Supplementary materials to:

Reframing Whole-body Angular Momentum: Exploring the Impact of Low-Pass Filtered Reference Frames during Straight-line and Turning Gaits

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Introduction

This document presents the distribution (mean, standard deviation) of the outcome measures (maximum (Max), minimum (Min) and range) of the anteroposterior (AP) and mediolateral (ML) WBAM expressed in the global, various Non-LP and LP dynamic local reference frames in the StrW, SlaW, ZigW, and TurW tasks, respectively. These outcomes measures are used for linear mixed models.

Additionally, Root mean square (RMS) differences (mean, standard deviation) of the AP and ML WBAM across various Non-LP and LP dynamic local reference frames during the Double Stance (DS) phase and Single Stance (SS) phase, in the StrW, SlaW, ZigW and TurW tasks, is provided.

StrW: walking along a straight line

SlaW: slalom walking

ZigW: Zig-zag walking

TurW: walking with 180-degree turn

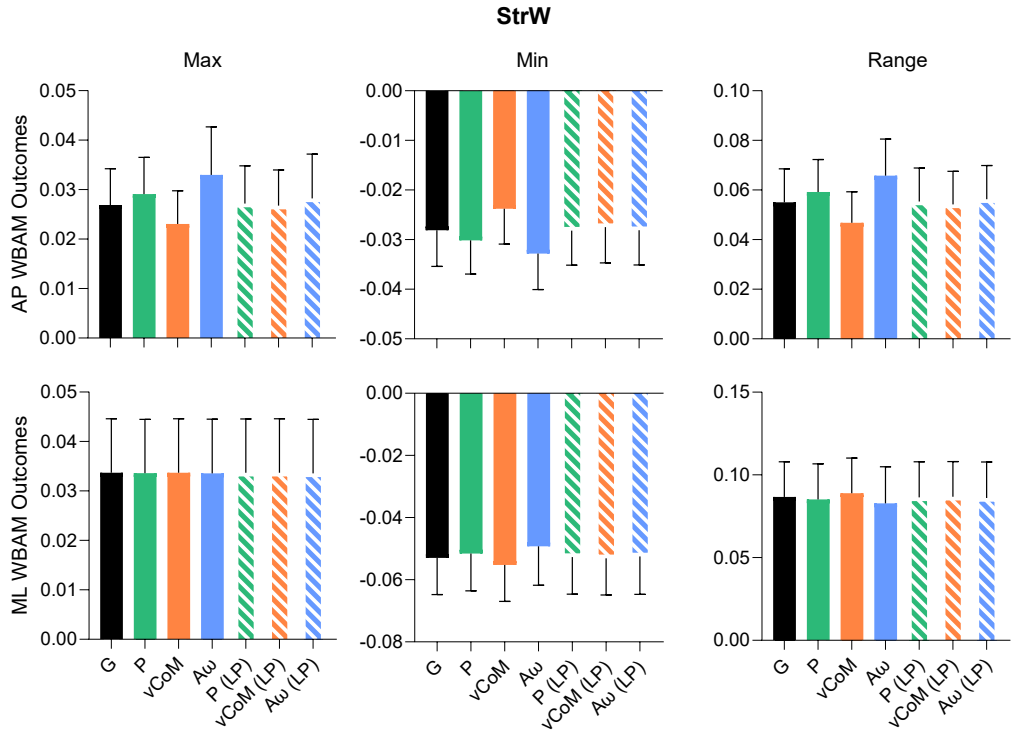

Figure S1. The distribution of the outcome measures (Max, Min and range) of the AP and ML WBAM expressed in the global, various Non-LP and LP dynamic local reference frames in the StrW task. Mean values with standard deviation error bars over all trails and participants are displayed.

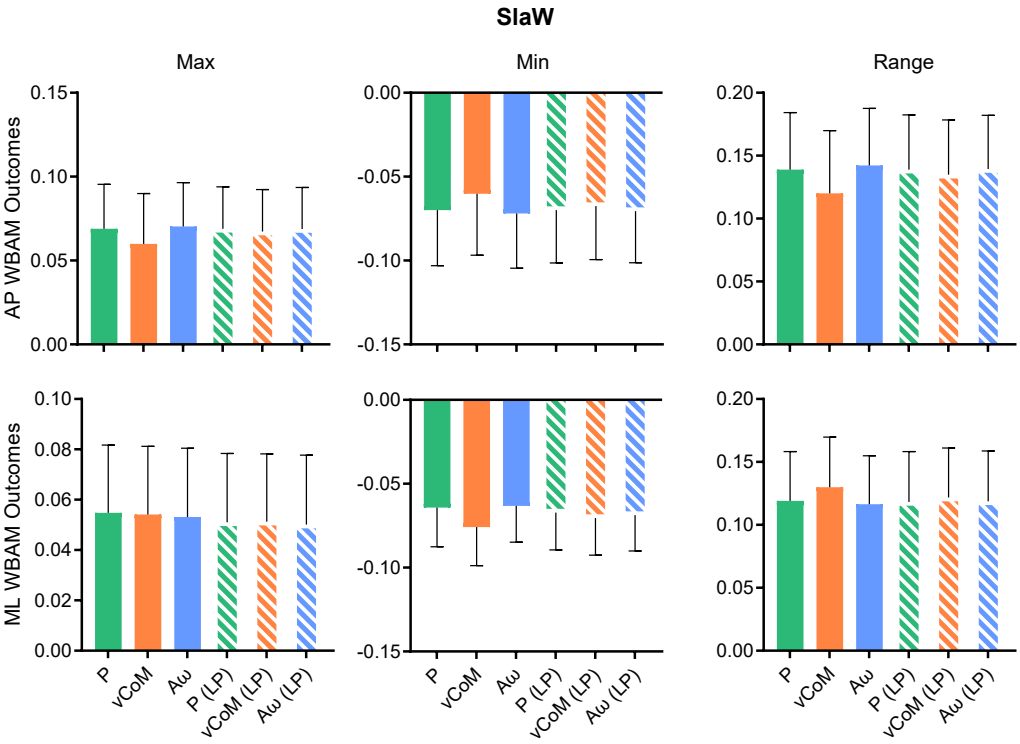

Figure S2. The distribution of the outcome measures (Max, Min and range) of the AP and ML WBAM expressed in various Non-LP and LP dynamic local reference frames in the SlaW task. Mean values with standard deviation error bars over all trails and participants are displayed.

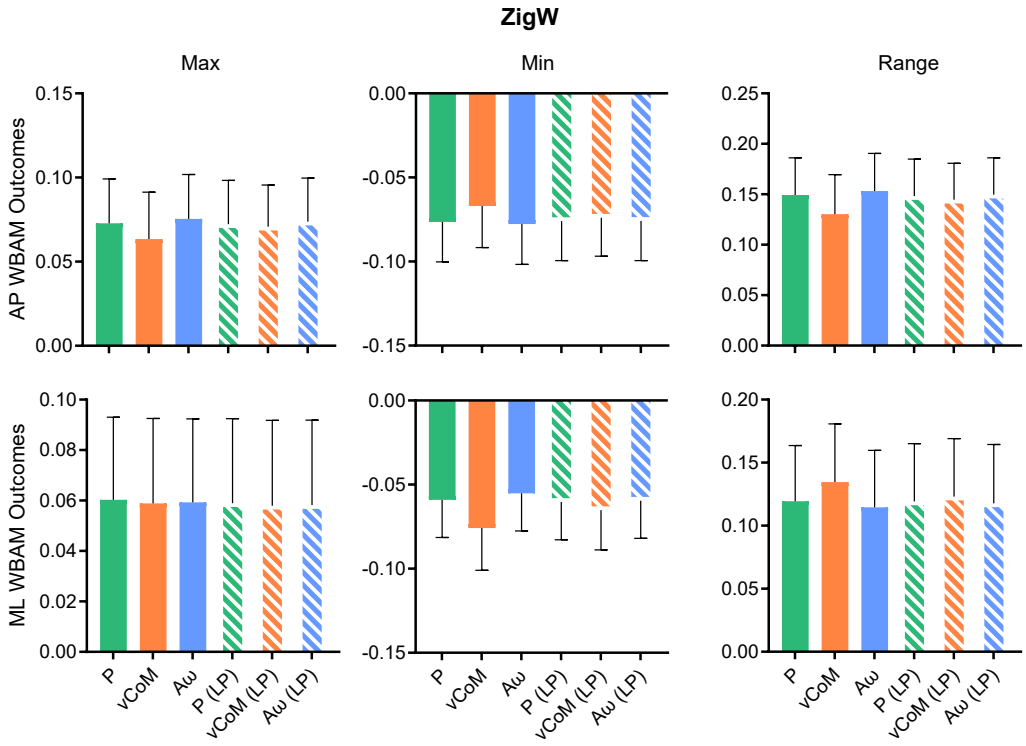

Figure S3. The distribution of the outcome measures (Max, Min and range) of the AP and ML WBAM expressed in various Non-LP and LP dynamic local reference frames in the ZigW task. Mean values with standard deviation error bars over all trails and participants are displayed.

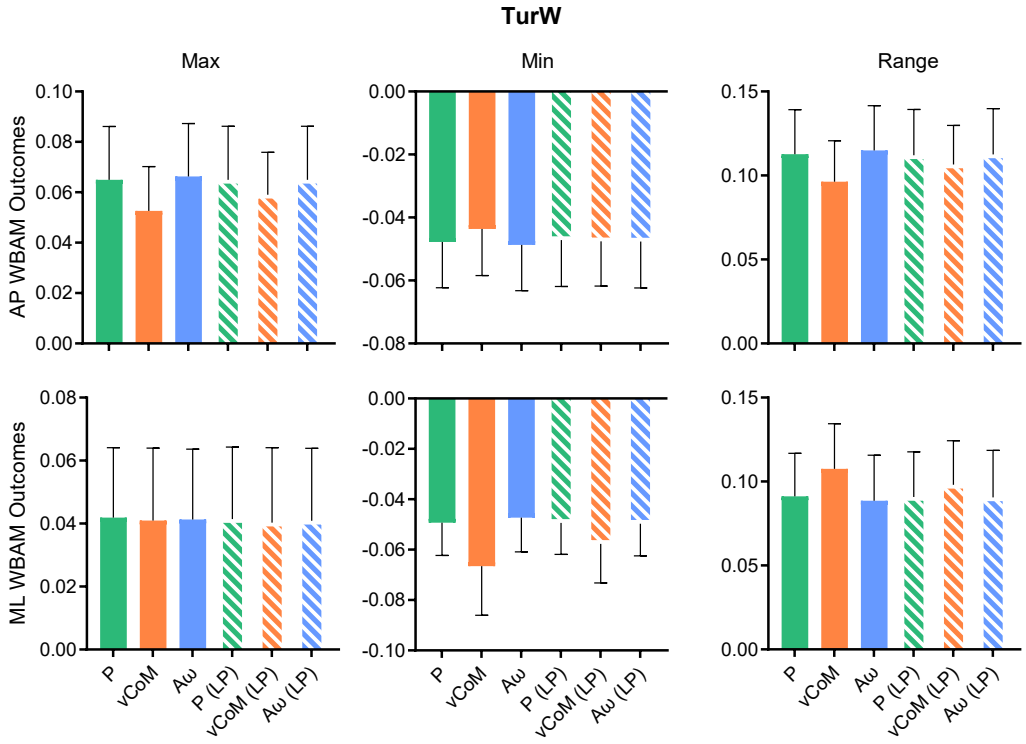

Figure S4. The distribution of the outcome measures (Max, Min and range) of the AP and ML WBAM expressed in various Non-LP and LP dynamic local reference frames in the TurW task. Mean values with standard deviation error bars over all trails and participants are displayed.

Table S1. The distribution (mean, standard deviation) of the outcome measures (Max, Min and range) of the AP and ML WBAM expressed in the global, various Non-LP and LP dynamic local reference frames in the StrW, SlaW, ZigW and TurW task. This table of numerical values is supplementary to **Figures S1**–**S4**.

		StrW						
		G	P	vCoM	$A\omega$	P (LP)	vCoM (LP)	$A\omega$ (LP)
AP WBAM	Max	0.027(0.007)	0.029(0.007)	0.023(0.007)	0.033(0.010)	0.027(0.008)	0.027(0.007)	0.028(0.009)
	Min	-0.028(0.007)	-0.030(0.007)	-0.024(0.007)	-0.033(0.007)	-0.028(0.007)	-0.027(0.007)	-0.028(0.007)
	Range	0.055(0.013)	0.059(0.013)	0.047(0.012)	0.066(0.012)	0.055(0.015)	0.054(0.013)	0.056(0.013)
ML WBAM	Max	0.034(0.011)	0.034(0.011)	0.034(0.011)	0.034(0.011)	0.034(0.011)	0.034(0.011)	0.034(0.011)
	Min	-0.052(0.012)	-0.052(0.012)	-0.055(0.012)	-0.048(0.012)	-0.053(0.012)	-0.053(0.012)	-0.053(0.012)
	Range	0.087(0.021)	0.085(0.021)	0.089(0.021)	0.083(0.022)	0.086(0.021)	0.087(0.021)	0.086(0.022)

		SlaW					
		P	vCoM	$A\omega$	P (LP)	vCoM (LP)	$A\omega$ (LP)
AP WBAM	Max	0.069(0.026)	0.060(0.030)	0.071(0.026)	0.069(0.025)	0.067(0.025)	0.069(0.025)
	Min	-0.070(0.033)	-0.060(0.037)	-0.074(0.033)	-0.070(0.031)	-0.068(0.032)	-0.071(0.031)
	Range	0.139(0.045)	0.120(0.050)	0.145(0.045)	0.139(0.043)	0.135(0.043)	0.139(0.042)
ML WBAM	Max	0.055(0.027)	0.054(0.027)	0.053(0.011)	0.051(0.011)	0.051(0.011)	0.050(0.028)
	Min	-0.064(0.023)	-0.076(0.023)	-0.063(0.022)	-0.067(0.022)	-0.070(0.022)	-0.069(0.021)
	Range	0.119 (0.039)	0.130(0.040)	0.116(0.038)	0.118(0.040)	0.122(0.039)	0.119(0.040)

		ZigW					
		P	vCoM	$A\omega$	P (LP)	vCoM (LP)	$A\omega$ (LP)
AP WBAM	Max	0.073(0.026)	0.063(0.028)	0.075(0.026)	0.072(0.026)	0.071(0.025)	0.074(0.026)
	Min	-0.076(0.024)	-0.067(0.025)	-0.078(0.024)	-0.076(0.023)	-0.074(0.023)	-0.076(0.024)
	Range	0.149(0.037)	0.130(0.039)	0.153(0.037)	0.148(0.037)	0.145(0.036)	0.150(0.037)
ML WBAM	Max	0.060(0.033)	0.059(0.034)	0.059(0.033)	0.059(0.033)	0.058(0.034)	0.058(0.034)
	Min	-0.059(0.022)	-0.076(0.025)	-0.055(0.022)	-0.060(0.022)	-0.065(0.024)	-0.060(0.022)
	Range	0.119(0.044)	0.135(0.046)	0.114(0.045)	0.119(0.046)	0.123(0.046)	0.118(0.047)

		TurW					
		P	vCoM	$A\omega$	P (LP)	vCoM (LP)	$A\omega$ (LP)
AP WBAM	Max	0.065(0.021)	0.053(0.017)	0.066(0.021)	0.065(0.021)	0.059(0.017)	0.065(0.021)
	Min	-0.048(0.014)	-0.044(0.015)	-0.049(0.014)	-0.047(0.015)	-0.048(0.014)	-0.048(0.015)
	Range	0.113(0.026)	0.096(0.024)	0.115(0.026)	0.112(0.027)	0.107(0.023)	0.113(0.027)
ML WBAM	Max	0.042(0.022)	0.041(0.023)	0.041(0.022)	0.041(0.023)	0.040(0.024)	0.041(0.023)
	Min	-0.049(0.013)	-0.067(0.019)	-0.047(0.014)	-0.049(0.012)	-0.058(0.015)	-0.050(0.013)
	Range	0.091(0.025)	0.108(0.027)	0.089(0.027)	0.090(0.027)	0.098(0.022)	0.091(0.028)

Table S2. RMS differences of the AP and ML WBAM across various Non-LP and LP dynamic local reference frames during the DS phase and SS phase, in the StrW, SlaW, ZigW and TurW tasks. Mean values with standard deviations over all trails and participants are displayed.

		StrW					
		P vs. vCoM	P vs. Aω	Aω vs. vCoM	P(LP) vs. vCoM(LP)	P(LP) vs. Aω(LP)	Aω(LP) vs. vCoM(LP)
AP WBAM	DS	0.0068 (0.0033)	0.0029 (0.0022)	0.0092 (0.0042)	0.0014 (0.0006)	0.0022 (0.0008)	0.0029 (0.0009)
	SS	0.0034 (0.0012)	0.0022 (0.0013)	0.0049 (0.0015)	0.0010 (0.0004)	0.0016 (0.0005)	0.0021 (0.0006)
ML WBAM	DS	0.0038 (0.0021)	0.0023 (0.0021)	0.0059 (0.0035)	0.0009 (0.0005)	0.0014 (0.0006)	0.0019 (0.0008)
	SS	0.0020 (0.0009)	0.0016 (0.0010)	0.0034 (0.0014)	0.0006 (0.0002)	0.0009 (0.0003)	0.0013 (0.0014)
		SlaW					
		P vs. vCoM	P vs. Aω	Aω vs. vCoM	P(LP) vs. vCoM(LP)	P(LP) vs. Aω(LP)	Aω(LP) vs. vCoM(LP)
AP WBAM	DS	0.0136 (0.0100)	0.0030 (0.0028)	0.0150 (0.0115)	0.0036 (0.0017)	0.0025 (0.0013)	0.0043 (0.0021)
	SS	0.0083 (0.0036)	0.0034 (0.0025)	0.0092 (0.0042)	0.0031 (0.0010)	0.0025 (0.0011)	0.0039 (0.0013)
ML WBAM	DS	0.0146 (0.0092)	0.0048 (0.0047)	0.0162 (0.0098)	0.0049 (0.0021)	0.0036 (0.0012)	0.0055 (0.0025)
	SS	0.0089 (0.0040)	0.0039 (0.0032)	0.0096 (0.0043)	0.0038 (0.0013)	0.0031 (0.0016)	0.0044 (0.0018)
		ZigW					
		P vs. vCoM	P vs. Aω	Aω vs. vCoM	P(LP) vs. vCoM(LP)	P(LP) vs. Aω(LP)	Aω(LP) vs. vCoM(LP)
AP WBAM	DS	0.0138 (0.0120)	0.0036 (0.0035)	0.0155 (0.0137)	0.0038 (0.0021)	0.0033 (0.0016)	0.0055 (0.0028)
	SS	0.0086 (0.0039)	0.0045 (0.0033)	0.0105 (0.0046)	0.0038 (0.0015)	0.0040 (0.0016)	0.0058 (0.0022)
ML WBAM	DS	0.0170 (0.0109)	0.0070 (0.0056)	0.0201 (0.0138)	0.0061 (0.0028)	0.0062 (0.024)	0.0093 (0.0039)
	SS	0.0107 (0.0051)	0.0052 (0.0038)	0.0130 (0.0065)	0.0047 (0.0019)	0.0046 (0.0018)	0.0070 (0.0027)
		TurW					
		P vs. vCoM	P vs. Aω	Aω vs. vCoM	P(LP) vs. vCoM(LP)	P(LP) vs. Aω(LP)	Aω(LP) vs. vCoM(LP)
AP WBAM	DS	0.0102 (0.0060)	0.0021 (0.0010)	0.0109 (0.0061)	0.0039 (0.0026)	0.0018 (0.0010)	0.0043 (0.0027)
	SS	0.0066 (0.0042)	0.0022 (0.0019)	0.0072 (0.0045)	0.0035 (0.0016)	0.0019 (0.0011)	0.0038 (0.0017)
ML WBAM	DS	0.0110 (0.0048)	0.0034 (0.0017)	0.0123 (0.0108)	0.0055 (0.0033)	0.0028 (0.0015)	0.0061 (0.0035)
	SS	0.0078 (0.0053)	0.0026 (0.0023)	0.0085 (0.0061)	0.0044 (0.0022)	0.0021 (0.0011)	0.0047 (0.0025)