Table S1. Mean and standard deviation [°] of the maximum orientation change during Dorsiflexion for each subject. **(Supplementary data for Table 4)**

Dorsiflexion–relaxation

	Sagittal plane			Frontal plane			Horizontal plane		
	Lateral	Anterior	Medial tibia	Lateral	Anterior	Medial tibia	Lateral	Anterior	Medial tibia
S1	1.1	6.8	0.3	2.3	3.4	2.4	2.6	10.8	0.9
S2	0.9	4.9	0.5	2.4	3.5	1.4	2.2	11.2	1.7
S3	0.5	5.7	0.8	1.2	1.0	1.4	1.3	12.6	1.6
S4	0.7	2.7	0.3	1.9	1.8	1.2	0.9	3.0	0.8
S5	0.8	5.3	0.6	0.7	2.7	1.0	1.7	4.9	1.7
S6	1.3	8.0	0.6	1.1	1.9	1.3	2.5	7.5	1.0
Average	0.8	5.0	0.5	1.9	2.4	1.6	1.8	9.4	1.3
SD	0.3	1.8	0.2	0.7	1.0	0.5	0.7	3.8	0.4

Table S2. Mean and standard deviation [°] of the maximum orientation change during plantarflexion for each subject. **(Supplementary data for Table 4)**

Plantarflexion–relaxation

	Sagittal plane			Frontal plane			Horizontal plane		
	Lateral	Anterior	Medial tibia	Lateral	Anterior	Medial tibia	Lateral	Anterior	Medial tibia
S1	1.9	2.6	1.4	2.1	1.5	1.8	4.0	1.8	1.7
S2	1.4	1.8	0.6	1.5	0.4	1.3	4.2	1.6	1.4
S3	0.6	1.6	0.9	1.4	0.5	0.5	2.8	1.4	1.1
S4	0.7	1.9	2.0	2.7	1.3	0.8	1.7	2.2	0.6
S5	0.7	0.5	0.6	1.3	0.3	0.3	1.6	0.9	0.7
S6	1.1	2.2	1.4	0.4	0.3	0.2	1.3	0.5	1.0
Average	1.2	2.0	1.2	1.9	0.9	1.1	3.2	1.7	1.2
SD	0.5	0.7	0.6	0.8	0.5	0.6	1.3	0.6	0.4

Table S3. The mean RMSE and CC values [°] for each subject in slow gait.
(Supplementary data for Table 5, 6)

Slow

	RMSE									CC								
	Sagittal plane			Frontal plane			Horizontal plane			Sagittal plane			Frontal plane			Horizontal plane		
	Lateral	Anterior	Medial tibia	Lateral	Anterior	Medial tibia	Lateral	Anterior	Medial tibia	Lateral	Anterior	Medial tibia	Lateral	Anterior	Medial tibia	Lateral	Anterior	Medial tibia
S1	2.0	2.9	2.7	2.1	1.2	1.4	2.6	3.1	2.9	0.997	0.998	0.996	0.664	0.856	0.830	0.957	0.901	0.957
S2	1.5	1.6	1.9	2.7	1.2	1.0	3.7	2.1	2.1	0.998	0.999	0.998	0.738	0.924	0.957	0.920	0.933	0.933
S3	1.4	3.7	1.7	1.2	2.2	1.5	2.6	2.5	2.0	0.998	0.998	0.997	0.886	0.907	0.813	0.960	0.920	0.970
S4	1.4	3.0	2.2	2.0	3.3	2.1	2.6	1.8	3.5	0.998	0.997	0.997	0.895	0.713	0.845	0.976	0.980	0.977
S5	2.1	1.4	2.7	2.0	1.5	1.7	4.4	3.2	3.2	0.996	0.997	0.996	0.933	0.881	0.842	0.970	0.979	0.986
S6	1.9	2.1	2.6	1.6	2.8	1.4	5.1	4.7	4.5	0.996	0.997	0.996	0.907	0.400	0.891	0.935	0.969	0.968
Average	1.7	2.5	2.3	1.9	2.0	1.5	3.5	2.9	3.0	0.997	0.998	0.997	0.837	0.780	0.863	0.953	0.947	0.965
SD	0.31	0.90	0.42	0.52	0.89	0.34	1.08	1.02	0.95	0.001	0.001	0.001	0.109	0.201	0.053	0.022	0.034	0.018

Table S4. The mean RMSE and CC values [°] for each subject in medium-speed gait.
(Supplementary data for Table 5, 6)

Medium

	RMSE									CC								
	Sagittal plane			Frontal plane			Horizontal plane			Sagittal plane			Frontal plane			Horizontal plane		
	Lateral	Anterior	Medial tibia	Lateral	Anterior	Medial tibia	Lateral	Anterior	Medial tibia	Lateral	Anterior	Medial tibia	Lateral	Anterior	Medial tibia	Lateral	Anterior	Medial tibia
S1	2.6	4.3	3.2	3.2	1.9	2.1	3.2	2.8	2.8	0.998	0.998	0.997	0.580	0.764	0.627	0.956	0.935	0.946
S2	2.0	1.7	1.8	3.3	1.1	1.8	4.3	3.4	2.3	0.998	0.999	0.998	0.793	0.952	0.911	0.941	0.929	0.934
S3	1.9	4.2	2.1	1.5	2.4	1.4	2.3	2.3	2.7	0.996	0.996	0.996	0.871	0.882	0.783	0.965	0.962	0.973
S4	1.9	2.5	2.3	2.7	3.3	2.1	4.7	2.5	3.4	0.997	0.999	0.997	0.764	0.782	0.748	0.960	0.972	0.959
S5	2.6	2.1	3.6	2.5	2.4	2.8	4.2	5.4	5.1	0.998	0.998	0.997	0.952	0.898	0.865	0.970	0.974	0.983
S6	1.9	1.9	2.4	2.2	3.7	1.6	5.8	5.7	5.2	0.998	0.998	0.997	0.711	0.117	0.828	0.934	0.970	0.973
Average	2.2	2.8	2.6	2.5	2.5	2.0	4.1	3.7	3.6	0.997	0.998	0.997	0.779	0.732	0.794	0.955	0.957	0.961
SD	0.35	1.16	0.69	0.67	0.94	0.49	1.22	1.48	1.24	0.001	0.001	0.001	0.129	0.310	0.100	0.014	0.020	0.019

Table S5. The mean RMSE and CC values [°] for each subject in fast gait.
(Supplementary data for Table 5, 6)

Fast

	RMSE									CC								
	Sagittal plane			Frontal plane			Horizontal plane			Sagittal plane			Frontal plane			Horizontal plane		
	Lateral	Anterior	Medial tibia	Lateral	Anterior	Medial tibia	Lateral	Anterior	Medial tibia	Lateral	Anterior	Medial tibia	Lateral	Anterior	Medial tibia	Lateral	Anterior	Medial tibia
S1	2.3	2.8	2.8	2.2	2.1	2.1	3.3	3.5	2.9	0.997	0.998	0.997	0.803	0.816	0.769	0.975	0.973	0.979
S2	2.8	1.7	2.0	3.3	1.7	1.5	6.2	5.4	3.4	0.998	0.998	0.998	0.852	0.912	0.876	0.918	0.932	0.955
S3	2.0	3.8	2.1	2.0	2.3	1.9	5.8	6.0	3.5	0.996	0.998	0.997	0.664	0.890	0.630	0.955	0.955	0.971
S4	2.1	3.8	3.0	3.0	4.3	3.0	5.0	4.1	3.7	0.998	0.999	0.998	0.667	0.789	0.604	0.927	0.942	0.943
S5	3.0	2.8	2.9	2.6	2.2	2.0	3.1	3.4	3.3	0.996	0.997	0.996	0.925	0.887	0.900	0.958	0.959	0.964
S6	1.8	3.1	2.2	2.9	3.5	2.1	5.4	5.2	5.4	0.998	0.998	0.997	0.845	0.055	0.847	0.923	0.954	0.967
Average	2.3	3.0	2.5	2.7	2.7	2.1	4.8	4.6	3.7	0.997	0.998	0.997	0.793	0.725	0.771	0.943	0.953	0.963
SD	0.47	0.77	0.46	0.51	1.00	0.50	1.28	1.10	0.88	0.001	0.000	0.001	0.106	0.332	0.127	0.023	0.014	0.013

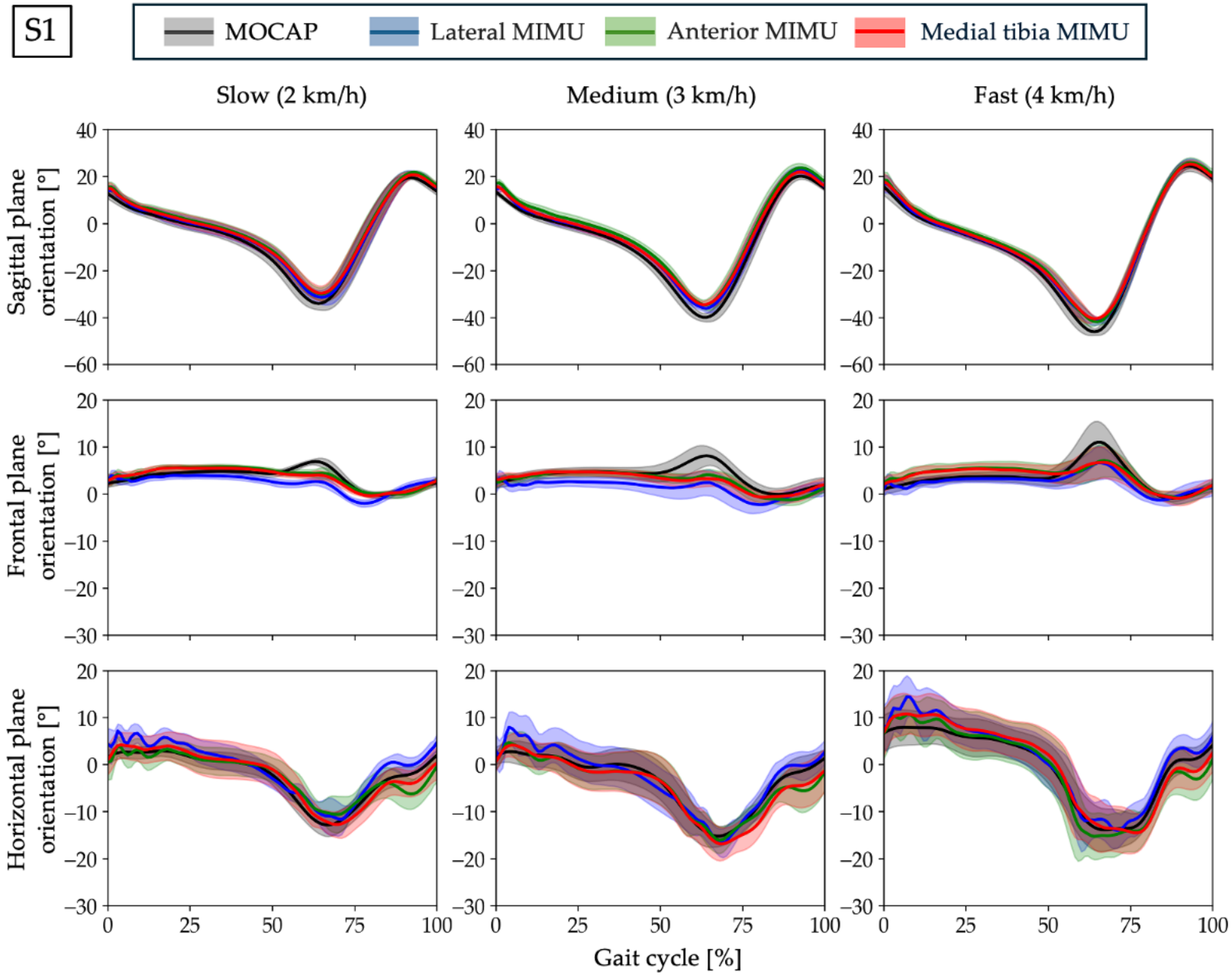


Figure S1. Waveform showing mean and standard deviation of shank posture data for subject 1 **(Supplementary data for Figure 10)**

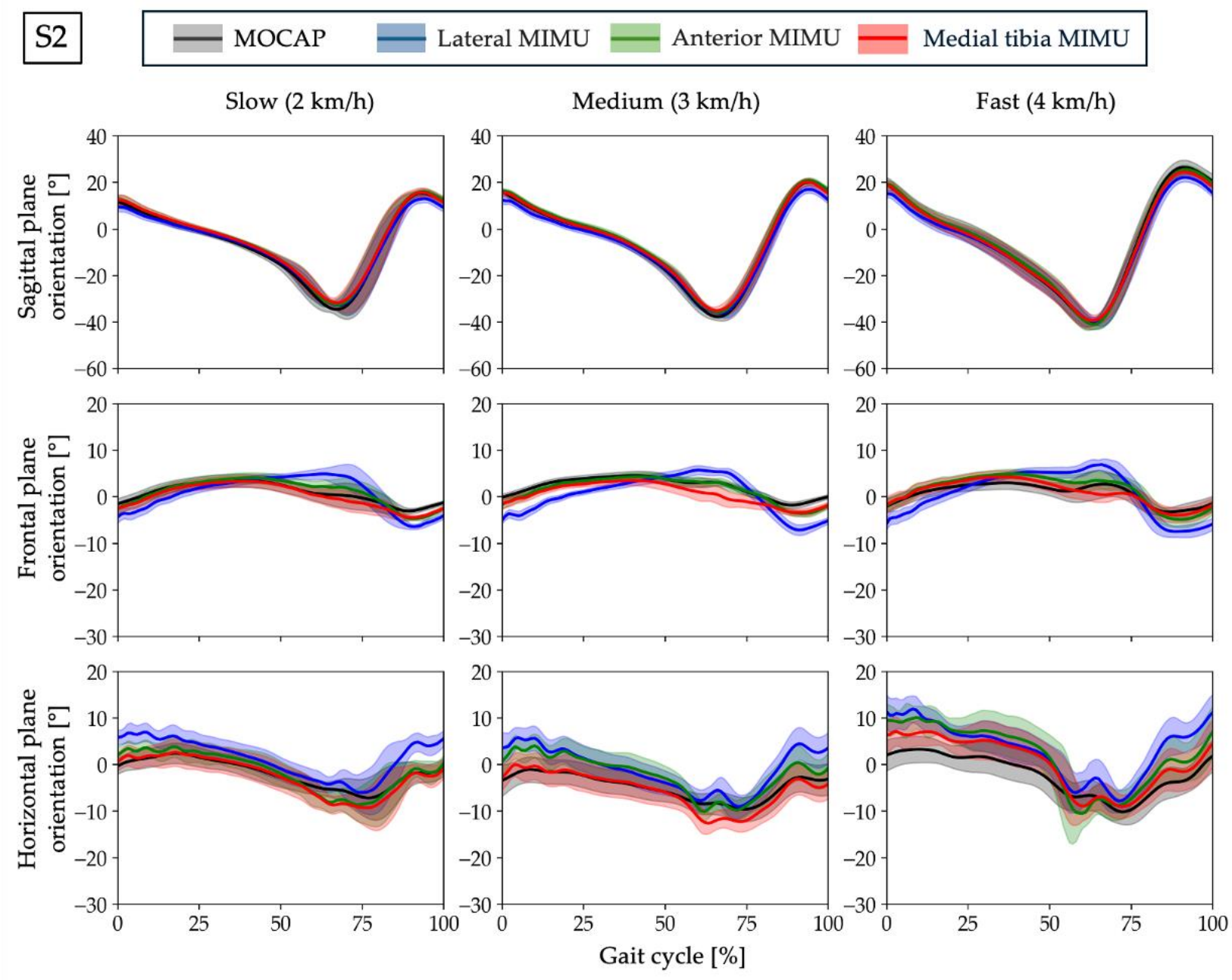


Figure S2. Waveform showing mean and standard deviation of shank posture data for subject 2

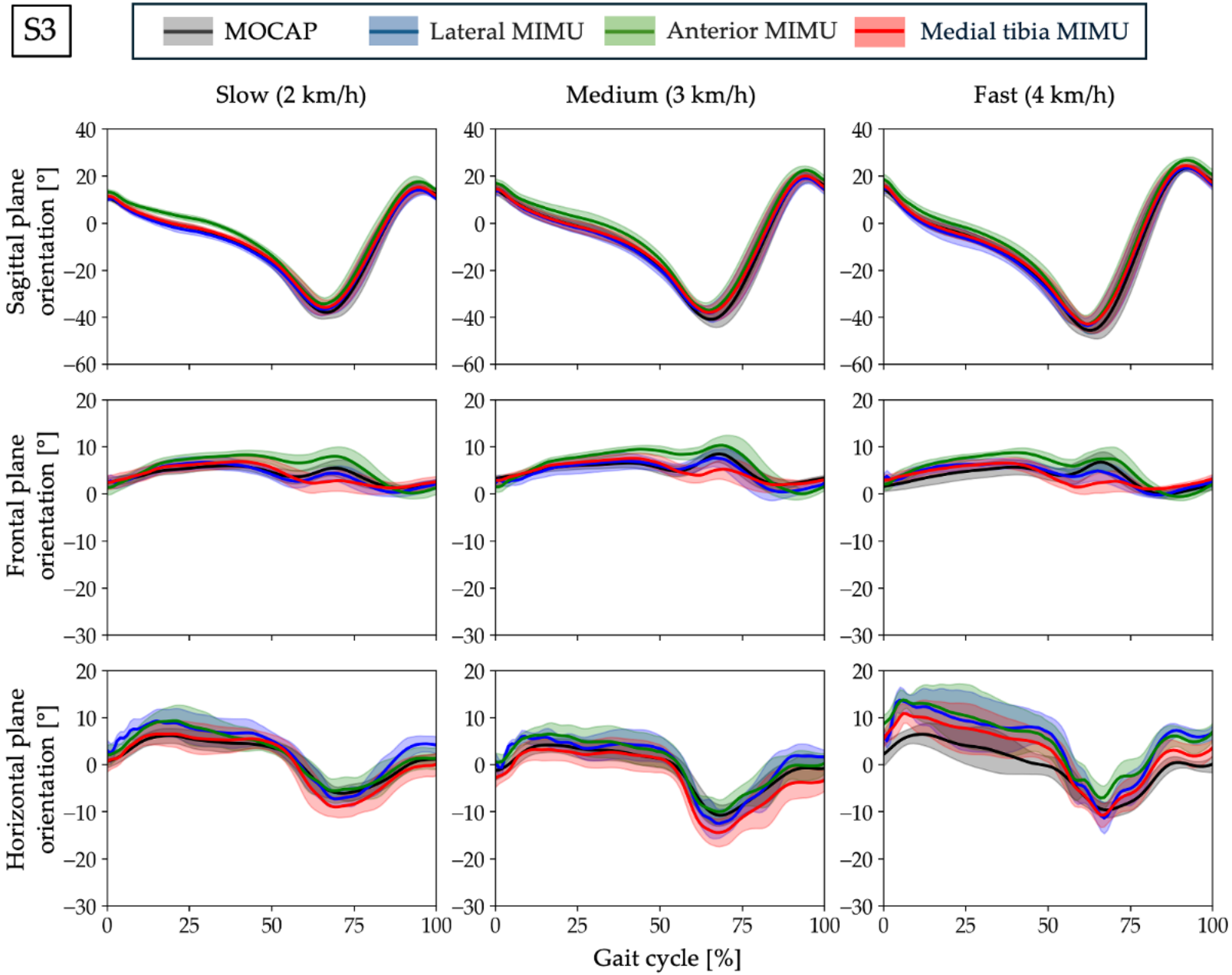


Figure S3. Waveform showing mean and standard deviation of shank posture data for subject 3

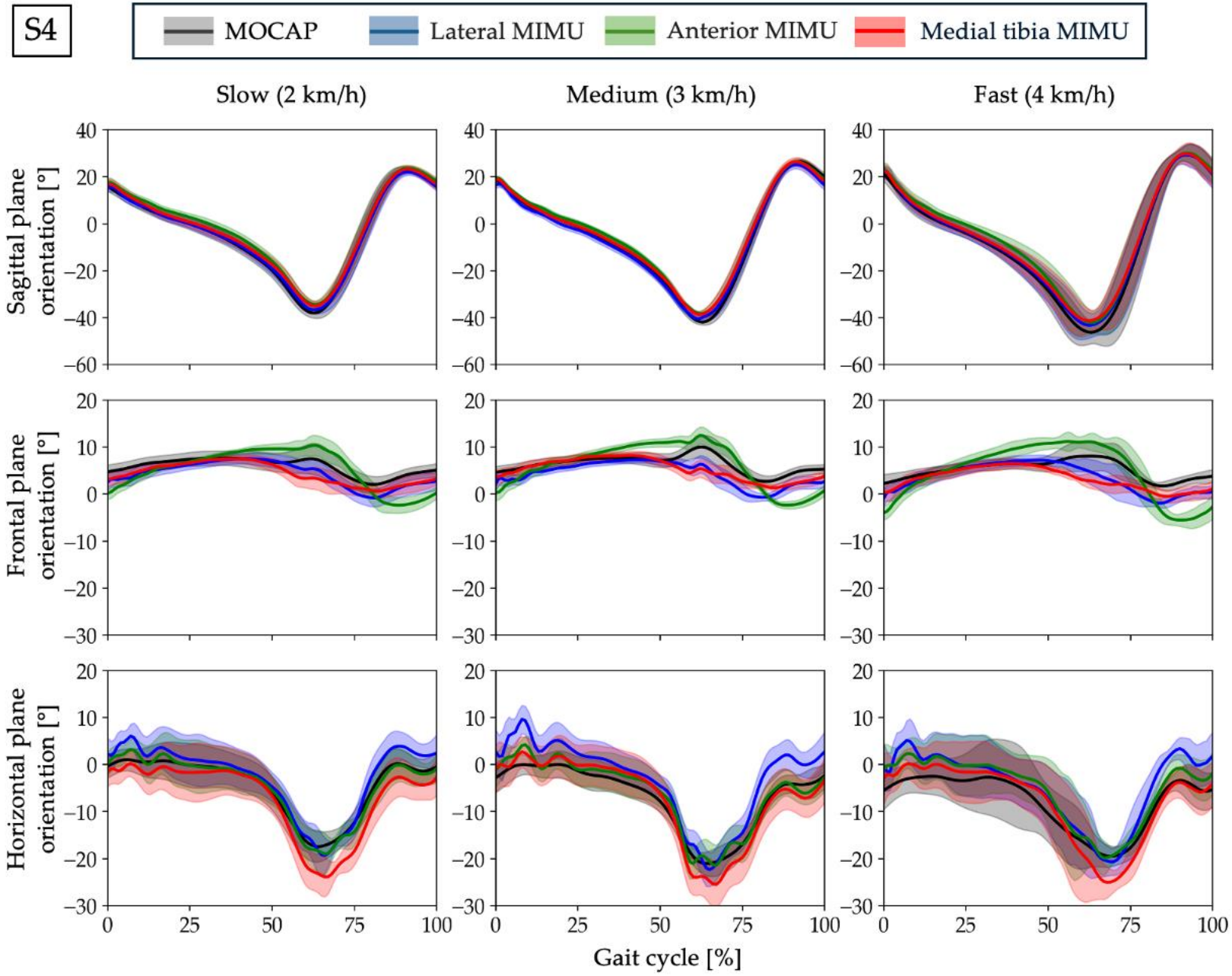


Figure S4. Waveform showing mean and standard deviation of shank posture data for subject 4

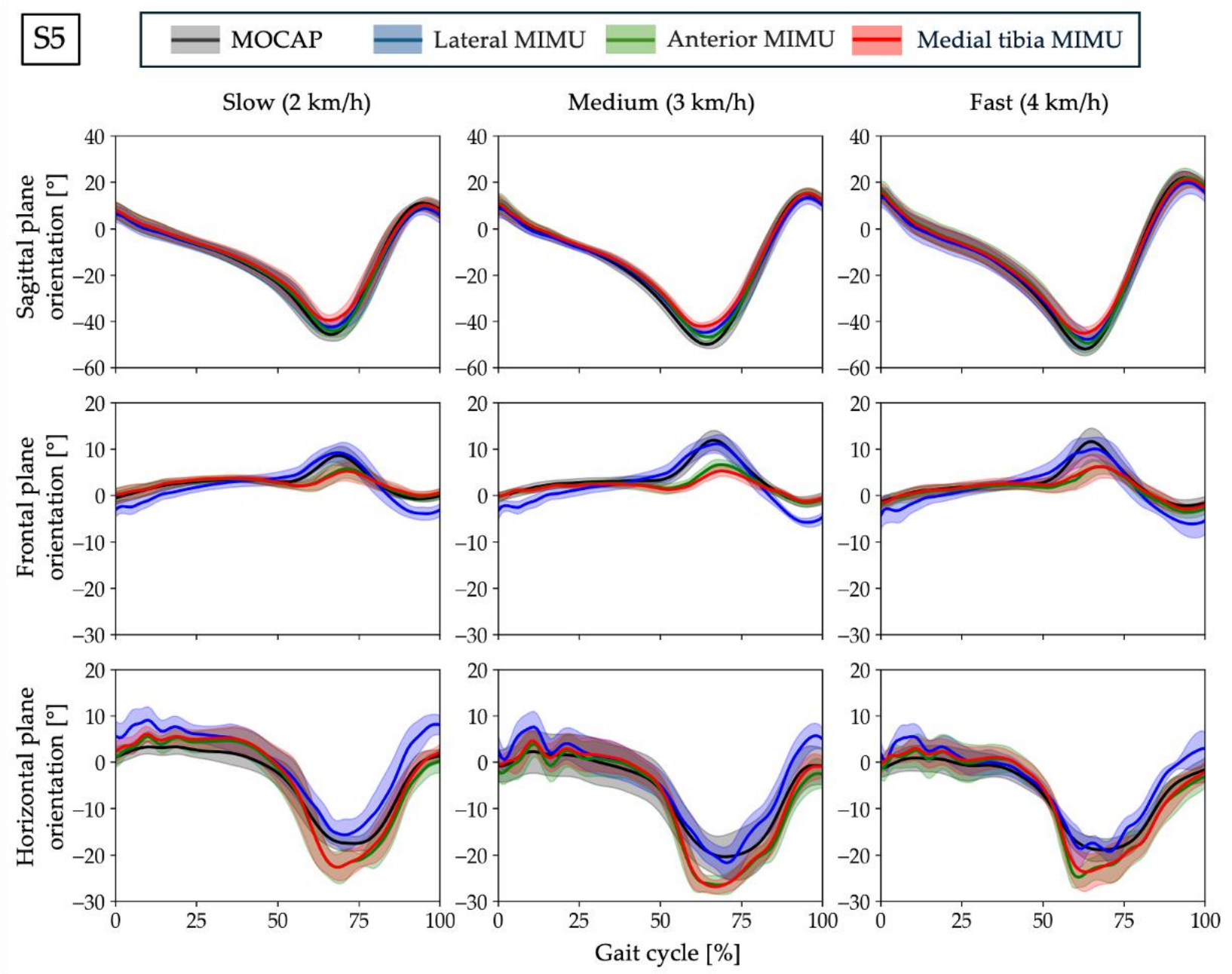


Figure S5. Waveform showing mean and standard deviation of shank posture data for subject 5

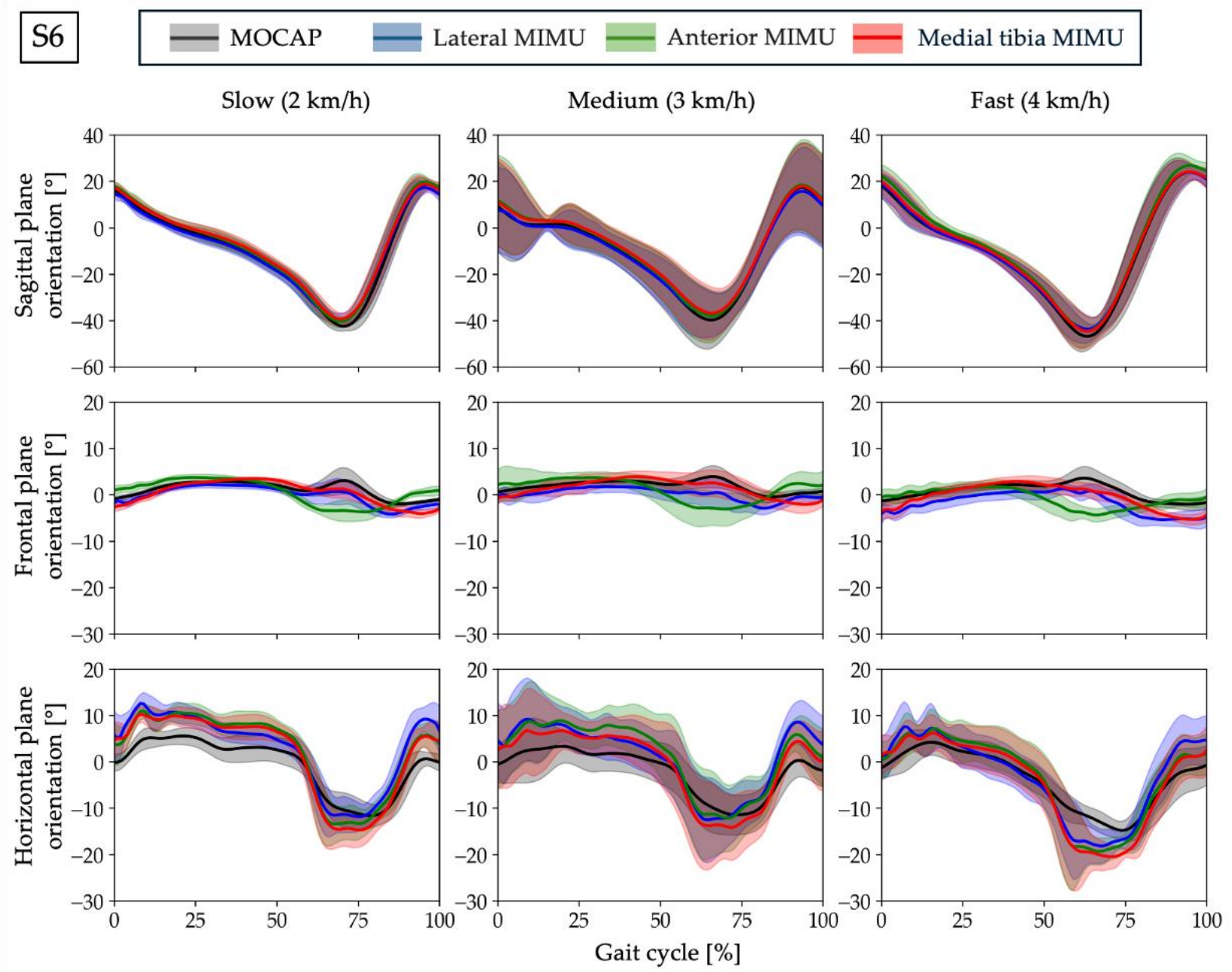


Figure S6. Waveform showing mean and standard deviation of shank posture data for subject 6