**Table S1: Associations of knee pain patterns over 2 and 3 years with structural outcomes over 4 years in participants without radiographic knee osteoarthritis at baseline**

|  |  |  |
| --- | --- | --- |
|  | **Knee pain patterns over 2 years** | **Knee pain patterns over 3 years** |
|  | **Estimated marginal mean (SE)** | **P** | **Estimated marginal mean (SE)** | **P** |
| **Annual % cartilage volume loss in medial compartment** |  |  |  |
| No knee pain at both time points | 0.61 (0.03)1 |  | 0.61 (0.03)5,6 |  |
| Fluctuating knee pain (pain at either time point) | 0.75 (0.07)2 | <0.001⁋ | 0.75 (0.06)5,7 | <0.001⁋ |
| Persistent knee pain (pain at both time points) | 1.36 (0.17)1,2 |  | 1.47 (0.19)6,7 |  |
| Trend |  | <0.001 |  | <0.001 |
| **Annual % cartilage volume loss in lateral compartment** |  |  |  |
| No knee pain at both time points | 0.67 (0.03)3 |  | 0.66 (0.03)8 |  |
| Fluctuating knee pain (pain at either time point) | 0.79 (0.06)4 | <0.001⁋ | 0.78 (0.06)9 | <0.001⁋ |
| Persistent knee pain (pain at both time points) | 1.37 (0.16)3,4 |  | 1.48 (0.17)8,9 |  |
| Trend |  | <0.001 |  | <0.001 |
|  | **Odds ratio (95% CI)** | **P** | **Odds ratio (95% CI)** | **P** |
| **Incidence of radiographic knee osteoarthritis** |  |  |  |
| No knee pain at both time points | 1.00 |  | 1.00 |  |
| Fluctuating knee pain (pain at either time point) | 1.80 (1.22, 2.67) | 0.003 | 1.95 (1.34, 2.84) | <0.001 |
| Persistent knee pain (pain at both time points) | 2.02 (0.91, 4.47) | 0.08 | 1.72 (0.71, 4.16) | 0.23 |
| Trend |  | 0.002 |  | 0.001 |

All analyses adjusted for age, gender, body mass index, and Kellgren-Lawrence grade

⁋For difference in annual % cartilage volume loss in medial/lateral compartment among the three knee pain pattern groups

1p<0.001, 2p=0.001, 3p<0.001, 4p=0.001, 5p=0.04, 6p<0.001, 7p<0.001, 8p<0.001, 9p<0.001 for between-group difference

**Table S2: Associations of knee pain patterns over 2 and 3 years with structural outcomes over 4 years in participants with radiographic knee osteoarthritis at baseline**

|  |  |  |
| --- | --- | --- |
|  | **Knee pain patterns over 2 years** | **Knee pain patterns over 3 years** |
|  | **Estimated marginal mean (SE)** | **P** | **Estimated marginal mean (SE)** | **P** |
| **Annual % cartilage volume loss in medial compartment** |  |  |  |
| No knee pain at both time points | 1.22 (0.07)1 |  | 1.18 (0.07)4 |  |
| Fluctuating knee pain (pain at either time point) | 1.60 (0.09)1 | 0.004⁋ | 1.62 (0.09)4 | <0.001⁋ |
| Persistent knee pain (pain at both time points) | 1.45 (0.14) |  | 1.40 (0.16) |  |
| Trend |  | 0.01 |  | 0.006 |
| **Annual % cartilage volume loss in lateral compartment** |  |  |  |
| No knee pain at both time points | 1.07 (0.05)2,3 |  | 1.06 (0.05)5,6 |  |
| Fluctuating knee pain (pain at either time point) | 1.38 (0.07)2 | 0.001⁋ | 1.35 (0.06)5 | 0.001⁋ |
| Persistent knee pain (pain at both time points) | 1.32 (0.10)3 |  | 1.33 (0.11)6 |  |
| Trend |  | 0.001 |  | 0.001 |
|  | **Odds ratio (95% CI)** | **P** | **Odds ratio (95% CI)** | **P** |
| **progression of radiographic knee osteoarthritis** |  |  |  |
| No knee pain at both time points | 1.00 |  | 1.00 |  |
| Fluctuating knee pain (pain at either time point) | 1.58 (1.16, 2.16) | 0.004 | 1.83 (1.35, 2.48) | <0.001 |
| Persistent knee pain (pain at both time points) | 2.03 (1.36, 3.04) | 0.001 | 2.31 (1.48, 3.62) | <0.001 |
| Trend |  | <0.001 |  | <0.001 |

All analyses adjusted for age, gender, body mass index, and Kellgren-Lawrence grade

⁋For difference in annual % cartilage volume loss in medial/lateral compartment among the three knee pain pattern groups

1p=0.001, 2p<0.001, 3p=0.03, 4p<0.001, 5p<0.001, 6p=0.03 for between-group difference