

**Appendix Table 1. Motion control features of participants' usual shoes, reported as number (%) unless otherwise stated.**

	Motion control shoes (n=18)	Neutral shoes (n=22)
Multiple density midsole	6 (33)	5 (23)
Fixation		
Laces	12 (67)	16 (73)
Straps/buckles	3 (17)	1 (5)
Velcro	1 (6)	1 (5)
None	2 (11)	4 (18)
Heel counter stiffness		
Rigid	7 (39)	13 (59)
Moderate	3 (17)	4 (18)
Minimal	6 (33)	4 (18)
No heel counter	2 (11)	1 (5)
Midfoot sagittal stability		
Rigid	6 (33)	4 (18)
Moderate	1 (6)	2 (9)
Minimal	11 (61)	16 (73)
Midfoot torsional stability		
Rigid	11 (61)	16 (73)
Moderate	4 (22)	3 (14)
Minimal	3 (17)	3 (14)
Overall motion control feature score, mean (SD) <sup>a</sup>	6.2 (3)	6.4 (3)

<sup>a</sup> Measured using the Footwear Assessment Tool; scores range 0 to 11, with higher scores indicating more motion control features.

SD = standard deviation.

**Appendix Table 2. Adherence to allocated footwear across groups.**

	Motion control shoes <sup>a</sup>	Neutral shoes <sup>b</sup>
Shoe wear in log books (hours/day), mean (SD):		
Month 1	7.1 (2.2)	7.9 (2)
Month 2	7.1 (4.0)	8.5 (3)
Month 3	7.0 (4.3)	7.8 (3)
Month 4	6.6 (3.7)	8.1 (2)
Month 5	7.5 (3.9)	7.4 (3)
Month 6	7.7 (3.9)	8.0 (3)
Overall	7.0 (3.4)	8.0 (2)
Participants classified as adherent <sup>c</sup> , n (%):		
Month 1	13 (72)	19 (86)
Month 2	10 (59)	18 (82)
Month 3	11 (61)	18 (82)
Month 4	10 (59)	18 (82)
Month 5	12 (75)	15 (71)
Month 6	12 (80)	18 (86)
Overall <sup>d</sup>	10 (56)	19 (86)
Self-rated adherence with allocated footwear over 6 months (NRS), mean (SD)	7.9 (2.8)	8.5 (1.9)

<sup>a</sup> n=17 for shoe wear and participants classified as adherent at month 2 and month 4; n=16 for shoe wear and participants classified as adherent at month 5; n=15 for shoe wear and participants classified as adherent at month 6; n=18 for all other outcomes.

<sup>b</sup> n=21 for shoe wear and participants classified as adherent at month 5 and month 6; n=22 for all other outcomes.

<sup>c</sup> Adherent defined as an average of  $\geq 6$  hours/day shoe wear for that month;

<sup>d</sup> Overall are participants who averaged  $\geq 6$  hours/day shoe wear over 6 months.

NRS = numerical rating scale, where 0 = shoes not worn at all and 10 = worn completely as instructed; SD = standard deviation.

**Appendix Table 3. Reasons for participants to cease wearing shoes over the course of the trial, reported as number (%).**

	<b>Motion control shoes (n=18)</b>	<b>Neutral shoes (n=22)</b>
Fractured ankle (unrelated to shoes)	1 <sup>a</sup> (6)	0 (0)
Total	1 (6)	0 (0)

<sup>a</sup> Participant ceased wearing shoes in month 2.

**Appendix Table 4: Difference<sup>a</sup> in change between groups, for the primary outcome, change in knee pain on walking (baseline – 6 months), assuming full adherence<sup>b</sup> (N=40).**

	Difference in change between groups Baseline to 6 months	
	Mean difference (95% CI)	P-value
Knee pain on walking (NRS) <sup>c</sup>	0.6 (-1.7, 2.9)	0.59

<sup>a</sup>The complier average causal effect difference, adjusted for the outcome at baseline and radiographic severity (Kellgren & Lawrence Grade).

<sup>b</sup>The treatment effect on the primary outcome assuming full adherence (where full adherence was defined as an average of  $\geq 6$  hours/day shoe wear over 6 months) was estimated using an instrumental variables approach (where randomization was the instrument for adherence).<sup>c</sup> For difference in change between groups, negative differences favour motion control shoe group.

CI=confidence intervals; NRS=numerical rating scale (0-10; higher scores indicate worse pain).

**Appendix Table 5: Results of the moderation analysis for radiographic disease severity (Kellgren & Lawrence Grade) as a potential binary moderator for the primary outcome, change in knee pain on walking, using complete case data.<sup>a</sup>**

	Mean (SD) Motion control shoes <sup>b</sup>	Neutral shoes <sup>c</sup>	Neutral shoes – motion control shoes Mean difference <sup>d</sup> (95% CI)	Interaction P-value
Radiographic disease severity				0.70
Grade 2 (mild) or 3 (moderate)	1.50 (2.37)	1.69 (2.46)	0.16 (-1.65, 1.96)	
Grade 4 (severe)	1.38 (1.92)	1.78 (1.72)	0.73 (-1.44, 2.90)	

<sup>a</sup> Presented as the mean scores on the primary outcome, change in average knee pain on walking (baseline – 6 months), in each group in each radiographic disease severity category, as well as in terms of the estimated mean difference in effect between groups (neutral shoes – motion control shoes) on the primary outcome in each radiographic disease severity category, adjusted for the outcome at baseline.

<sup>b</sup> n=10 for Grade 2 or 3; n=13 for Grade 4;

<sup>c</sup> n=8 for Grade 2 or 3; n=9 for Grade 4.

<sup>d</sup> Negative differences favour motion control shoes.

CI=confidence intervals; SD=standard deviation.

**Appendix Table 6: Results of the moderation analysis for potential continuous moderators for the primary outcome, change in knee pain on walking, using complete case data<sup>a</sup>.**

Potential Moderator <sup>b</sup> (taken at baseline)	Motion control shoes Moderator Coeff. (95% CI)	P-value	Neutral shoes Moderator Coeff. (95% CI)	P-value	Difference <sup>c</sup> in coefficients, Neutral shoes – motion control shoes (95% CI)	Interaction P-value
Foot Posture Index <sup>d</sup>	0.09 (-0.29, 0.46)	0.64	0.11 (-0.15, 0.37)	0.41	0.02 (-0.44, 0.48)	0.92
Radiographic knee alignment (degrees)	0.15 (-0.03, 0.34)	0.11	-0.08 (-0.27, 0.12)	0.42	-0.23 (-0.49, 0.03)	0.085
KOOS sub-scale: Patellofemoral pain and OA	0.03 (-0.04, 0.10)	0.33	0.06 (-0.01, 0.13)	0.097	0.02 (-0.06, 0.11)	0.58

<sup>a</sup> Presented in terms of the estimated mean effect on the primary outcome, change in average knee pain on walking (baseline – 6 months), of a one-unit increase in the potential moderator in each of the motion control shoe group and neutral shoe group, adjusted for the outcome at baseline and radiographic severity (Kellgren & Lawrence Grade 2, 3 or 4).

<sup>b</sup> n=32 for radiographic knee alignment, n=40 for all other potential moderators.

<sup>c</sup> Negative differences favour motion control shoes.

<sup>d</sup> Scored from -12 to 12; higher scores indicating a more pronated foot posture.

CI=confidence intervals; KOOS = Knee Injury and Osteoarthritis Outcome Score (0 to 100; lower scores indicating worse pain/patellofemoral problems); OA = osteoarthritis.