Foot Segments Motion during Uneven Terrain Walking and Influence on Lower Limb Biomechanics

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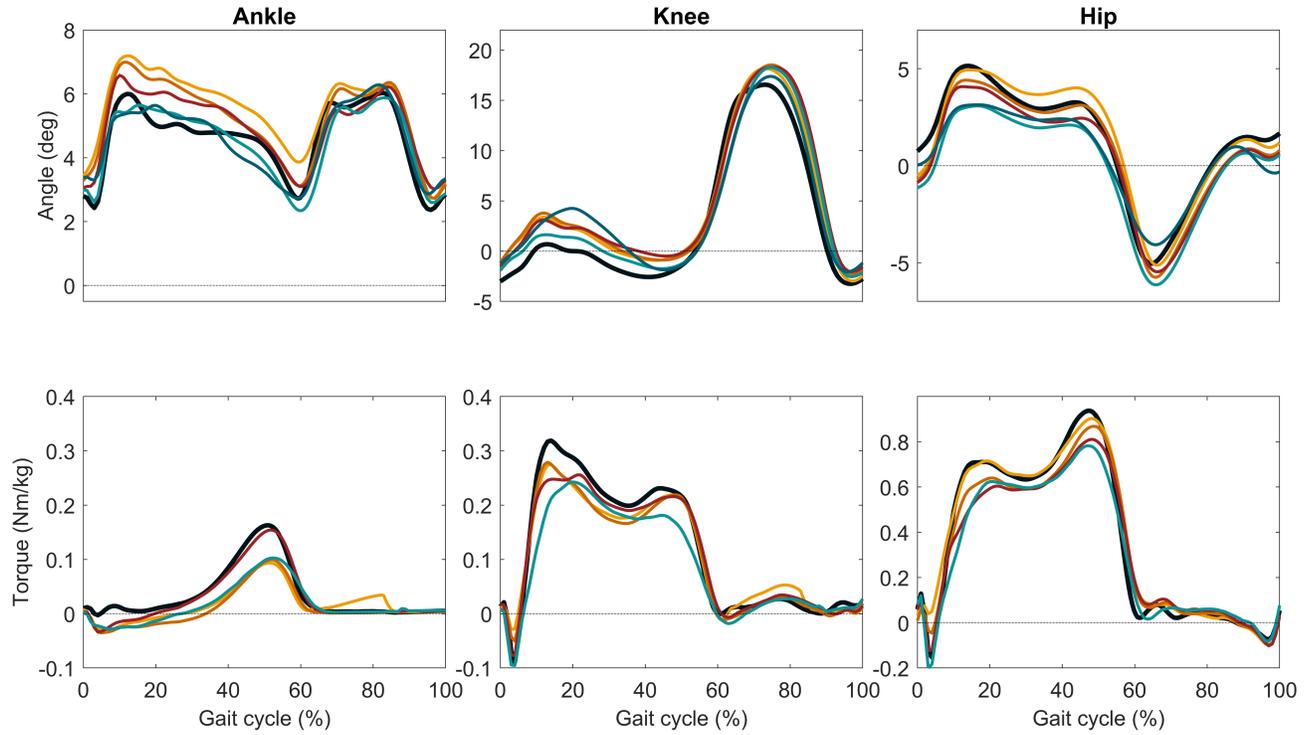[†]These authors contributed equally to this work

Supplementary Information

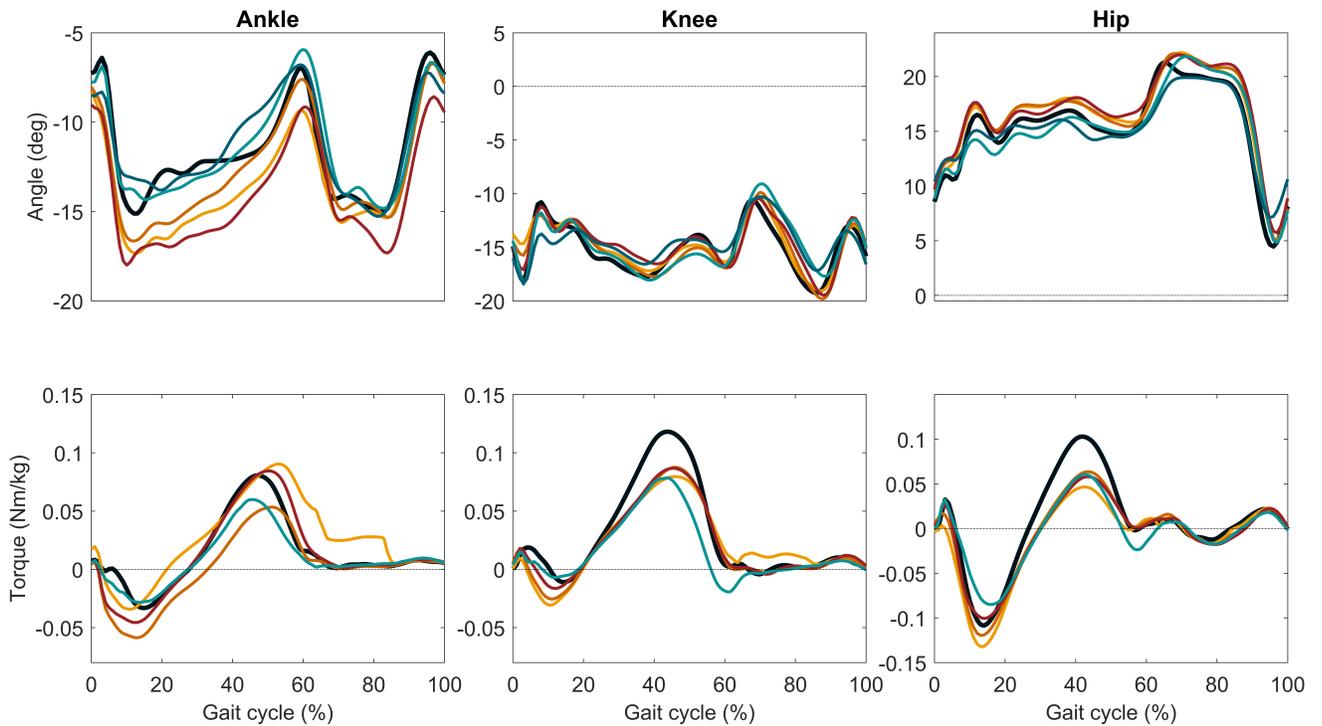| Subject	Level [m/s]	Arch [m/s]	Rect [m/s]	Circle [m/s]	Uneven [m/s]
1	0.93	0.93	0.92	0.96	0.90
2	1.23	1.25	1.26	1.25	1.22
3	1.20	1.12	1.15	1.16	1.20
4	1.11	0.98	1.00	0.88	0.81
5	0.80	0.80	0.84	0.80	0.82
6	1.46	1.50	1.51	1.49	1.54
7	1.12	1.14	1.13	1.15	1.09
8	0.91	0.96	0.97	0.94	0.84
9	1.32	1.25	1.21	1.23	1.20
10	0.99	0.96	1.01	1.01	0.95
11	1.13	1.15	1.18	1.16	1.14
12	1.02	1.03	1.03	1.02	0.98

Supplementary Table S1. Self-selected walking speeds of the study's participants for each task.

Subject	Level [-]	Arch [-]	Rect [-]	Circle [-]	Uneven [-]
1	0.09	0.10	0.09	0.10	0.09
2	0.17	0.18	0.18	0.18	0.17
3	0.17	0.14	0.15	0.15	0.17
4	0.14	0.11	0.12	0.09	0.08
5	0.07	0.07	0.08	0.08	0.08
6	0.24	0.25	0.26	0.25	0.27
7	0.14	0.14	0.14	0.14	0.13
8	0.09	0.10	0.10	0.10	0.08
9	0.20	0.18	0.17	0.17	0.16
10	0.12	0.11	0.12	0.12	0.11
11	0.14	0.14	0.15	0.14	0.14
12	0.11	0.12	0.12	0.12	0.11

**Supplementary Table S2.** Froude number for each study's participant and each task.
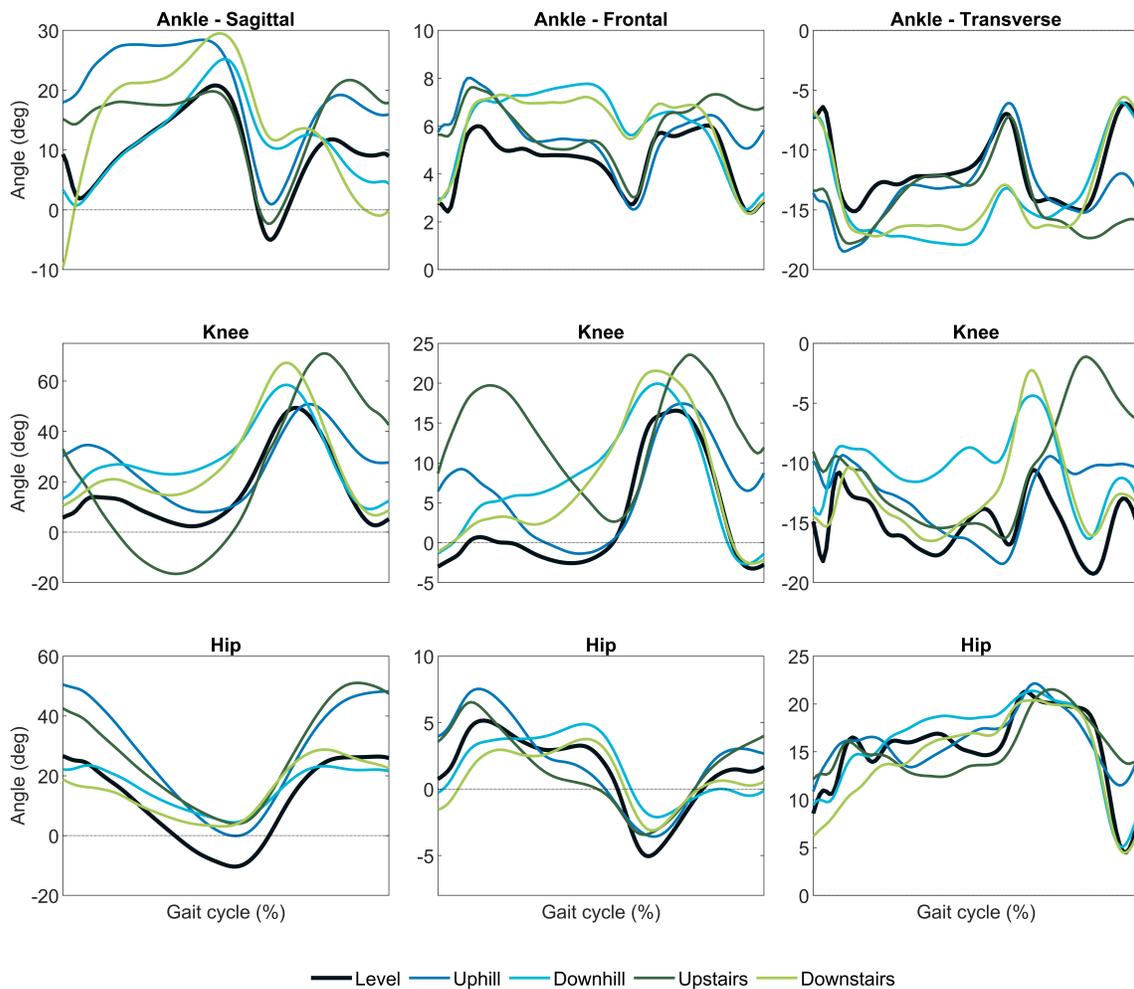
Supplementary Figure S1. Mean values of angles and torques (from top to bottom) in the (a) frontal and (b) transverse planes for the ankle, knee, and hip joints (from left to right). For the knee, positive frontal-plane values indicate abduction (i.e. lateral displacement of the tibia relative to the femur). Data are displayed normalized to stride duration. Torques are normalized to the participant's body mass.
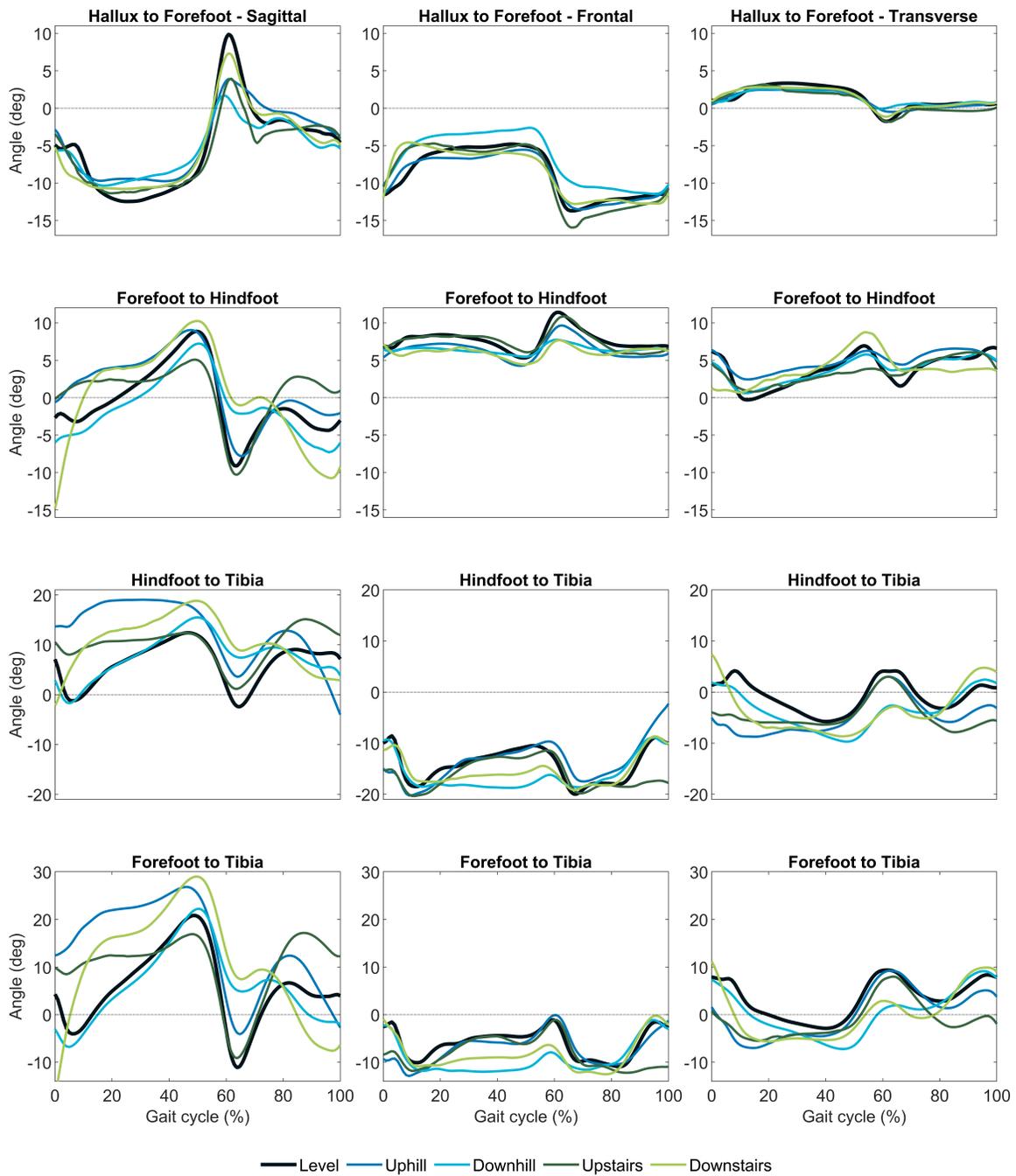
Supplementary Figure S2. Mean vales of angles in the three anatomical planes for the stairs and ramp between the three rigid segments of the foot and the tibia, as defined in the Oxford Foot model. From top to bottom, hallux-to-forefoot, forefoot-to-hindfoot, hindfoot-to-tibia, and forefoot-to-tibia angles. From left to right, rotations in the sagittal, frontal, and transverse planes. Data are displayed normalized to stride duration. Only kinematic data are shown due to the absence of embedded force plates on the stairs and ramp.

Supplementary Figure S3. Mean values of angles in the three anatomical planes for the stairs and ramp for the ankle, knee, and hip joints (from top to bottom). From left to right, rotations in the sagittal, frontal, and transverse planes. Data are displayed normalized to stride duration. Only kinematic data are shown due to the absence of embedded force plates on the stairs and ramp.