

Supplementary material

This material is provided for: “A data set with kinematic and ground reaction forces of human balance”.

The marker set model used in this study is based on the work of Leardini and collaborators (2011; 2007). There is a tutorial of the Visual3D software for the IOR Full Body Model ([http://c-motion.com/v3dwiki/index.php?title=Tutorial: IOR Gait Full-Body Model](http://c-motion.com/v3dwiki/index.php?title=Tutorial:_IOR_Gait_Full-Body_Model)) which is close related to the present model we employed.

Table 1. Label, name, and description of the 42 markers used.

Label	Name	Description
R.Front.Head /L.Front.Head	Right/Left front head	Approximately over the right/left temple.
R.Back.Head /L.Back.Head	Right/Left back head	On the back of the head, roughly in a horizontal plane of the front head markers.
R.Shoulder /L.Shoulder	Right/Left shoulder	Right/Left Acromio-clavicular joint.
C7	7th cervical vertebrae	Spinous process of the seventh cervical vertebrae.
T2	2nd thoracic vertebrae	Second thoracic vertebrae.
T7	7th thoracic vertebrae	Seventh thoracic vertebrae.
L1, L3, L5	1st, 3rd, 5th lumbar vertebrae	First, third and fifth lumbar vertebrae.
IJ	Incisura jugularis	Deepest point of incisura jugularis.
PX	Xiphoid process	Xiphoid process (most caudal point of the sternum).
R.ASIS/L.ASIS	Right/Left anterior superior iliac spine	Anterior superior iliac spine.
R.PSIS/L.PSIS	Right/Left posterior superior iliac spine	Posterior superior iliac spine.
R.Iliac.Crest/L.Iliac.Crest	Right/Left iliac crest	Iliac crest.
R.GRT/L.GRT	Right/Left greater trochanter	Most lateral prominence of the greater trochanter.
R.Knee/L.Knee	Right/Left femoral epicondyle	Most lateral prominence of the lateral femoral epicondyle.
R.Knee.Medial/L.Knee.Medial	Right/Left medial femoral epicondyle	Most medial prominence of the medial femoral epicondyle.
R.HF/L.HF	Right/Left head of the fibula	Proximal tip of the head of the fibula.
R.TT/L.TT	Right/Left tibial tuberosity	Anterior border of the tibial tuberosity.
R.Ankle/L.Ankle	Right/Left lateral malleolus	Lateral prominence of the lateral malleolus.
R.Ankle.Medial/L.Ankle.Medial	Right/Left medial malleolus	Most medial prominence of the medial malleolus.
R.Heel/L.Heel	Right/Left heel	Aspect of the achilles tendon insertion on the calcaneous.
R.MT1/L.MT1	Right/Left 1st metatarsal head	Dorsal margin of the first metatarsal head.
R.MT2/L.MT2	Right/Left 2nd metatarsal head	Dorsal aspect of the second metatarsal head.
R.MT5/L.MT5	Right/Left 5th metatarsal head	Dorsal margin of the fifth metatarsal head.

Table 2. Label and name of the calculated angles.

Planar angles				3D Cardan angles	
Label	Name			Label	Name
Sp5_Sp4_FE	Sp5_Sp4 Flexion/Extension			R/LHe_Lab_Angle	Right/Left Head_Lab Angle
Sp4_Sp3_FE	Sp4_Sp3 Flexion/Extension			R/LTh_Lab_Angle	Right/Left Thorax_Lab Angle
Sp3_Sp2_FE	Sp3_Sp2 Flexion/Extension			R/LPel_Lab_Angle	Right/Left Pelvic Angle
Sp2_Sp1_FE	Sp2_Sp1 Flexion/Extension			R/LHe_Th_Angle	Right/Left Head_Thorax Angle
Sp1_Pel_FE	Sp1_Pelvis Flexion/Extension			R/LTh_Pel_Angle	Right/Left Thorax_Pelvis Angle
R/LSp5_Sp4_LB	Right/Left Bending	Sp5_Sp4	Lateral	R/LA_Th_Transl	Right/Left Acromium_Thorax Translation
R/LSp4_Sp3_LB	Right/Left Bending	Sp4_Sp3	Lateral	R/LHip_Angle	Right/Left Hip Angle
R/LSp3_Sp2_LB	Right/Left Bending	Sp3_Sp2	Lateral	R/LKnee_Angle	Right/Left Knee Angle
R/LSp2_Sp1_LB	Right/Left Bending	Sp2_Sp1	Lateral	R/LAnkle_Angle	Right/Left Ankle Angle
R/LSp1_Pel_LB	Right/Left Bending	Sp1_Pelvis	Lateral		
R/LSh_Th_LB	Right/Left Bending	Shouder_Thorax	Lateral		
R/LSh_Th_AR	Right/Left Rotation	Shoulder_Thorax	Axial		

Table 3. Convention for the planar angles.

Label	Convention
Sp5_Sp4_FE	Flexion (+)/Extension (-)
Sp4_Sp3_FE	Flexion (+)/Extension (-)
Sp3_Sp2_FE	Flexion (+)/Extension (-)
Sp2_Sp1_FE	Flexion (+)/Extension (-)
Sp1_Pel_FE	Flexion (+)/Extension (-)
RSp5_Sp4_LB	Right (-)/Left (+)
LSp5_Sp4_LB	Right (+)/Left (-)
RSp4_Sp3_LB	Right (-)/Left (+)
LSp4_Sp3_LB	Right (+)/Left (-)
RSp3_Sp2_LB	Right (-)/Left (+)
LSp3_Sp2_LB	Right (+)/Left (-)
RSp2_Sp1_LB	Right (-)/Left (+)
LSp2_Sp1_LB	Right (+)/Left (-)
RSp1_Pel_LB	Right (-)/Left (+)
LSp1_Pel_LB	Right (+)/Left (-)
RSh_Th_LB	Right (-)/Left (+)
LSh_Th_LB	Right (+)/Left (-)
RSh_Th_AR	Right (-)/Left (+)
LSh_Th_AR	Right (+)/Left (-)

Table 4. Convention for the tri-dimensional Cardan angles.

Label	Convention
RHe_Lab_Angle	Flexion/Extension: Anterior (+)/Posterior (-) Lateral Bending: Right (-)/Left (+) Rotation: Right (-)/Left (+)
LHe_Lab_Angle	Flexion/Extension: Anterior (+)/Posterior (-) Lateral Bending: Right (+)/Left (-) Rotation: Right (+)/Left (-)
RTh_Lab_Angle	Flexion/Extension: Anterior (+)/Posterior (-) Lateral Bending: Right (-)/Left (+) Rotation: Right (-)/Left (+)
LTh_Lab_Angle	Flexion/Extension: Anterior (+)/Posterior (-) Lateral Bending: Right (+)/Left (-) Rotation: Right (+)/Left (-)
RPel_Lab_Angle	Flexion/Extension: Anterior (+)/Posterior (-) Lateral Bending: Right (-)/Left (+) Rotation: Right (-)/Left (+)
LPel_Lab_Angle	Flexion/Extension: Anterior (+)/Posterior (-) Lateral Bending: Right (+)/Left (-) Rotation: Right (+)/Left (-)
RHe_Th_Angle	Flexion/Extension: Anterior (+)/Posterior (-) Lateral Bending: Right (-)/Left (+) Rotation: Right (-)/Left (+)
LHe_Th_Angle	Flexion/Extension: Anterior (+)/Posterior (-) Lateral Bending: Right (+)/Left (-) Rotation: Right (+)/Left (-)
RTh_Pel_Angle	Flexion/Extension: Anterior (+)/Posterior (-) Lateral Bending: Right (-)/Left (+) Rotation: Right (+)/Left (-)
LTh_Pel_Angle	Flexion/Extension: Anterior (+)/Posterior (-) Lateral Bending: Right (+)/Left (-) Rotation: Right (-)/Left (+)
R/LA_Th_Transl	Anterior (+)/Posterior (-) Right (+)/Left (-) Up (+)/Down (-)
R/LHip_Angle	Flexion (+)/Extension (-) Adduction (+)/Abduction (-) Rotation: Internal (+)/External (-)
R/LKnee_Angle	Flexion (+)/Extension (-) Adduction (+)/Abduction (-) Rotation: Internal (+)/External (-)
R/LAnkle_Angle	PlantarFlexion (-)/DorsiFlexion(+) Adduction (+)/Abduction (-) Inversion (+)/Eversion (-)