

Honert, E. C., Zelik, K. E., 2016. “Inferring Muscle-Tendon Unit Power from Ankle Joint Power during the Push-off Phase of Human Walking: Insights from a Multiarticular EMG-Driven Model”, PLOS ONE. doi: 10.1371/journal.pone.0163169

Description of contents:

1. **Results:** *Results.mat* – contains partial results from the manuscript
2. **Raw Data:** Subject-specific raw data folders (e.g. Sub1) which include the following files:
 - a. *MVC_0#.c3d* – four different quasi-static maximum voluntary contraction trials
 - b. *Walk_075.c3d* – walking trial at 0.75 m/s
 - c. *Walk_100.c3d* – walking trial at 1.00 m/s
 - d. *Walk_125.c3d* – walking trial at 1.25 m/s

Results: Description of variables with *Results.mat*:

This *.mat* file contains stride averaged results for each subject and speed in addition to subject-specific body mass. All variables, besides *BodyMass*, contain a three layered structure with the first two levels presented below and the third level corresponding to the walking velocity (e.g. *v_0_75* corresponds with walking at 0.75 m/s) and are interpolated to 1000 points: 1 corresponding to left foot contact and 1000 corresponding to subsequent left foot contact. See manuscript for full processing details. For full study results please contact Eric Honert at eric.c.honert@vanderbilt.edu.

Level 1 Variable	Level 2 Variable	Corresponding Metric (units)
BodyMass	-	Subject body mass (kg)
EMG	FDHL	Flexor digitorum and hallucis longus EMG (%)
	PeroneusLongus	Peroneus Longus EMG (%)
	LatGastroc	Lateral Gastrocnemius EMG (%)
	MedGastroc	Medial Gastrocnemius EMG (%)
	Soleus	Soleus EMG (%)
GRF	X	Left fore-aft ground reaction force (N/kg)
	Y	Left medial-lateral ground reaction force (N/kg)
	Z	Left vertical ground reaction force (N/kg)
kinematics/kinetics	AnkleAngle	Sagittal plane ankle angle (degrees)
	AnkleAngularVelocity	Sagittal plane ankle angular velocity (rad/sec)
	HalluxAngularVelocity	Sagittal plane hallux angular velocity (rad/sec)
	Toes2to4AngularVelocity	Mean sagittal plane angular velocity from toes 2 and 4 (rad/sec)
	AnkleMoment	Sagittal plane ankle moment (Nm/kg)
	AnklePower	Sagittal plane ankle power (W/kg)

Raw Data: Description of variables within .c3d formatted file

Within each .c3d file format are surface electromyography (EMG) signals labeled with the following nomenclature:

<u>.c3d Variable</u>	<u>Corresponding Muscle for the EMG Signal</u>
FDHL_EMG#	Flexor Digitorum and Hallucis Longus
MG_EMG#	Medial Gastrocnemius
LG_EMG#	Soleus
TA_EMG#	Tibialis Anterior
PL_EMG#	Peroneus Longus

Each .c3d file contains ground reaction forces (GRF) with the following coordinate frame:

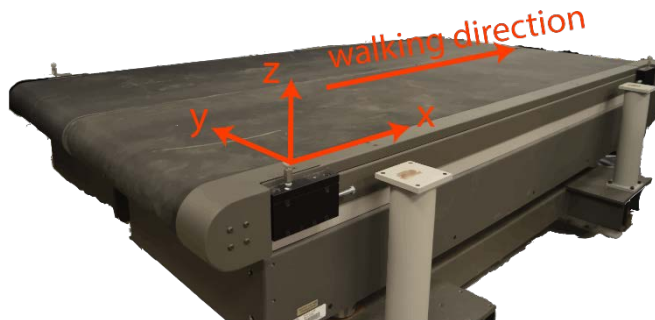


The force signals are labeled as such:

<u>.c3d Variable</u>	<u>Corresponding Treadmill Belt Kinetic Component*</u>
Force_Fx1	Left Belt X-GRF
Force_Fy1	Left Belt Y-GRF
Force_Fz1	Left Belt Z-GRF
Moment_Mx1	Left Belt X-Moment
Moment_My1	Left Belt Y-Moment
Moment_Mz1	Left Belt Z-Moment
Force_Fx2	Right Belt X-GRF
Force_Fy2	Right Belt Y-GRF
Force_Fz2	Right Belt Z-GRF
Moment_Mx2	Right Belt X-Moment
Moment_My2	Right Belt Y-Moment
Moment_Mz2	Right Belt Z-Moment

*Relative to forward walking direction

Additionally for the walking trials passive reflective motion capture marker data are stored within the .c3d files with the following coordinate frame:



All subject markers adhere to the following naming convention:

<u>.c3d Variable/Marker Abbreviation</u>	<u>Marker Name</u>
LLE	Left lateral femoral epicondyle
LME	Left medial femoral epicondyle
LSH1	Left shank tracking marker 1
LSH2	Left shank tracking marker 2
LSH3	Left shank tracking marker 3
LSH4	Left shank tracking marker 4
LMM	Left medial malleolus
LLM	Left lateral malleolus
LHeel	Left heel/calcaneus
LSTL	Left sustentaculum tali
LP1M	Left base of the 1 st metatarsal
LLCA	Left lateral calcaneus
LP5M	Left base of the 5 th metatarsal
LA1M	Left 1 st metatarsal head
LA2M	Left 2 nd metatarsal head
LA5M	Left 5 th metatarsal head
C1Toe	Left 1 st toe
C2Toe	Left 2 nd toe
C4Toe	Left 4 th toe

Example marker locations on one subject:

