

Appendix S1. Individual AFO properties and effect

ID	Disease	Uni (1)/ bilateral (2) affected	AFO type	Custom- made (1)/ off-the-shelf (2)	AFO material	AFO footplate stiffness (Nm/°)	AFO ankle stiffness (Nm/°)	AFO mass (kg)	Shoes- only speed (m/s)	AFO speed (m/s)	Shoes- only energy cost (J/kg/m)	AFO walking energy cost (J/kg/m)	Assistive device shoes-only/ AFO
P01	Polio	1	DF-stop AFO	1	Carbon	1.24	-	0.8	0.71	0.87	7.96	6.58	Crutch/crutch
P02	Polio	2	Ventral AFO	2	Carbon	0.33	2.85	0.4	0.88	0.88	4.23	3.69	Walker/none
P03	Inclusion body myositis	2	Ventral AFO	2	Carbon	-	-	0.3	0.68	1.18	5.22	3.98	None/none
P04	Nerve injury	1	Dorsal AFO	2	Polypropylene	0.14	0.2	0.2	1.17	1.20	4.35	4.23	None/none
P05	Polio	1	OS	1	Leather+iron	-	-	0.6	1.17	1.26	3.60	3.51	None/none
P06	CMT	2	DF-stop AFO	1	Carbon	1.9	-	1.4	0.88	1.23	5.72	3.43	None/none
P07	CMT	2	DF-stop AFO	1	Carbon	0.66	-	0.8	0.70	1.15	5.34	4.28	None/none
P08	CMT	2	OS	1	Leather	-	0.13	1.1	0.56	0.76	6.53	4.96	Crutch/none
P09	Polio	1	Dorsal AFO	1	Polypropylene	0.11	2.7	0.2	1.03	1.19	5.54	3.76	None/none
P10	CMT	2	Dorsal AFO	2	Polypropylene	0.05	2.75	0.3	0.87	1.16	5.39	4.41	None/none
P11	Nerve injury	1	Ventral AFO	2	Carbon	0.31	1.44	0.4	1.26	1.34	4.63	4.28	None/none
P12	Myotonic dystrophy	2	Dorsal AFO	1	Polypropylene	0.16	1.17	0.9	0.96	1.15	5.67	5.19	Cane/cane
P13	Myotonic dystrophy	2	Ventral AFO	2	Carbon	0.17	2.02	0.3	0.68	0.94	5.61	4.71	Walker/walker
P14	Miyoshi dystrophy	2	Dorsal AFO	2	Polypropylene	0.06	0.2	0.3	1.30	1.31	3.41	3.32	None/none
P15	Polio	1	Dorsal AFO	2	Polypropylene	3/4 length	0.2	0.2	0.88	1.02	4.59	4.51	None/none
P16	Nerve injury	1	Ventral AFO	1	Carbon	1.85	Rigid	0.9	0.68	1.13	4.64	3.42	None/none
P17	Nerve injury	1	Ventral AFO	2	Carbon	0.26	1.7	0.3	0.77	0.81	5.60	5.84	None/none
P18	Polio	1	DF-stop AFO	1	Carbon	0.65	-	0.8	0.59	0.67	7.00	6.01	2 Canes/ 2 canes
P19	Nerve injury	2	Dorsal AFO	2	Polypropylene	0.11	0.24	0.2	0.76	1.10	4.78	4.38	None/none
P20	CIDP	2	DF-stop AFO	1	Carbon	3.19	-	1.2	0.83	0.87	3.70	3.52	Crutch/crutch
P21	CMT	2	Dorsal AFO	2	Polypropylene	0.19	0.2	0.2	0.92	1.12	3.93	4.46	2 Canes/ 2 canes
P22	Polio	2	OS	1	Leather+iron	-	-	0.7	0.52	0.70	7.31	5.25	Walker/walker
P23	Nerve injury	1	Ventral AFO	2	Carbon	-	-	0.4	1.23	1.33	4.55	4.45	None/none
P24	Nerve injury	1	Ventral AFO	2	Carbon	0.13	1.6	0.3	0.79	1.24	3.82	3.56	None/none
P25	CMT	2	Dorsal AFO	2	Polypropylene	0.18	1.46	0.3	1.05	1.09	4.60	4.06	Cane/none
P26	CMT	2	Dorsal AFO	1	Leather+iron	-	0.11	0.7	0.69	0.71	6.62	5.72	Walker/walker
P27	Partial paraplegia	2	DF-stop AFO	1	Carbon	0.05	-	1.1	0.85	0.85	6.16	5.45	2 Canes/none
P28	CMT	2	OS	1	Leather+carbon	-	-	0.9	1.00	1.40	5.55	4.67	None/none
P29	CMT	2	Dorsal AFO	2	Polypropylene	0.04	0.3	0.3	0.81	1.01	4.97	4.31	None/none
P30	CMT	2	OS	1	Leather	-	0.25	1	0.46	0.61	6.83	6.09	Cane/cane
P31	CMT	2	OS	1	Leather+iron	-	-	0.8	0.79	0.93	4.79	4.54	Crutch/crutch
P32	CMT	2	Dorsal AFO	2	Carbon	0.28	0.55	0.2	1.14	1.16	4.08	4.68	None/none
P33	CMT	2	Ventral AFO	1	Carbon	0.33	1.8	0.3	0.80	1.01	5.36	4.11	None/none
P34	CMT	2	Ventral AFO	2	Carbon	-	-	0.2	0.84	1.06	6.64	5.50	Cane/none

CMT: Charcot Marie Tooth disease; CIDP: chronic inflammatory demyelinating neuropathy; AFO: ankle-foot orthosis; OS: orthopaedic shoes; DF: dorsal flexors.