence interval.