

IOR Gait Full Body Model

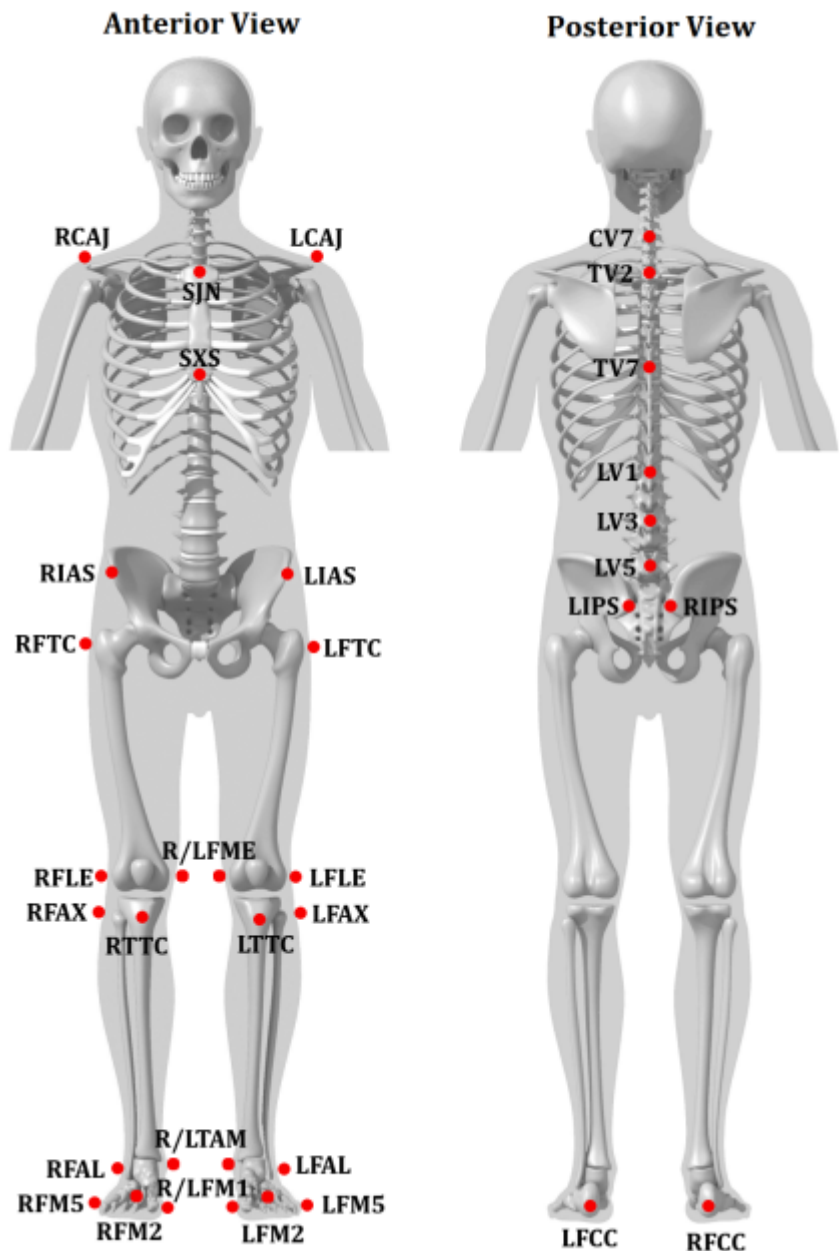
This tutorial explains how to implement the IOR Full Body Model in Visual3D. The IOR Full Body Model is a combination of the IOR Multi-Segment Trunk, and the IOR Lower Extremity Model. The naming convention in this tutorial follows Serge Van Sint Jan's convention.

Downloads

Sample files may be downloaded [here](#). The zip file contains:

1. C3D files which you can use to follow along with the tutorial
2. A model template which contains the landmark & segment definitions
3. A script which contains the planar & joint angle definitions
4. A report template which plots the relevant kinematics (joint angles & planar angles)
5. A completed CMO file

Target Placement



LCAJ/RCAJ (LA/RA): Left/Right acromion

SJN (IJ): Deepest point of the incisura jugularis

SXS (PX): Xiphoid process, i.e. most caudal point of the sternum

CV7 (C7): Spinous process of the seventh cervical vertebrae

TV2 (T2): Second thoracic vertebrae

TV7 (MAI): Midpoint between the inferior angles of the most caudal points of the two scapulae

LV1, LV3, LV5 (L1, L3, L5): First, third and fifth lumbar vertebrae

LIAS/RIAS (LASIS/RASIS): Left/Right anterior superior iliac spine

LIPS/RIPS (LPSIS/RPSIS): Left/Right posterior superior iliac spine

LFTC/RTTC (LGT/RGT): Most lateral prominence of the greater trochanter

LFLE/RFLE (LLE/RLE): Most medial prominence of the medial femoral epicondyle

LFME/RFME (LME/RME): Most medial prominence of the medial femoral epicondyle

LFAX/RFAX (LHF/RHF): Proximal tip of the head of the fibula

LTTC/RTTC (TT/RTT): Most anterior border of the tibial tuberosity

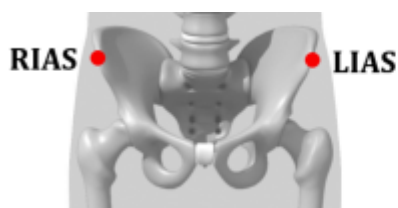
LFAL/RFAL (LLM/RLM): Lateral prominence of the lateral malleolus

LTAM/RTAM (LMM/RMM): Most medial prominence of the medial malleolus
LFCC/RFCC (LCA/RCA): Aspect of the Achilles tendon insertion on the calcaneus
LFM1/RFM1 (LFM/RFM): Dorsal margin of the first metatarsal head
LFM2/RFM2 (LSM/RSM): Dorsal aspect of the second metatarsal head
LFM5/RFM5 (LVM/RVM): Dorsal margin of the fifth metatarsal head

Segment Definitions

Pelvis

The pelvis segment coordinate system is consistent with the [CODA pelvis](#), from which the Left and Right Hip Joint centers are automatically created.



LIAS/RIAS (LASIS/RASIS): Left/Right anterior superior iliac spine
LIPS/RIPS (LPSIS/RPSIS): Left/Right posterior superior iliac spine

Pelvis Landmarks

1. Create SCRM:

1. Click **Landmarks** button
2. Click **Add New Landmark** button
3. Create Landmark: SCRM
 - **Landmark Name:** SCRM
 - **Define Orientation Using:**
 - **Starting Point:** RIPS
 - **Ending Point:** LIPS
4. Offset Using the Following **ML/AP/AXIAL** Offsets:
 - **X:** 0.0 **Y:**0.0 **Z:**0.5
5. **Check:** Offset by Percent (1.0 = 100%)
6. **Check:** Calibration Only Landmark

Pelvis Definition

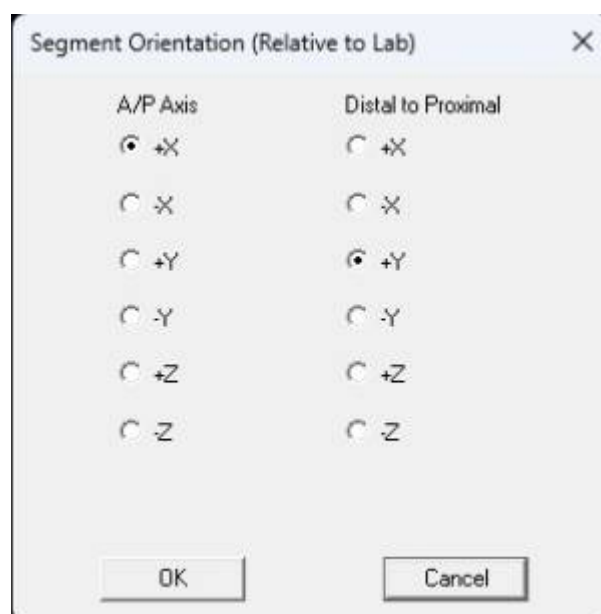
2. Create Pelvis Segment:

The screenshot shows the 'Pelvis' dialog box in the Visual3D software. The 'Segments' tab is selected. The 'Define Segment Type' section has 'Segment Type' set to 'CODA'. The 'Define Calibration Signals' section has four signals: R.ASIS (RIAS), L.ASIS (LIAS), R.PSIS (RIPS), and L.PSIS (LIPS). The 'Define ASIS Target Radius for Hip Joint Center Offset' section has 'ASIS Target Radius' set to '0.000'. The 'Select Tracking Signals' section has a checkbox 'Use Calibration Signals for Tracking' which is checked. The '6DOF Cutoff Frequency' is set to '0.0'. At the bottom are buttons for 'Close Tab', 'Guess Properties', 'Apply', and 'Build Model'.

1. In the **Segments** tab, select *Pelvis* in the Segment Name box
2. In **Segment Type**, select CODA
3. Click on the **Create Segment** button
4. In the **Pelvis** dialog:
 - **Define Calibration Targets**

- **R.ASIS:** RIAS
 - **L.ASIS:** LIAS
 - **R.PSIS:** RIPS
 - **L.PSIS:** LIPS
 - **Select Tracking Targets:**
 - **Check:** Use Calibration Signals for Tracking
5. Close **CODA Segment Markers** dialog box
 6. Click on **Build Model**
 7. Click on **Close Tab** before proceeding

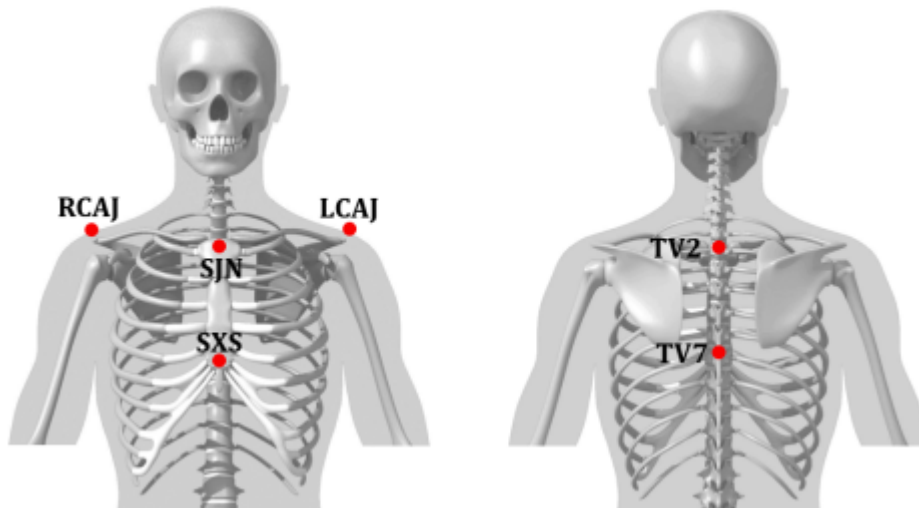
3. Modify the **Segment Coordinate System**



- Define the Segment Orientation as:
 - **A/P Axis:** +X
 - **Distal to Proximal:** +Y

Thorax Segment

This marker set is consistent with the Rizzoli Gait model and the ISB recommendations.



LCAJ/RCAJ (LAR/RA): Left/Right acromion

SJN (IJ): Deepest point of the incisura jugularis

SXS (PX): Xiphoid process, i.e. most caudal point of the sternum

C7V (C7): Spinous process of the seventh cervical vertebrae

TV2 (T2): Second thoracic vertebrae

TV7 (MAI): Midpoint between the inferior angles of the most caudal points of the two scapulae

Thorax Definition

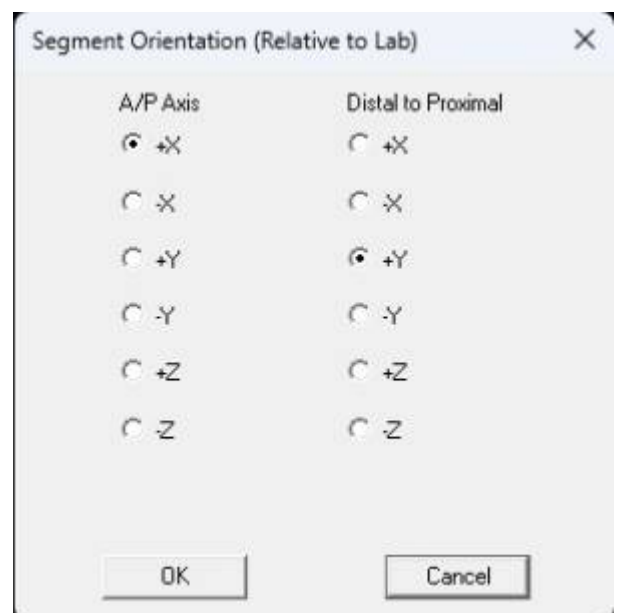
4. Create Thorax/Ab:

Segments		Landmarks		Muscles		Subject Data / Metrics	
Segments Segment Properties IK Constraints Thorax							
Define Proximal Joint and Radius							
Lateral	Joint Center	Medial					
None	TV2	None					
Radius (Meters)		0.5*DISTANCE(RCAJ,LCAJ)					
Define Distal Joint and Radius							
Lateral	Joint Center	Medial					
None	TV7	None					
Radius (Meters)		0.5*DISTANCE(RCAJ,LCAJ)					
Extra Signal to Define Orientation (if needed)							
Location		Anterior					
		SXS					
Select Tracking Signals							
☐ Use Calibration Signals for Tracking							
☐ RFM1	☐ RIAS	☒ SXS					
☐ RFM2	☐ RIPS	☒ TV2					
☐ RFM5	☐ RTAM	☒ TV7					
☐ RFME	☐ RTTC						
☐ RFTC	☒ SJN						
Depth (Meters):							
6DOF Cutoff Frequency		0.0					
Close Tab		Guess Properties		Apply		Build Model	

1. In the **Segments** tab, select *Thorax/Ab* in the Segment Name box.

2. Click **Kinematic Only**
3. Click on the **Create Segment** button
4. In the **Thorax/Ab** tab, enter these values:
 - **Define Proximal Joint and Radius**
 - **Lateral:** None **Joint:** TV2 **Medial:** None
 - **Radius** 0.5*DISTANCE(RCAJ,LCAJ)
 - **Define Distal Joint and Radius**
 - **Lateral:** None **Joint:** TV7 **Medial:** None
 - **Radius:** 0.5*DISTANCE(RCAJ,LCAJ)
 - **Extra Target to Define Orientation**
 - **Location:** Anterior SXS
 - **Select Tracking Targets:**
 - SJN, SXS, TV2, TV7
5. Click on **Build Model**
6. Click on **Close Tab** before proceeding.

5. Modify the Segment Coordinate System ** *
Define the Segment Orientation as: * **A/P Axis:
 +X



- **Distal to Proximal:** +Y

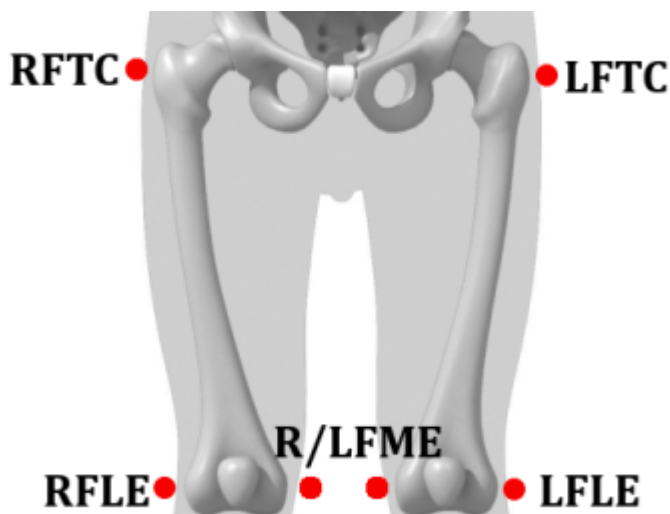
Change the graphic:

Model File: *thoraciccervicleacromiumtot12.v3g*

Thigh Segment

The RIGHT_HIP/LEFT_HIP landmarks are used to define the thigh segments. These landmarks are

created automatically when the Pelvis segment is defined (so the Pelvis must be defined prior to creating the thigh segments).



LFTC/RFTC (LGT/RGT): Most Lateral prominence of the greater trochanter

LFKE/RFLE (LLE/RLE): Most lateral prominence of the lateral femoral epicondyle

LFME/RFME (LME/RME): Most medial prominence of the medial femoral epicondyle

Thigh Definition

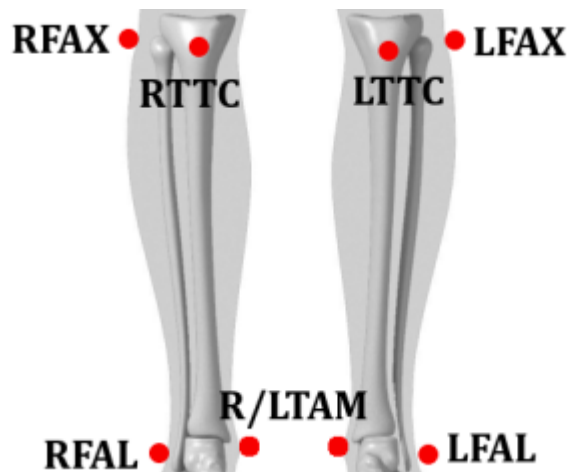
6. Create Right Thigh:

1. In the **Segments** tab, select Right Thigh in the Segment Name box
2. Click on the **Create Segment** button
3. In the **Right Thigh** tab, enter these values:
 - **Define Proximal Joint and Radius**
 - **Lateral:** None **Joint** RIGHT_HIP **Medial:** None
 - **Radius:** $0.5 * \text{DISTANCE}(\text{RIGHT_HIP}, \text{LEFT_HIP})$
 - **Define Distal Joint and Radius**
 - **Lateral:** RFLE **Joint:** None **Medial:** RFME
 - **Select Tracking Targets:**
 - RIGHT_HIP, RFLE, RFME, RFTC
4. Click on **Build Model**
5. Click on **Close Tab** before proceeding

Shank Segment

The segment coordinate system is different from the [conventional gait model](#) because the shank

segment is designed according to markers located on the tibia and fibula, not the femur as with the Conventional Gait Model



LFAX/RFAX (LHF/RHF): Proximal tip of the head of the fibula

LTTC/RTTC (TT/RTT): Most anterior border of the tibial tuberosity

LFAL/RFAL (LLM/RLM): Lateral prominence of the lateral malleolus

LTAM/RTAM (LMM/RMM): Most medial prominence of the medial malleolus

Shank Landmarks

7. Create RKNE Joint Center:

1. Click **Landmarks** button
2. Click **Add New Landmark** button
3. Create Landmark: RKNE
 - **Landmark Name:** RKNE
 - **Define Orientation Using:**
 - **Starting Point:** RFLE

- **Ending Point:** RFME
 - 4. Offset Using the Following **AXIAL** Offset: 0.5
 - 5. **Check:** Offset by Percent (1.0 = 100%)
 - 6. **Check:** Calibration Only Landmark
-

8. Create RANK Joint Center:

The screenshot shows the 'Landmarks' tab in the Visual3D software. The 'RANK' landmark is being configured. The 'Landmark Name' is 'RANK'. Under 'Define Orientation Using:', 'Starting Point' is 'RFAL' (Reference) and 'Ending Point' is 'RTAM' (On a line). There are also fields for '*Lateral object' (On a plane) and '*Project From' (Projection onto a line or plane), both marked as optional. The 'Existing Segment' is set to a dropdown. Under 'Landmark Offset from Start Point (Reference) or Segment Origin', the 'Offset to Existing Calibration Target or Landmark' is set to a dropdown. The 'Offset Using the Following ML/AP/AXIAL Offsets' section has fields for 'ML', 'AP', and 'AXIAL' (set to 0.5). The 'Offset by Percent (1.0 = 100%) (Meters when not checked)' checkbox is checked. The 'Calibration Only Landmark (Not generated for assigned motion file(s))' checkbox is also checked. At the bottom are buttons for 'Undo Changes', 'Apply', 'Build Model', and 'Close Tab'.

1. Click **Landmarks** button
 2. Click **Add New Landmark** button
 3. Create Landmark: RANK
 - **LANDMARK Name:** RANK
 - **Define Orientation Using:**
 - **Starting Point:** RFAL
 - **Ending Point:** RTAM
 4. Offset Using the Following **AXIAL** Offset: 0.5
 5. **Check:** Offset by Percent (1.0 = 100%)
 6. **Check:** Calibration Only Landmark
-

9. Create RTTC_PROJ:

The screenshot shows the 'RTTC_PROJ' dialog box within the 'Landmarks' tab. The 'Landmark Name' is set to 'RTTC_PROJ'. Under 'Define Orientation Using:', 'Starting Point' is 'RFAX' (Reference), 'Ending Point' is 'RFAL' (On a line), '*Lateral object' is 'RTAM' (On a plane), and '*Project From' is 'RTTC' (Projection onto a line or plane). The 'Existing Segment' option is not selected. Under 'Landmark Offset from Start Point (Reference) or Segment Origin', 'Offset to Existing Calibration Target or Landmark' is not selected, and 'Offset Using the Following ML/AP/AXIAL Offsets' is selected. The 'ML', 'AP', and 'AXIAL' offset fields are empty. The 'Offset by Percent (1.0 = 100%) (Meters when not checked)' checkbox is unchecked. The 'Calibration Only Landmark (Not generated for assigned motion file(s))' checkbox is checked. At the bottom are buttons for 'Undo Changes', 'Apply', 'Build Model', and 'Close Tab'.

1. Click **Landmarks** button
2. Click **Add New Landmark** button
3. Create Landmark: RTTC_PROJ
 - **Landmark Name:** RTTC_PROJ
 - **Define Orientation Using:**
 - **Starting Point:** RFAX
 - **Ending Point:** RFAL
 - **Lateral Object:** RTAM
 - **Project From:** RTTC
4. **Do Not Check:** Offset by Percent (1.0 = 100%)
5. **Check:** Calibration Only Landmark

10. Create RSK_PROX:

The screenshot shows the 'Landmarks' tab in the Visual3D software. The 'RSK_PROX' landmark is being defined. The 'Landmark Name' is 'RSK_PROX'. The 'Define Orientation Using' section is active, with 'Starting Point' set to 'RANK' (Reference), 'Ending Point' set to 'RTTC_PROJ' (On a line), and 'Project From' set to 'RKNE' (Projection onto a line or plane). The 'Offset' section is also visible, with 'Offset Using the Following ML/AP/AXIAL Offsets' selected. The 'Calibration Only Landmark' checkbox is checked. The 'Apply' button is highlighted.

1. Click **Landmarks** button
2. Click **Add New Landmark** button
3. Create Landmark: RSK_PROX
 - **Landmark Name:** RSK_PROX
 - **Define Orientation Using:**
 - **Starting Point:** RANK
 - **Ending Point:** RTTC_PROJ
 - **Lateral Object:** Leave Blank
 - **Project From:** RKNE
4. **Do NOT Check:** Offset by Percent (1.0 = 100%)
5. **Check:** Calibration Only Landmark

Shank Definition

The screenshot shows the 'Right Shank' tab in a software interface. It contains several sections for defining joint properties and tracking targets.

Define Proximal Joint and Radius:

- Lateral: None
- Joint Center: RSK_PROX
- Medial: None
- Radius (Meters): $0.5 * \text{DISTANCE}(\text{RFLE}, \text{RFME})$

Define Distal Joint and Radius:

- Lateral: RFAL
- Joint Center: None
- Medial: RTAM
- Radius (Meters): 0.043403

Extra Target to Define Orientation (if needed):

- Location: None

Select Tracking Targets (Ctrl-Left Mouse Click to Multiselect):

☐ Use Calibration Targets for Tracking

☐ Lab_Origin	☐ RIGHT_HIP	☐ CV7	☐ LFLE
☐ Lab_AX	☐ LEFT_HIP	☐ LCAJ	☐ LFM1
☐ Lab_ML	☐ RPV_AX	☐ LFAL	☐ LFM2
☐ Pel_ML	☐ RTA_OR	☐ LFAX	☐ LFM5
☐ VLab_ML	☐ RTA_ML	☐ LFCC	☐ LFME

Depth (Meters):

Buttons: Close Tab, Guess Properties, Apply, Build Model

11. Create Right Shank:

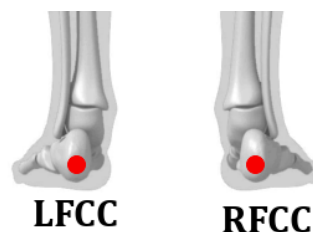
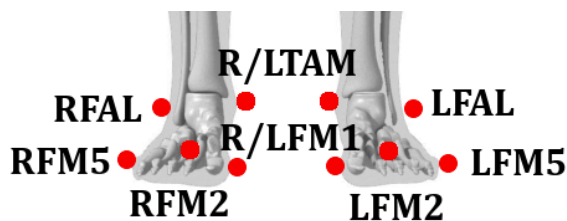
1. In the **Segments** tab, select Right Shank in the Segment Name box
2. Click on the **Create Segment** button
3. In the **Right Shank** tab, enter these values:
 - **Define Proximal Joint and Radius**
 - **Lateral:** None **Joint:** RSK_PROX **Medial:** None
 - **Radius:** $0.5 * \text{DISTANCE}(\text{RFLE}, \text{RFME})$
 - **Define Distal Joint and Radius**
 - **Lateral:** RFAL **Joint:** None **Medial:** RTAM
 - **Select Tracking Targets:**
 - RFAL, RFAX, RTAM, RTTC

12. Modify the Segment Coordinate System:

- Define the Segment Orientation as:
- **A/P Axis:** +X
- **Distal to Proximal:** +Y

Foot Segment

The foot segment coordinate system is consistent with some version of the [Conventional Gait Model](#). The foot segment is created using the RANK/LANK landmarks which are described in the Shank Landmarks section



LFAL/RFAL (LLM/RLM): Lateral prominence of the lateral malleolus

LTAM/RTAM (LMM/RMM): Most medial prominence of the medial malleolus

LFCC/RFCC (LCA/RCA): Aspect of the achilles tendon insertion on the calcaneus

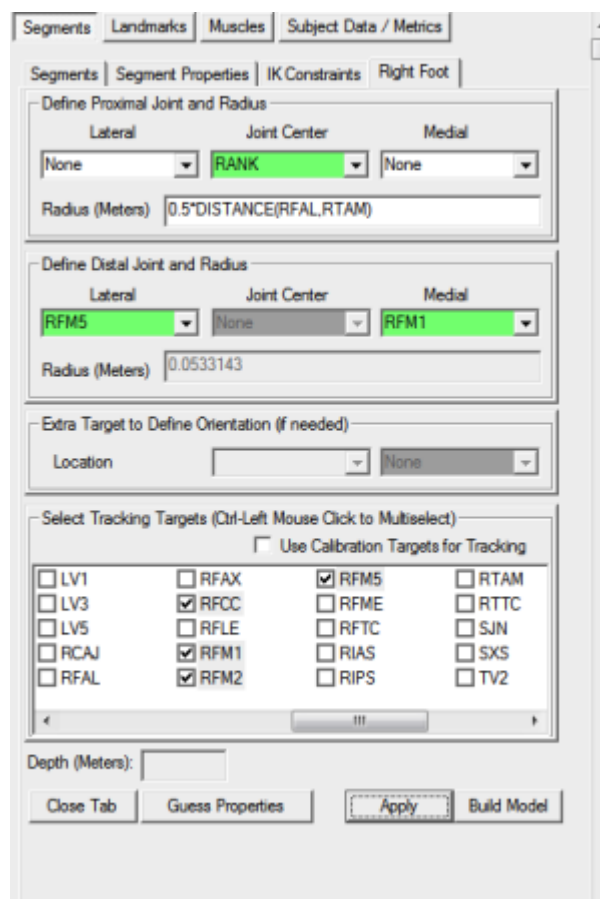
LFM1/RFM1 (LFM/RFM): Dorsal margin of the first metatarsal head

LFM2/RFM2 (LSM/RSM): Dorsal aspect of the second metatarsal head

LEFM5/RFM5 (LVM/RVM): Dorsal margin of the fifth metatarsal head

Kinetic Foot

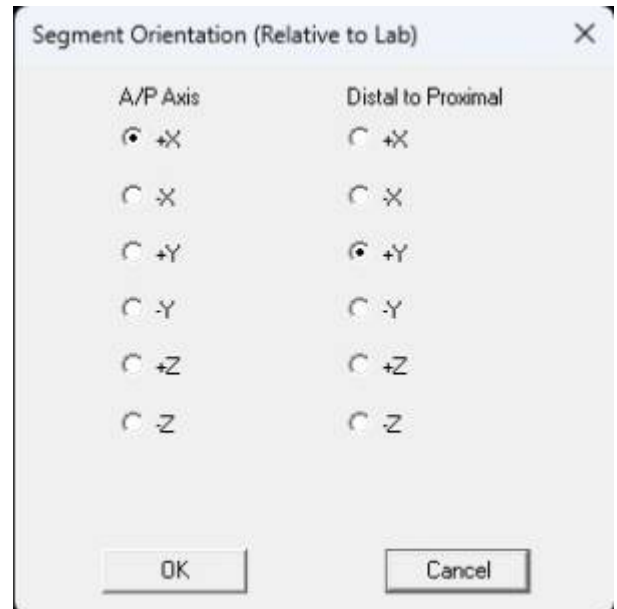
13. Create Right Foot:



1. In the **Segments** tab, select the Right Foot in the Segment Name box
2. Click on the **Create Segment** button
3. In the **Right Foot** tab, enter these values:
 - **Define Proximal Joint and Radius**
 - **Lateral:** None **Joint:** RANK **Medial:** None
 - **Radius:** $0.5 \times \text{DISTANCE}(\text{RFAL}, \text{RTAM})$
 - **Define Distal Joint and Radius**

- **Lateral:** RFM5 **Joint:** None **Medial:** RFM1
 - **Select Tracking Targets:**
 - RFCC, RFM1, RFM2, RFM5
4. Click on the **Build Model**
 5. Click on **Close Tab** before proceeding
-

14. Modify the **Segment Coordinate System:**



- Define the Segment Orientation as:
 - **A/P Axis:** +X
 - **Distal to Proximal:** +Y
-

Kinematic Foot Landmarks

15. Create RFT_DIST:

Segments | Landmarks | Muscles | Subject Data / Metrics

Landmarks | Functional | Digitizing | RFT_DIST

Landmark Name: RFT_DIST

Define Orientation Using:

Starting Point: RFCC (Reference)

Ending Point: RFM5 (On a line)

*Lateral object: RFM1 (On a plane)

*Project From: RFM2 (Projection onto a line or plane)

* = Optional

Existing Segment:

Landmark Offset from Start Point (Reference) or Segment Origin

Offset to Existing Calibration Target or Landmark:

Offset Using the Following ML/AP/AXIAL Offsets

ML:

AP:

AXIAL:

Offset by Percent (1.0 = 100%) (Meters when not checked)

Calibration Only Landmark (Not generated for assigned motion file(s))

Undo Changes | Apply | Build Model | Close Tab

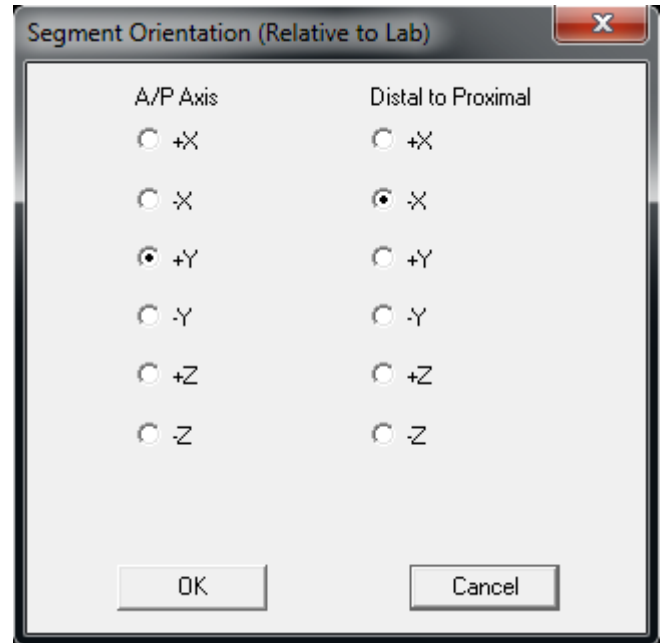
1. Click **Landmarks** button
2. Click **Add New Landmark** button
3. Create Landmark: RFT_DIST
 - **Landmark Name:** RFT_DIST
 - **Define Orientation Using:**
 - **Starting Point:** RFCC
 - **Ending Point:** RFM5
 - **Lateral Object:** RFM1
 - **Project From:** RFM2
4. **Do NOT Check:** Offset by Percent (1.0 = 100%)
5. **Check:** Calibration Only Landmark

Kinematic Foot Definition

16. Create Right Virtual Foot:

1. In the **Segments** tab, type *Right Virtual Foot* into the Segment Name box
2. Check the **Kinematic Only** Check Box
3. Click on the **Create Segment** button
4. In the **Right Virtual Foot** tab, enter these values:
 - **Define Proximal Joint and Radius**
 - **Lateral:** None **Joint:** RFCC **Medial:** None
 - **Radius:** 0.01
 - **Define Distal Joint Radius**
 - **Lateral:** RFM5 **Joint:** RFT_DIST **Medial:** None
 - **Select Tracking Targets:**
 - RFCC, RFM1, RFM2, RFM5

17. Modify the Segment Coordinate System:

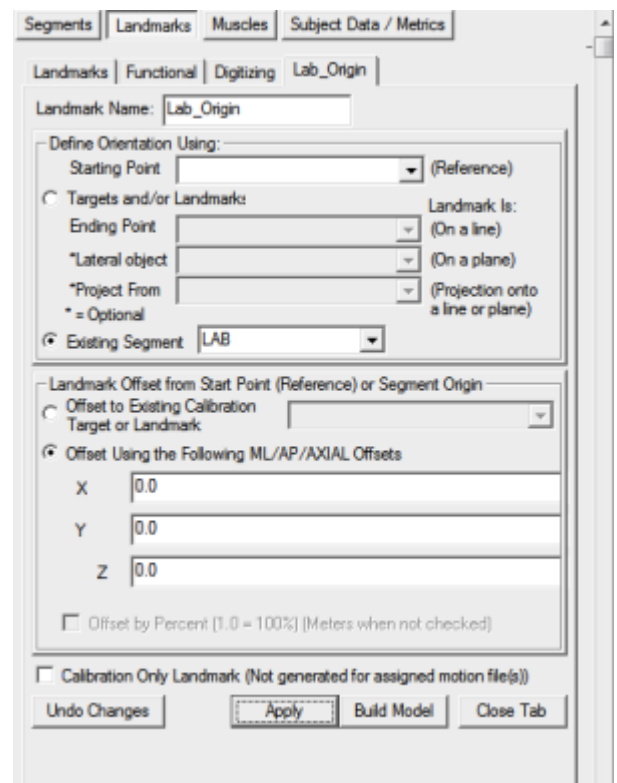


- Define the Segment Orientation as:
 - A/P Axis:** +Y
 - Distal to Proximal:** -X

Virtual Lab

Virtual Lab Landmarks

18. Create Lab_Origin:



1. Click **Landmarks** button
2. Click **Add New Landmark** button
3. Create Landmark: Lab_Origin
 - **Landmark Name:** Lab_Origin
4. Offset Using the Following **ML/AP/AXIAL** Offsets:
 - **X:** 0.0 **Y:** 0.0 **Z:** 0.0
5. **Do NOT Check:** Offset by Percent (1.0 = 100%)
6. **Do NOT Check:** Calibration Only Landmark

19. Create Lab_AX:

Segments | Landmarks | Muscles | Subject Data / Metrics

Landmarks | Functional | Digitizing | Lab_AX

Landmark Name: Lab_AX

Define Orientation Using:

Starting Point: (Reference)

Targets and/or Landmark:

Ending Point: (On a line)

*Lateral object: (On a plane)

*Project From: (Projection onto a line or plane)

* = Optional

Existing Segment: LAB

Landmark Offset from Start Point (Reference) or Segment Origin

Offset to Existing Calibration Target or Landmark:

Offset Using the Following ML/AP/AXIAL Offsets

X: 0.0

Y: 0.0

Z: 0.1

☐ Offset by Percent (1.0 = 100%) (Meters when not checked)

☐ Calibration Only Landmark (Not generated for assigned motion file(s))

Undo Changes Apply Build Model Close Tab

1. Click **Landmarks** button
2. Click **Add New Landmark** button
3. Create Landmark: Lab_Origin
 - **Landmark Name:** Lab_AX
4. Offset Using the Following **ML/AP/AXIAL** Offsets:
 - **X:** 0.0 **Y:** 0.0 **Z:** 0.1
5. **Do NOT Check:** Offset by Percent (1.0 = 100%)
6. **Do NOT Check:** Calibration Only Landmark

20. Create Lab_ML:

The screenshot shows the 'Lab_ML' dialog box in the Visual3D software. The 'Landmarks' tab is selected. The 'Landmark Name' is 'Lab_ML'. Under 'Define Orientation Using:', 'Starting Point' is set to '(Reference)'. The 'Targets and/or Landmark:' section has 'Ending Point' set to '(On a line)', '*Lateral object' set to '(On a plane)', and '*Project From' set to '(Projection onto a line or plane)'. The 'Existing Segment' is 'LAB'. Under 'Landmark Offset from Start Point (Reference) or Segment Origin', 'Offset to Existing Calibration Target or Landmark' is selected. The 'Offset Using the Following ML/AP/AXIAL Offsets' section has 'X' set to 0.1, 'Y' set to 0.0, and 'Z' set to 0.0. The 'Offset by Percent (1.0 = 100%) [Meters when not checked]' checkbox is unchecked. The 'Calibration Only Landmark (Not generated for assigned motion file(s))' checkbox is also unchecked. At the bottom, there are buttons for 'Undo Changes', 'Apply', 'Build Model', and 'Close Tab'.

1. Click **Landmarks** button
2. Click **Add New Landmark** button
3. Create Landmark: Lab_ML
 - **Landmark Name:** Lab_ML
4. Offset Using the Following **ML/AP/AXIAL** Offsets:
 - **X:** 0.1 **Y:** 0.0 **Z:** 0.0
5. **Do NOT Check:** Offset by Percent (1.0 = 100%)
6. **Do NOT Check:** Calibration Only Landmark

21. Create Pel_ML:

Segments | Landmarks | Muscles | Subject Data / Metrics

Landmarks | Functional | Digitizing | Pel_ML

Landmark Name: Pel_ML

Define Orientation Using:

Starting Point Lab_Origin (Reference)

Targets and/or Landmark:

Ending Point (On a line)

*Lateral object (On a plane)

*Project From (Projection onto a line or plane)

* = Optional

Existing Segment Pelvis

Landmark Offset from Start Point (Reference) or Segment Origin

Offset to Existing Calibration Target or Landmark

Offset Using the Following ML/AP/AXIAL Offsets

ML 0.1

AP 0.0

AXIAL 0.0

Offset by Percent (1.0 = 100%) (Meters when not checked)

Calibration Only Landmark (Not generated for assigned motion file(s))

Undo Changes Apply Build Model Close Tab

1. Click **Landmarks** button
2. Click **Add New Landmark** button
3. Create Landmark: Pel_ML
 - **Landmark Name** Pel_ML
 - **Define Orientation Using:**
 - **Starting Point:** Lab_Origin
 - **Existing Segment:** Pelvis
4. Offset Using the Following **ML/AP/AXIAL** Offsets:
 - **X:** 0.1 **Y:** 0.0 **Z:** 0.0
5. **Do NOT Check:** Offset by Percent (1.0 = 100%)
6. **Do NOT Check:** Calibration Only Landmark

22. Create Pel_ML_Proj:

The screenshot shows the 'Landmarks' tab in the Visual3D software. The 'Pel_ML_Proj' landmark is being configured. The 'Landmark Name' is 'Pel_ML_Proj'. Under 'Define Orientation Using:', 'Starting Point' is 'Lab_Origin' (Reference), 'Ending Point' is 'Lab_ML' (On a line), '*Lateral object' is empty (On a plane), and '*Project From' is 'Pel_ML' (Projection onto a line or plane). '* = Optional'. The 'Existing Segment' is empty. Under 'Landmark Offset from Start Point (Reference) or Segment Origin', 'Offset to Existing Calibration Target or Landmark' is empty, and 'Offset Using the Following ML/AP/AXIAL Offsets' is selected. The offsets are: ML (empty), AP (empty), and AXIAL (empty). The checkbox 'Offset by Percent (1.0 = 100%) (Meters when not checked)' is unchecked. The checkbox 'Calibration Only Landmark (Not generated for assigned motion file(s))' is unchecked. At the bottom are buttons: 'Undo Changes', 'Apply', 'Build Model', and 'Close Tab'.

1. Click **Landmarks** button
2. Click **Add New Landmark** button
3. Create Landmark: Pel_ML_Proj
 - **Landmark Name:** Pel_ML_Proj
 - **Define Orientation Using:**
 - **Starting Point:** Lab_Origin
 - **Ending Point:** Lab_ML
 - **Project Point:** Pel_ML
4. **Do NOT Check:** Offset by Percent (1.0 = 100%)
5. **Do NOT Check:** Calibration Only Landmark

23. Create VLab_ML:

1. Click **Landmarks** button
2. Click **Add New Landmark** button
3. Create Landmark: VLab_ML
 - **Landmark Name:** VLab_ML
 - **Define Orientation Using:**
 - **Starting Point:** Lab_Origin
 - **Ending Point:** Pel_ML_Proj
4. Offset Using the Following **ML/AP/AXIAL** Offsets:
 - **AXIAL:** 0.1
5. **Do NOT Check:** Offset by Percent (1.0 = 100%)
6. **Do NOT Check:** Calibration Only Landmark

Additional Details

Once the IOR Gait Full Body model has been created, additional items can be calculated specific to the IOR Gait model.

- **Planar Angles:** Compute the orientation of different parts of the thorax relative to one another.
- **Shoulder Orientation and Translation:** This tutorial goes through computing the orientation and the translation of the shoulder targets relative to the trunk segment.
- **Joint Angles:** Compute IOR Gait specific joint angles.
- **IOR Multi-Segment Foot Model:** Define a multi segment foot model.

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