

Supplementary Table S2. Characteristics of included non-randomized studies.

References	Study design	Population	Mean Age	Diagnosis	Level of function	Usage period	Comparison	Outcome	Results
Abel M F et al. 1998 [14]	Retrospective study	35, sex unspecified	8.7 yrs, range 2.5 to 19 yrs	SDCP, 18 equinus, 17 plano-valgus and crouch	GMFCS: I (14 pt), II-III (21 pt)	Unsp	AFO vs BF	3DGA: STP, sagittal kinematics and kinetics	<p>Ws (m/sec): AFO .82±.32, BF .72±.30</p> <p>SL (m): AFO .79±.25, BF .69±.22</p> <p>SS (%): AFO 35.0±5, BF 33.2±6.2</p> <p>DS (%): AFO 30±10, BF 33.9±12</p> <p>ST (%): AFO 65±5.1, BF 67±6.2</p> <p>max KF (°): AFO 59.9±13, BF 56.3±13</p> <p>ankle at IC(°): AFO 6.91±7.9, BF 1.26±12</p> <p>max ankle PF(°): AFO 2.6±7.4, BF -9.05±15</p> <p>ankle excursions(°): AFO 13.7±8.5, BF 25.8±15</p> <p>pelvic excursions (°): AFO 8.13±2.9, BF 6.96±2.7</p> <p>hip excursions (°): AFO 45.2±9.5, BF 40.8±9.7</p> <p>knee excursions (°): AFO 42.0±13, BF 36.8±13</p> <p>ankle pw burst 0 to 30% in the equinus subgroup (watts/kg): AFO .38±.43, BF .68±.60</p> <p>ankle pw burst 30 to 80% in the equinus subgroup (watts/kg): AFO .89±.35, BF 1.38±.35</p> <p>ankle PF moment 30 to 80% in equinus subgroup (Nm/kg): AFO 1.10±.61, BF .94±.42</p>
Altschuck N et al. 2019 [15]	Non-randomized controlled trial	16, sex unspecified	9 yrs, range 4-14 yrs	SHCP with drop foot	GMFCS: I (14 pt), II (2 pt)	Unsp	cAFO vs BF vs shoes	3DGA: kinematics, STP and GPS	<p>max DF Sw (°): cAFO 9.19±5.2, shoes 3.94 ±5.2, BF -1.06 ±4.7</p> <p>mean DF Sw (°): cAFO 6.70 ±5.3, shoes 3.30±5.9, BF -7.73±4.2</p> <p>DF IC (°): cAFO 6.06±5.6, shoes -3.21±5.9, BF -5.59±3.6</p> <p>ankle movement LR (°): cAFO -2.64±2.4, shoes -0.80±1.2, BF -0.08±0.3</p> <p>sole angle IC (°): cAFO -103.50±6.2, shoes -93.75±4, BF -88.38±3.6</p> <p>sole angle MS (°): cAFO -88.79±3.4, shoes -87.53±2.9, BF -86.68±2.3</p> <p>mean DF SS (°): cAFO 13.71±4.6, BF 9.16±5.3</p> <p>max PF PSw (°): cAFO -7.26±6, shoes -1.75±7.6, BF 4.15±4.1</p> <p>max pw PSw (w/kg): cAFO 1.48±.5, shoes 2.13±.7, BF 2.25±.8</p> <p>max KF ST (°): cAFO 31.48±11.1, BF 28.35±8.5</p> <p>SL (m): cAFO 1.15±.1, BF 1.07±.1</p> <p>Cad (steps/min): cAFO 120.5±10.7, shoes 124.1±12.0, BF 130.5±14.2</p>
Bahramizadeh M et al. 2015 [16]	Non-randomized controlled trial	8, 4 M and 4 F	9.6 ± 3.84	SDCP	GMFCS: I (2 pt), II (3 pt), III (3 pt)	6 wk hours/d)	<p>mGRAFO vs shoes at T0</p> <p>mGRAFO at T1 vs shoes at T0</p> <p>mGRAFO at T0 vs T1</p>	3DGA: STP, kinematics	<p>Ws (m/s): mGRAFO at T1 0.45±.02, mGRAFO at T0 .42±.029 m/s, shoes at T0 .31±.03</p> <p>SL (m): mGRAFO at T1 50.62±3.20, mGRAFO at T0 49.87±3.04, shoes at T0 41.25±2.60</p> <p>ankle ROM (°): mGRAFO at T1 14.5±1.19, mGRAFO at T0 16.12±1.72, shoes at T0 30.37±1.40</p> <p>max DF (°):mGRAFO at T1 11.62±3.66, mGRAFO at T0 13.37±1.59, shoes at T0 25.12±1.24</p> <p>max PF (°): mGRAFO at T1 1.62±.74, mGRAFO at T0 2.75±.70, shoes at T0 5.25±.03</p> <p>knee ROM (°): mGRAFO at T0 36.5±13.23, shoes at T0 39±1.3</p> <p>max KE (°): mGRAFO at T1 2±.75, mGRAFO at T0 4.5±.92, shoes at T0 8±.75</p> <p>max KF (°): mGRAFO at T1 45.5±.75, shoes at T0 47±1.19</p> <p>max HF at IC (°): mGRAFO at T1 25±.75, shoes at T0 27±1.06</p> <p>max HE at ST (°): mGRAFO at T1 5.5±.92, mGRAFO at T0 2.62±.51, shoes at T0 2.5±.75</p>

Balaban B et al. 2007 [17]	Non-randomized controlled trial	11, 7 M and 4 F	7.18 ± 1.16 yrs	SHCP with dynamic equinus	GMFCS: I and II	Use for at least two months prior to participation in the study	HAFO and BF	3DGA: dynamic efficiency of gait and energy expenditure	ws (m/s): HAFO .89±.08, BF .70±.06 SL (m): HAFO .90±.09, BF .73±.07 SS time (s): HAFO .38±.02, BF .36±.02 DS (s): HAFO.18±.04, BF .23±.09 ankle DF at IC (°): HAFO 4.79±3.82, BF -4.28±3.26 ankle DF at MS (°): HAFO 11.59±7.19, BF 5.81±4.53 max ankle DF in ST (°): HAFO 19.32±7.07, BF 11.37±4.59 max ankle DF in MSw (°): HAFO 8.27±4.96, BF -3.61±6.23 KF at IC (°): HAFO 8.48±6.65, BF 16.58±9.33 Peak ankle pw generation in Sw (W/kg): HAFO 1.61±1.17, Bf 1.96±1.25 Oxygen consumption (ml/kg/min): HAFO 8.81±1.68, BF 9.50±1.83
Bennett BC et al. 2012 [18]	Non-randomized controlled trial	21, 16 M and 5 F	9.6 ± 4.12 yrs	SDCP	GMFM 93±7	Unsp (clinically prescribed)	SAFO (11) or HAFO (10) vs BF	3DGA: kinematics, kinetics and energy recovery	SL (m): SAFO/HAFO 1.06±.17, BF.94±.15 ws (m/sec): SAFO/HAFO 1.10±.21, BF 1.01±.16 energy recovery (%): SAFO/HAFO 48.1±15.9, BF 40±16.2 variation of Ken (J/Kg): SAFO/HAFO .22±.08, BF .16±.05 PE/KE: SAFO/HAFO 1.94±.70, BF 2.14±.48 Center of mass vertical excursion (cm): SAFO/HAFO 4.1±1.2, BF 3.4±.9
Bohm H et al. 2018 [19]	Non-randomized crossover study	22, sex unspecified	11.9 yrs ± 2.6, range 6-17 yrs	BSCP	GMFCS: II-IV	> 3 mo	GRAFO vs BF vs shoes 12 pt max KE ≥ 8.8° (10-28°, mean 17±5°) -> GR; 10 pt max KE < 8.8° (-4-8°, mean 4±5°)-> NR.	3DGA: kinetics, kinematics, STP	strenght KE (MRC): NR 3.8±.7, GR 3.1±.8 strenght PF (MRC): NR 2.1±1.2, GR 1.2±.5 ws (m/s): NR GRAFO .74±.3, GR GRAFO .38±.22, NR BF .72±.34, GR BF .33±.17 FPA (°):GR GRAFO -11.1±17.2, NR shoed 2.7±12.8, GR shoed -17.8±15.1, NR BF 1.1±14.3, GR BF -18.6±11.4 KE IC (°): NR GRAFO 40.3±13.9, NR BF 45.6±11.5 pelvis flexion (°): GR GRAFO 15.2±8.8, GR BF 14.3±6.5 peak HE (°): GR GRAFO 7.4±19.9, GR shoes 11.1±17, GR BF 14.6±16.3 peak KE IC (°): GR GRAFO 37.6±9.1, GR shoes 47.7±9.8 knee rotation stance (°): GR GRAFO -.8±6.7, GR shoes -27.8±15.8, GR BF -26±13.1
Brehm MA et al. 2008 [20]	Retrospective study	172, 110 M and 71 F	9 ± 3 yrs, range 4-18 yrs	HCP (21 pt), SDCP (97 pt), QUAD (54 pt)	Unsp	Unsp (clinically prescribed)	SAFO vs PLS vs shoes vs BF	3DGA: ND speed, NN-cost, NN-cost% For 80 pt, 3DGA: kinematics, kinetics, GGI	Ws: ↑9% with SAFO/PLS vs BF, ↑8.2% with SAFO vs BF, ↑9% with PLS vs BF NN-cost: ↓6% with SAFO/PLS vs BF, ↓8.1% with PLS vs BF, in QUAD group ↓10.5% NN-cost %: ↓9% with SAFO/PLS vs BF, ↓13% with PLS vs BF, in QUAD group ↓20% Correlation: NN-cost and KF in ST; NN-cost% and in KF TSw. minimal KF angle in ST (°): GR AFO 9.6±9.9, BR AFO 13±11.2, GR BF 9.8±11.3, BR BF 11.3±10.5 minimal KF angle in Sw (°): GR AFO 26.6±11.4, BR AFO 27.1±12.1, GR BF 29.5±9.1, BR BF 29.1±8.9

Contini B et al. 2019 [21]	Observational pre and post cross over study	10, 7 M and 3 F	7,6 yrs, range 4-11 yrs	SDCP	GMFCS: I (3pt), II (7 pt)	20 days of daily use of each configuration	SAFO vs HAFO vs BF	STP (10 biomechanical features), stability and symmetry of gait	average step length (step length/leg length): BF .62±.23, Δ SAFO-BF +.06±.12 acceleration attenuation (%): BF -73±23, Δ SAFO-BF -11±18 Trunk ML stability (°): BF 8.98±2.30, Δ HAFO-BF +1.71±1.62
Crenshaw S et al. 2000 [22]	Non-randomized controlled study	8, 5 M and 3 F	8,4±1,9, range 4-11 yrs	SDCP	Unsp	4 wk accommodation period allowed for each of the three devices	HAFO, TRAFO, SMO vs shoes	3DGA: kinetics, kinematics, STP	SL (cm): TRAFO 98.25±10.56, shoes 86.88±16.91 PF a HS (°): TRAFO 2.16±2.68, AFO 3.86±4.24, SMO 8.51±5.45, shoes 8.73±4.91 max PF in ST (°): TRAFO 3.54±2.85, AFO 5.90±4.05, SMO 10.40±4.30, shoes 10.90±3.96 max PF in ST (°): TRAFO 3.54±2.85, SMO 10.40±4.30 time to max PF in ST: TRAFO 3.81±3.37, SMO 25.25±29.93 max DF in ST (°): TRAFO 10.61±4.87, AFO 10.53±6.20, SMO 5.78±6.93 time to max DF in ST: TRAFO 51.25±1.77, SMO 40.44±15.48, shoes 39.94±17.13 PF at TO (°): TRAFO -3.10±3.98, AFO -1.01±5.58, SMO 5.86±6.93, shoes 5.21±6.78 max PF in Sw (°): TRAFO 3.24±2.05, AFO 5.15±3.75, SMO 18.80±7.95, shoes 18.24±7.44 time to max PF in Sw: TRAFO 78.56±13.57, AFO 74.75±11.93, SMO 69.13±3.54, shoes 71.75±7.81 max PF moment (nm/kg): TRAFO 1.058±.135, AFO 1.070±.141, SMO .903±.135, shoes .943±.156 max DF moment (nm/kg): TRAFO .085±.081, AFO .108±.103, SMO .026±.041, shoes .038±.070 max ankle pw absorption (w/kg): AFO 1.29±.45, SMO .97±.31, shoes .97±.34 ankle pw absorption (w/kg): TRAFO 17.8±7.20, AFO 22.42±8.06, SMO 14.94±6.33, shoes 16.40±7.05 ankle pw generation (w/kg): TRAFO 8.25±4.30, shoes 14.94±6.38 max ankle pw generation (w/kg): AFO 1.28±.48, SMO 1.00±.41 time to max KF in Sw: TRAFO 73.94±3.40, AFO 74.81±3.62, SMO 76.06±3.71, shoes 76.81±3.92 hip pw generation (w/kg): AFO 32.15±13.06, SMO 21.98±12.14 hip max extensor moment (nm/kg): AFO .784±.320, SMO .596±.268
							AFO vs SMO		Ws (cm/min): HCP AFOs 96.32, HCP BF 85.27, DCP AFO 79.17, DCP BF 72.07 sl (cm): HCP AFOs 53.79, HCP BF 44.29, DCP AFOs 41.53, DCP BF 37.38 SL (cm): HCP AFOs 105.35, HCP BF 90.45, DCP AFOs 83.14, DCP BF 74.57 Cad (step/min): HCP AFOs 122.54, HCP BF 131.43
							TRAFO vs SMO		internal FPA in MSw (°): DCP AFOs vs BF ↑ 4.29 (2.4-6.17) internal FPA in MSt (°): DCP AFOs vs BF ↑ 3.72 (1.43-6.02) Pearson correlation between the rotational profile (femorale AV and thigh foot angle) and the FPA at MSt: with AFO FPA and femoral AV .353, with AFO FPA and thigh foot angle .413; BF FPA and femoral AV .333 Pearson correlation between the rotational profile (femorale AV and thigh foot angle) and the FPA at MSw: with AFO FPA and femoral AV .256, with AFO FPA and thigh foot angle .548; BF FPA and femoral AV .3, BF FPA and thigh foot angle .343
Danino B et al. 2015 [23]	Retrospective study	97, 58 M and 39 F	8,5, ange 3.3 to 16.5	HCP (29 pt), DCP (68 pt)	GMFCS: I (62 pt), II (13 pt), III (22 pt)	Unsp	AFOs (HAFO, SAFO, DAFO, PLS) vs BF	3DGA: STP, kinematics (FPA), kinetics	

De Souza MA et al. 2016 [24]	Prospective crossover study	20 M	7,5±2,3	DMD	Unsp	Unsp	7 NoO; 6 DO tested with and without orthoses; 7 NiO	3DGA: STP, kinematics, kinetics	max DF (°): DOWith 6.5±6, NoO -3.4±11.8 max PF (°): DOWith 7.5±4.3, NoO 28.8±12.9, NiO 30.9±8.8 ankle ROM (°): DOWith 14±4.5, NoO 25.4±9.8, NiO 30.7±5.4 max DF moment (nm/kg): DOWith .13±.09, NoO .04±.04, NiO .1±.16 Ankle Pw Generation (watts/kg): DOWith .7±.4, NoO 2.9±2.2 max HF moment (nm/kg): DOWithout .2±.1, NoO .3±.1, NiO .3±.1 max PF moment (nm/kg): DOWithout .8±.26, NoO 1.10±.24 ankle DF/PF moment range (nm/kg): DOWithout .8±.2, NoO 1.1±.2 Cad (steps/min): DOWith 105.5±16.7, NiO 132.4±22.4 max HF (°): DOWith 39.9±8, NiO 48.6 HPwA (watts/kg): DOWith .2±.1, NiO .5±.2, NoO .3±.1 KPwA (watts/kg): DOWith .4±.4, NiO 1.1±.6 max KF (°): DOWithout 56.5±6.2, NiO 64.3±5.4, NoO 55.9±7.5
Dobler F et al. 2023 [25]	Retrospective controlled cross-over study	27, 14 M and 13 F	10,9±3,3	BSCP (15 pt), USCP (12 pt)-> 40 legs	GMFCS: I (12 pt), II (15 pt)	Unsp	AFO (7 ventral shell AFO, 20 dorsal shell AFO) vs BF	3DGA: STP, kinematics, kinetics	ws (m/s): AFO 1.10±.21, BF 1.04±.21 sl (m): AFO .57±.08, BF .49±.07 cad (s ⁻¹): AFO 114±15, BF 123±16
Dursun E et al. 2002 [26]	Non-randomized controlled study	24, 10 M and 14 F	6.66±0.73, range 3-14 yrs	SDCP (16 pt), HCP (8 pt)	Unsp	≥ 2 mo	AFO vs BF	Videotape recordings, STP: ws, cad, SL, SW, CGAS	ws (m/min): AFO 33.50±2.72, BF 30.79±2.48 SL (cm): AFO 31.36±1.96, BF 29.08±2.07 CGAS: AFO 17.96±2.62, BF 30.79±3.15
Galli M et al. 2016 [27]	Non-randomized crossover study	21, 12 M and 9 F	HCP range 4-13 yrs; DCP range 5-14 yrs	HCP (11 pt), DCP (10 pt)	GMFCS: I-II	Unsp	DAFO (12 pt), HAFO (9 pt) vs BF	3DGA: STP, kinematics, kinetics; GVS; GPS	GVS pelvic tilt (°): DCP DAFO/HAFO 6.5±2.6, DCP BF 7.9± 2.2 GVS ankle DF-PF (°): DCP DAFO/HAFO 8.5±2.3, DCP BF 11.5±3.1, HCP DAFO/HAFO aff 7.1±1.8, HCP BF aff 9.9±2.4, HCP DAFO/HAFO less-aff 9.6±1.5, HCP BF less-aff 7.6±1.1 GPS (°): HCP DAFO/HAFO aff 8.8±1.4, HCP BF aff 11.8±2.2 GVS Pelvic Rotation (°): HCP DAFO/HAFO aff 4.9±1.2, HCP BF aff 7.9±2.2, HCP DAFO/HAFO less-aff 5.2±1.7, HCP BF less-aff 8.7±2.4 GVS Pelvic Obliquity (°): HCP DAFO/HAFO aff 3.4±1.1, HCP BF aff 4.3±1.9, HCP DAFO/HAFO less-aff 2.9±1.3, HCP BF less-aff 4.7±1.9 GVS knee FE (°): HCP DAFO/HAFO aff 12.9±2.9, HCP BF aff 16.6±4.4 GVS hip Ab-Ad (°): HCP DAFO/HAFO less-aff 5.2±2.9, HCP BF less-aff 8.3±2 GVS Foot Progression (°): HCP DAFO/HAFO less-aff 5±2.7, HCP BF less-aff 9.8±3.9
Hassani S et al. 2004 [28]	Non-randomized crossover study	16, sex unspecified	7.5 ± 2.9 yrs	SDCP	Unsp	1 mo wearing each AFO with 2 wk without AFO between usage period	HAFO vs DAFO vs BF	3DGA: STP, kinematics, kinetics	peak DF in St: differences between (↑) HAFO/DAFO and BF peak PF in Sw: differences between HAFO/DAFO and BF peak KF in Sw: differences between HAFO/DAFO and BF peak HF in ST: differences between HAFO/DAFO and BF peak PF moment: differences between HAFO/DAFO and BF peak KF in St: differences between HAFO and BF
Hayek S et al. 2007 [29]	Retrospective study	56, 32 M and 24 F	8.9 yrs, range 4–17 yrs	SDCP (38 pt), SHCP (18 pt)	GMFCS: I (33 pt), II (23 pt)	Unsp (clinically prescribed)	AFO vs BF	STP, IS	ankle DF at IC (°): ↑ AFO vs BF of average 8.5 cad (step/min): SHCP AFO 120.08±16.9, SHCP BF 131.8±22.8 SL (cm): SHCP AFO 108.6±23.7, SHCP BF 97.22±21.4, SDCP AFO 82.42±19.2, SDCP BF 70.10±19.2 ws (cm/min): SDCP AFO 74.89±30.5, SDCP BF 63.57±30.9

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Kerkum YL et al. 2015 a [33]	Prospective cohort study	10, 8M and 2F	10±2	SDCP	GMFCS: I-II	4 wk	vAFO at baseline vs after 4 wk acclimatization	3DGA: STP, kinematics, kinetics	No significant changes for the investigated parameters.
Lam WK et al. 2005 [34]	Non-randomized crossover study	13, 7 M and 6 F	5.9 ± 1.81 yrs, range 3.3–9.7 yrs	SDCP with dynamic equinus	Unsp	Unsp (clinically prescribed)	AFO vs DAFO vs BF	3DGA: kinetics, kinematics; sEMG (rectus femoris, hamstrings, tibialis anterior and calf muscles) with RMS of each muscle groups	SL (m): DAFO .81±.15, AFO .74±.15, BF .69±.14 ankle angle at IC (°): DAFO 4.66±4.74, AFO 3.36±5.29, BF -6.32±6.96 max DF in ST (°): DAFO 15.26±5.37, AFO 12.32±6.07, BF 2.87±10.03 max DF in Sw (°): DAFO 5.62±5.57, AFO 3.29±4.53, BF -4.57±8.35 max PF in Sw (°): DAFO -4.47±6.97, AFO -.12±5.29, BF -19.52±12.22 ankle ROM (°): AFO 12.44± 5.55, BF 22.39±6.78 time of occurrence of max DF in Sw: DAFO 45.91±1.66, AFO 45.63±2.77, BF 45.50±1.34 knee angle at IC (°): DAFO 29.14±8.64, BF 24.30±6.97 knee angle at TSt (°): DAFO 5.33±9.11, BF 3.97±9.38 hip angle at IC (°): DAFO 42.19±10.18, BF 36.90±8.22 GRF at 2 nd peak: AFO .97±.06, BF .89±.11 mPF moment in ST: DAFO 1.11±0.43, AFO .96±.27, BF .69±.25 mDF moment in ST: AFO .03±.24, BF .04±.06 median frequency in calf muscle: ↓ AFO vs DAFO and BF RMS in calf muscle: ↑ AFO vs BF RMS of the hamstrings: ↑ DAFO vs BF
Limpaninla chat S et al. 2021 [35]	Cross-sectional comparative	26, 17 M and 9 F	9,3±0,47	SDCP	GMFCS: I-II-III	↑6 mo, hrs/day, days/wk	HAFO, SAFO	STP, EEI, FRT, GMFM	normalized functional reach test by height: HAFO 10.7±2.3, SAFO 8.36±3.4 without assistive devices: HAFO 11.3±2.3, SAFO 7.8±2.8 SL normalized by leg length (cm/cm): HAFO 1.19±.35, BF 1.05±.26, without assistive devices: HAFO 1.45±.28, SAFO .96±.15 ws normalized by leg length (m/s-m): HAFO 1,39±.34, SAFO .92±.20 sl: ↑ HAFOf and HAFOc vs BF Cad: ↓ HAFOf and HAFOc vs BF activity of MG in ES (6-23%): ↓ HAFOf vs BF activity of TA in ES (17-23%): ↓ HAFOf vs BF activity of MG in LS (44-68%) and late Sw (88-95%): ↑ HAFOf vs BF activity of TA in Sw (73-81%): ↓ HAFOf vs BF total muscle activity for TA: ↓ 9% HAFOc vs BF activity of MG in ES (4-20%) and TA (5-27%): ↓ HAFOc vs BF activity of TA in Sw (65-86%): ↓ HAFOc vs BF activity of MG from St to Sw (48-57%) and from Sw to ST (85-4%): ↓ HAFOc vs HAFOf activity of TA from Sw to ST (95-9%) and in SS (20-24%): ↓ HAFOc vs HAFOf activity of MG in SS (13-25%): ↑ HAFOc vs HAFOf
Lindskov L et al. 2020 [36]	Prospective repeated measures trial	17, 11M and 6F	8,4±1,3	SHCP	GMFCS: I-II	Unsp	HAFOc, HAFOf, BF	EMG in MG e TA, STP	activity of MG in ES (4-20%) and TA (5-27%): ↓ HAFOc vs BF activity of TA in Sw (65-86%): ↓ HAFOc vs BF activity of MG from St to Sw (48-57%) and from Sw to ST (85-4%): ↓ HAFOc vs HAFOf activity of TA from Sw to ST (95-9%) and in SS (20-24%): ↓ HAFOc vs HAFOf activity of MG in SS (13-25%): ↑ HAFOc vs HAFOf
Liu X et al. 2014 [37]	Prospective cohort study	23, sex unspecified	8,6, range 4,5-16,6 yrs	7 HCP, 16 DCP	GMFCS: I (11 pt), II (5 pt), III (5 pt), IV (2 pt)	Unsp (clinically prescribed)	SMO (9 pt, 12 limbs), SAFO (5 pt, 10 limbs), HAFO (10 pt, 16 limbs) vs BF	EMTS (62S model): kinematics	ankle DF(+)/PF(-) at LR (°): HAFO 4.8±6.8, BF -4.5±5.3 ankle DF(+)/PF(-) at TSt (°): HAFO 7.7±7.6, BF 2.1±6.1 ankle DF(+)/PF(-) at PSw (°): HAFO 6.6±9.7, BF -5.5±8.1 ankle DF(+)/PF(-) at ISw (°): HAFO 5.2±8.8, BF -2.7±9.2 forefoot DF(+)/PF(-) at PSw (°): HAFO 6.1±3.4, SMO 8.1±7.4, BF 19.0±11.1 forefoot DF(+)/PF(-) at at ISw (°): HAFO 3.8±4.2, SMO 2.1±7.4, BF 12.9±10.3 forefoot DF(+)/PF(-) at MSw (°): SMO -0.8±8.1, BF 10.2±6.4 forefoot DF(+)/PF(-) at at TSsw (°): HAFO 5.2±4.1, SMO 2.6±7.1, BF 12.2±8.2

Liu X et al. 2018 [38]	prospective cohort study	23, sex unspecified	10.5 yrs, range 6.2-18.1 yrs	7 SHCP, 16 SDCP	GMFCS: I (10 pt), II (5 pt), III (4 pt), IV (2 pt)	Unsp (clinically prescribed)	SAFO (5) or HAFO (10) vs SMO (9) vs BF, from initial visit to follow up (18-mo) and at the final visit	3DGA: STP, kinematics	midfoot DF(+)/PF(-) at ISw (°): SMO -8.2±6.2, BF -2.9±5.0 ROM forefoot DF(+)/PF(-) at TSt (°): HAFO 4.8±2.2, SAFO 5.1±2.9, SMO 8.2±2.5, BF 11.3±5.5 ROM forefoot DF(+)/PF(-) ISw (°): HAFO 2.4±1.7, BF 7.7±4.7 ROM forefoot DF(+)/PF(-) LR (°): SMO 3.6±2.6, BF 9.6±4.5 forefoot DF(+)/PF(-) in MSt (°): SAFO final visit -1.4±6.6, SAFO initial visit 4.4±5.5 forefoot DF(+)/PF(-) in TSt (°): SAFO final visit .8±8.4, SAFO initial visit 8.4±7.8, SMO 1.6±4.4, BF 7.5±6.4 eversion in TSsw (°): SMO 2±5.4, BF 7.3±4.5 forefoot DF(+)/PF(-) at LR (°): SMO .4±4.5, BF 6.2±4.1 forefoot DF(+)/PF(-) in PSw (°): SMO 4.5±6.4, BF 17.9±8 forefoot DF(+)/PF(-) in ISw (°): SMO -2.1±7, BF 9.4±5.5 forefoot DF(+)/PF(-) in MSw (°): SMO -3.5±7.2, BF 6.5±3.8 forefoot DF(+)/PF(-) in TSsw (°): SMO .2±6.4, BF 11.3±4 ROM forefoot DF(+)/PF(-) at LR (°): SMO 4.1±2.6, BF 9.9±3.7 ROM forefoot DF(+)/PF(-) in TSt (°): SMO 5.5±2.1, SAFO 4.0±2.2, BF 12.3±3.5 ROM forefoot DF(+)/PF(-) in PSw (°): HAFO 5.7±4.2, BF 13.5±13.9
Lucarelli PR et al. 2007 [39]	Retrospective study	71, sex unspecified (142 limbs)	12.2 ± 3.9 yrs	SDCP	GMFCS not specified. Group I (max KE <15°) 14 pt; Group II (15°>max KE <30°) 57 pt; Group III (max KE>30°) 71 pt.	Unsp (clinically prescribed)	GRAFO vs BF	3DGA: kinematics, in the stance phase of the gait cycle	Group I: no differences. Group II GRAFO vs BF: max KE (15.7 ± 10.2) in St and ankle DF in St (11.5 ± 9.0). Group III GRAFO vs BF: max KE (37.6 ± 11.4) in St and ankle DF in St (4.2 ± 7.6).
Majewska J et al. 2020 [40]	Prospective cohort study	37, 18M and 19F	13,7±4,2	HCP (16R, 21L)	GMFCS: I	1 mo	PLS, AFO vs BF	3DGA: STP, kinematics, kinetics; GVI, GDI	SL (cm): PLS/AFO aff .66±.11, BF aff .60±.12, PLS/AFO less-aff .69±.12, BF less-aff .64±.11 Ws: PLS/AFO 1.11±.23, BF .96±.22 Cad (step/min): PLS/AFO 118.23±21.3, BF 128.7± 21.3 DF IC (°): PLS/AFO aff 4.34±4.26, BF aff -4.73±5.31, PLS/AFO less-aff 8.27±7.62 BF less-aff 2.33±5.42 DF Sw (°): PLS/AFO aff 8.29±6.62, BF aff -2.03±7.43, PLS/AFO less-aff 10.32±7.13, BF less-aff 6.21±7.24 KF+HF (°): PLS/AFO aff 19.48±9.31, BF aff 27.13±9.47 KF+HF (°): PLS/AFO aff 114.37±10.82, BF aff 121.21±11.1, PLS/AFO less-aff 112.02±9.23, BF less-aff 117.19±12.71 GVI: PLS/AFO aff 83.1±8.74, BF aff 74.2±9.48, PLS/AFO less-aff 86.5±8.32, BF less-aff 78.6±7.67 GDI: PLS/AFO aff 75.1±10.7, BF aff 68.6±12.3, PLS/AFO less-aff 82.3±9.7, BF less-aff 77.9±10.4
Melanda et al. 2020 [41]	Retrospective cross-sectional study	24, 14 M and 10 F	11, range 5-17 yrs	BCP	GMFCS: I (1 pt), II (13 pt), III (9 pt), IV (1 pt).	At least 2 mo	AFO (10 pt), HAFO (14 pt) vs BF	3DGA: STP, kinematics, kinetics; GVS, GPS	ws (cm/sec): AFO 82.31 [36.70-89.25], BF 68.85 [25.95-80.50] SL (cm): AFO 77.65±4.58, AFO 68.62±4.15 Right sl (cm): AFO 40.28±2.28, BF 35.15±2.16 Left sl (cm): AFO 37.82±2.49, BF 33.42±2.20 GVS left hip abduction-adduction (°): AFO 6.44 [5.31-8.97], BF 5.76 [4.42-8.85]

Meyns P et al. 2016 [42]	Non randomized crossover study	15, 11 M and 4 F	10±2	SDCP	GMFCS: I-III	Unsp	Three configurations of spring HAFO (rigid- 3.8 N m deg ⁻¹ , stiff- 1.6 N m deg ⁻¹ and flexible 0.7 N m deg ⁻¹) vs shoes	3DGA: kinematics (trunk ROM in three planes), STP; nEC	Trunk LF ROM (°): Rigid HAFO 20.5±7.9, stiff HAFO 21.9±8.5, flexible HAFO 22.6±7.8, shoes 16.7±6.0 Trunk rotation ROM (°): Rigid HAFO 18.4±4.9, stiff HAFO 15.0±6.2, flexible HAFO 13.4±5.9, shoes 11.9±4.4 NetEC (J·kg ⁻¹ ·min ⁻¹): Rigid HAFO 5.5±1.1, stiff HAFO 5.4±1.2, flexible HAFO 5.6±1.5, shoes 6.1±1.7 Correlation between nEC and trunk tilt .419 and LF .576
Mossberg KA et al. 1990 [43]	Non randomized controlled study	18 (10 M and 8 F)	8,3±2,8; range 3-14 yrs	SDCP	Unsp	Unsp (clinically prescribed)	AFO vs BF	PCI, HR, ws	PCI (beats/meter): AFO 1.34±.69, BF 1.51±.79
Oudenhoven LM et al. 2021 [44]	Non randomized controlled study	18, 13 M and 5 F	10.83±2.9 yrs, range 6–17 yrs	HCP (10 pt) or BCP (8 pt)	GMFCS: I (10 pt), II (8 pt)	Unsp (clinically prescribed)	AFO: PLS (12 pt), HAFO (1 pt), dorsal AFO (4 pt), ventral AFO (1 pt) (heel height incremente d by wedges of 5, 10, and 15mm) vs NS-SHOES Two groups: - knee hyperextension (EXT) (9 pt) - excessive knee flexion (FLEX) (9 pt)	3DGA on a treadmill: sagittal hip and knee angles and moments; SVA; foot to horizontal angle; GPS	BF, FLEX vs EXT: HF-HE angles at MST (9±6°vs 2±5°), KF-KE angles at MST (21±5°vs 8±7°), SVA (15±3°vs 8±4°) AFO FLEX group vs NS-SHOES FLEX group: ↑ HE at TSt (8.0±8.4°vs 9.3±8.6°), ↓ knee angle at IC (24,4±9,2°vs 26,8±5,6°), ↓ F2H at IC (–5.3±8.3 vs –3.1±4.6) AFO EXT group vs NS-SHOES EXT group: ↓ HE at TSt (–1.6±9.4°vs 2.4±8.0°), ↓ knee angle at IC (14,3±9,0°vs 15.1±8.7°), ↓ F2H at IC (11.7±9.6 vs –0.41±6.3) AFO FLEX vs EXT significant difference of: knee angles at MST (16.3±4.8°vs 13.1±6.7°), F2H at IC (–5.3±8.3°vs –11.7 ±9.6°), internal knee moments at TSt (–0.29±0.16° vs –0.35±0.17°) and PKF (0.24±0.24°vs 0.40±0.22°)
Ounpuu S et al. 2021 [45]	Prospective cohort study	15 (9 M, 6F)	12± 4,4	CMT	Unsp	Unsp	HAFO, SAFO, GRAFO, PLS vs BF	Strength, PROM, 3DGA: STP, kinematics, kinetics	sl (m): AFO .57±.13, BF .49±.11 SL (m): AFO 1.13±.23, BF .96±.22, subgroup equinus in MSw AFO 1.10±.22, subgroup equinus in MSw BF .93±.23 Cad (steps/min): AFO 106±21, BF 114±27 Ws (m/sec): AFO 1.13±.23, BF .91±.31 Ankle IC (°): AFO 1±6, BF -10±7, subgroup equinus in MSw AFO 1±7, subgroup equinus in MSw BF -12±7 Peak PF Sw: AFO -5±8, BF -21±13

Author	Study Design	Age	Sex	Duration	Intervention	Control	Outcome Measures	Results
Pauk J et al. 2016 [46]	Case-control study	20, 9 and 11	M and F	1 yr	SDCP	GMFCS: I (5 pt), II (15 pt)	Typical children vs CP with AFO (10 pt) vs CP BF group (10 pt)	Peak PF mid 1/3 Sw (°): AFO 0±5, BF -11±10, subgroup equinus in MSw AFO 0±7, subgroup equinus in MSw BF -14±8 Sagittal ROM ankle (°): AFO 27±9, BF 39±13 Peak PF moment (nm/kg): AFO .85±.29, BF .71±.30 Peak DF moment loading (nm/kg): AFO .19±.10, BF .02±.04, subgroup equinus in MSw AFO .197±.09, subgroup equinus in MSw BF .015±.037 FPA (°): AFO -4±16, BF -13±15 Peak HF Sw (°): AFO 43±7, BF 48±9 Pearson correlations: PF strength and Peak DF ST -.708, PF strength and peak OF moment St .606, PF strength and peak pw generation St .591, PF strength and ws .664, DF strenght and peak PF middle 1/3 Sw .619, DF strenght and peak HF Sw
Radtka SA et al. 1997 [47]	Non-randomized crossover study	10, 6 and 4	M and F	2 wks	SDCP (6 pt) and HCP (4 pt)	Unsp	SAFO vs DAFO vs BF	ws (m/sec): AFO 1.09±.16, BF .92±.24, Typical 1.12±.13 SL (cm): AFO 88.9±13.6, BF 85.8±21.4, typical 102.4±9.5 sl (cm): AFO 43.4±8.5, BF 44.2±11.4, typical 51.03±4.9 Cad (steps/min): AFO 148±21.6, typical 125.2±17.6 Toes pressure (N/cm2): AFO 6.1±1.2, BF 6.3±1.8, typical 3.5±.8 Metatarsal heads (N/cm2): AFO 9.9±2.4, BF 10.3±3.1, typical 5.9±1.3 Medial arch (N/cm2): AFO 3.3±1, BF 3.8±1.2, typical 2±.6 Heel (N/cm2): AFO 5.8±.7, BF 5.7±.9, typical 8.3±.6
Rethlefsen S et al. 1999 [48]	Non-randomized crossover study	21, 13 and 8	M and F	4-6 wks	SDCP	Unsp	SAFO vs HAFO vs BF	SL (cm): initial 2-wk NoO 85.14±12.69, SAFO 95.23±16.64, second 2-wk NoO 86.13±10.26, DAFO 95.78±13.96 Cad (steps/min): initial 2-wk NoO 152.21±16.95, SAFO 137.62±10.59, second 2-wk NoO 152.78±16.56, DAFO 136.70±9.27 Ankle DF(+)/PF(-) at IC (°): initial 2-wk NoO -7.52±5.24, SAFO 3.24±4.12, second 2-wk NoO -8.73±6.94, DAFO 2.17±5.16 Ankle DF(+)/PF(-) at MSt (°): initial 2-wk NoO -3.86±5.40, SAFO 7.83±3.95, second 2-wk NoO -3.48±10.05, DAFO 8.93±5.19 DF at IC (°): HAFO 4±5, SAFO 3± 4, shoes -0,6±6 DF at TSt (°): HAFO 13±6, SAFO 8±4, shoes 8±8 PF moment in TSt (Nm/Kg): HAFO 1.3±.2, SAFO 1.2±.2, shoes 1.1±.2 PF pw at pSW (W/Kg): HAFO 1.3±.4, SAFO .8±.3, shoes 1.3±.5 Knee LR (°): HAFO 36±12, SAFO 33±11, shoes 36±13 DS (%): HAFO .26±.03, SAFO .23±.04, shoes .25±.03

Ries AJ et al. 2015 [49]	Retrospective study	378, 215 M and 163 F	9.8 ± 3.8 yrs	SDCP	Unsp	Unsp (clinically prescribed)	SAFO (230 pt), HAFO (211 pt), PLS (160 pt) vs BF	3DGA: GDI, knee and ankle GVS, normalized speed and step length	ND step length: mean BF value .636, mean change in SAFO/HAFO/PLS .115±.103 ND speed: mean BF value .316, mean change in SAFO/HAFO/PLS .042±.059, SAFO +.052, HAFO +.037, PLS +.030 GDI: mean BF value 73.8, mean change in SAFO/HAFO/PLS 1.4±6.6 ankle GVS: SAFO -0.93, PLS +0.93 Interactions: GDI: ambulation type (with or without devices) and BF value Nd speed: AFO design and BF value, AFO design and ambulation type Nd step length: AFO design and ambulation type
Ries AJ et al. 2019 [50]	Retrospective study	147, sex unspecified	11,5 ± 3,8 yrs SAFO, 14,1 ± 6,5 yrs GRAFO	DCP with crouch gait	GMFCS: I (5 pt), II (36 pt), III (51 pt), 55 not reported	Unsp (clinically prescribed)	SAFO (121) vs GRAFO (26)	The average change in minimum KF during stance	Min KF in ST (°): SAFO 23.5±8.4, GRAFO 32.2±10.8 Mean KF in ST (°): SAFO 32.9±6.9, GRAFO 39.4±10 Mean ankle DF in ST (°): SAFO 12.7±5.9, GRAFO 15.7±10.4 HF contracture in PhE (°): SAFO 1±10.7, GRAFO 6±10.3 KF contracture in PhE (°): SAFO 1.6±7.2, GRAFO 6.3±9.8 PL straight in PhE (5,4,3,2,1): SAFO 6,12,92,8,3, GRAFO 0,8,15,0,3 AFO ROM in ST (°): SAFO 11.4±4.6, GRAFO 8.4±2.6 Global regression model: mean ankle DF in ST, level of KF contracture, age, minimum KF in ST, and AFO neutral angle modeled 27% of the total ΔKF variability. SL (m): DAFO 1.27±.22, HAFO 1.31±.22, BF 1.13±0.23 sl (m): DAFO .65±.13, HAFO .66±.12, BF .57±.13 cad (steps/min): DAFO 117.5±3.5, HAFO 120.1±3.6 DF at IC (°): DAFO -8.0±7.3, HAFO 3.7±4.0, BF -18.5±10.3 peak DF at ST (°): DAFO 12.6±11.0, HAFO 16.1±6.3, BF 4.9±8.8 peak DF % time GC in ST (%): DAFO 42.5±11.9, HAFO 41.2±11.7, BF 33.5±15 PF at TO (°): DAFO 11.4±12.8, HAFO -2.7±5.9, BF 17.1±11.3 peak PF at Sw (°): DAFO 18.1±12.1, HAFO -.7±3.5, BF 26.7±12.6 peak KE % time GC in ST (%): DAFO 44.8±1.8, HAFO 44.3±3.5, BF 41.0±5.9 peak KF at Sw (°): DAFO 67.4±4.2, HAFO 67.2±5.1, BF 64.5±3.5 peak KF % time GC in Sw (%): DAFO 75.3±3.20, HAFO 73.3±3.0, BF 76±2.4 ankle PF moment 30–65% GC (Nm/Kg): DAFO .92±.30, HAFO 1.08±.22, BF .82±.18 ankle pw absorption 0–30% GC(W/kg): DAFO 1.78±.72, HAFO 1.50±.84, BF 2.31±.74
Romkes J et al. 2002 [51]	Non-randomized controlled study	12 (9 M and 3 F)	11.9±4.9 yrs,	HCP (9 right side, 3 left side)	Unsp	Unsp (clinically prescribed)	DAFO vs HAFO vs BF	3DGA: kinematics and kinetics, STP	Ws (m/s): HAFO 1.14±.14, BF 1.05±.18 sl (m): HAFO .61±.06, BF .52±.07 SL (m): HAFO 1.22±.11, BF 1.06±.15 Cad (steps/min): HAFO 112.5±7.3, BF 119.4±7.5 PF at IC (°): HAFO -.1± 6.3, BF 15.0± 9.7 HF at IC (°): HAFO 48.1± 5.4, BF 44.8± 6.7 peak activity at IC and LR of TA: with HAFO average ↓ of 36.1± 20.6% Peak activity at Sw of TA: with HAFO average ↓ of 57.3± 20.2% semitendinosis, biceps femoris, vastus medialis and lateralis activity during SW: slight changes
Romkes J et al. 2006 [52]	Non-randomized controlled study	10, 6 M and 4 F	9.7 ± 1.6 yrs	HCP (6 right side, 4 left side)	Unsp	Unsp (clinically prescribed)	HAFO vs BF	3DGA: kinematics, STP, sEMG (muscle timing)	GGI: DAFO/DESA/GRAFO 243±147, post-BF 335±157 ST duration (%): DAFO/DESA/GRAFO 67.2±5.9, post-BF 70.6±7 ws (m/s): DAFO/DESA/GRAFO .81±.32, post-BF .63±.35 mHF (°): DAFO/DESA/GRAFO 2.3±8.4, post BF 6.8±8.6 range HF (°): DAFO/DESA/GRAFO 42.5±7.4, post-BF 37.1±8.3 KF at IC (°): DAFO/DESA/GRAFO 17.8±12.8, post-BF 21±10, Time of peak KF (%): DAFO/DESA/GRAFO 78.7±4.6, post-BF 81.5±3.9 Max DF in Sw (°): DAFO/DESA/GRAFO 7.9±5.2, post-BF 4.8±5.2
Schwarze M et al. 2019 [53]	Retrospective study + non-randomized pre and post operative crossover	20, 15 M and 5 F	10.4 ± 3.3 yrs, range 6-17 yrs	BSCP	GMFCS: I-III	Unsp (clinically prescribed)	DAFO (2 pt), DESA (6 pt), GRAFO (12 pt) vs BF	3DGA: kinetics, kinematics, STP, GPS, GDI collected operative	

									1.5 ±0.6 yrs post-operative	Mean FPA (°): DAFO/DESA/GRAFO .2±7.6, post-BF -1.9±7.4
Schweizer et al. 2014 [54]	Retrospective study	23 (14M, 9F)	12,4	HCP	Unsp	Wearing in daily life	HAFO vs BF	AASS, pelvic kinematics		<p>Ws (nd): HAFO aff .45±.06, BF aff .43±.05</p> <p>Cad (nd): HAFO aff 32±2, BF aff 34±3</p> <p>sl (nd): HAFO aff .83±.10, BF aff .76±.08</p> <p>Foot-of (% of GC): HAFO aff 58.7±2, BF aff 57.2±2</p> <p>PF at IC (°): HAFO aff 2.8 (.8–4.9), BF aff 14.2 (11.1–17.3)</p> <p>Mean PF in Sw (°): HAFO aff 2.6 (.5–4.7), BF aff 16.2 (12.3–20.0)</p> <p>Max PF in Sw (°): HAFO aff 5.1 (2.7–7.4), BF aff 24.3 (19.6–29.0)</p> <p>Mean PF in ST (°): HAFO aff -2.2 (-4.4–.1), BF aff 1.7 (-1.6–4.9)</p> <p>Pelvic tilt ROM (°): HAFO aff 6.6 (5.1–8.1), BF aff 7.5 (6.1–9)</p> <p>shoulder abduction (°): HAFO aff 12.1 (8.4–15.8), BF aff 14.3 (10.2–18.4)</p>
Skaaret I et al. 2019 [55]	Prospective cohort study	34, 12 F and 22 M	11 yrs, range 6–17 yrs	SBCP	GMFCS: 7 level I, 19 level II and 8 level III	The children were advised to use the AFOs all day until the evaluation, 1 year postoperatively.	GRAFO or HAFO vs BF. Only evaluation with and without AFO, not pre/post-surgery.	3DGA: kinematics, kinetics, STP, GPS		<p>ws (m/s): GRAFO/HAFO 1.01±.2, post-BF .92±.2</p> <p>sl (m): GRAFO/HAFO .56±.1, post-BF .48±.1</p> <p>Cad (steps/min): GRAFO/HAFO 106.2±18, post-BF 111.1±19</p> <p>GPS (°): GRAFO/HAFO 11.6±2.5, post-BF 12.3±2.8, GRAFO 12.1±3, post-BF (GRAFO subgroup) 13.3±3</p> <p>Max ankle DF (°): GRAFO/HAFO 6.8±5.7, post-BF 13.8±6.3, GRAFO 5.8±4.3, post-BF (GRAFO subgroup) 15.8±7.2</p> <p>Peak Knee moment (nm/kg): GRAFO/HAFO -.1±.3, post-BF .005±.3</p> <p>Min knee (°): GRAFO 8.2±10, post-BF (GRAFO subgroup) 13.9±13</p>
Swinnen et al. 2018 [56]	Prospective controlled non randomized	15 (12 M and 3 F)	8±2, range 5–12 yrs	BCP	GMFCS: I (12 pt), II (3 pt)	Unsp	PLS vs BF	3DGA: kinematics (Thorax, spine, pelvis ROM)		<p>Thorax ROM Flex-Ext (°): PLS 6.70±2.25, BF 5.79±2.01</p> <p>Thorax ROM Lateral Bending (°): PLS 10.93±3.60, BF 8.83±3.61</p> <p>Thorax ROM Rot (°): PLS 11.43±4.75, BF 7.78±266</p> <p>Spine ROM Lateral Bending (°): PLS 22.31±3.98, BF 19.55±4.98</p>
Tavernese E et al. 2017 [57]	Non-randomized controlled trial	15, 7 M, 8 F	7.6 ± 2.2 yrs, range 5–11 yrs	SHCP	GMFCS: 4 level I, 11 level II	Unsp (clinically prescribed)	commonly prescribed AFO vs CAMO (flexible or stiff) vs BF	3DGA: STP, kinematics, kinetics		<p>Cad (stps/min): AFO flex 118.4±3.5, AFO stiff 122.1±2.1, CAMO flex 118.4±3.9, CAMO stiff 122.2±2.1, BF flex 132.2±4.4, BF stiff 136±3.9</p> <p>Ws (m/s): AFO flex .9±.05, CAMO flex .9±.06, BF flex 1±.03</p> <p>SS (s): CAMO stiff aff .39±.01, BF flex aff .34±.01, BF stiff aff .35±.01</p> <p>sl (m): AFO stiff aff .5±.02, CAMO stiff aff .51±.03, BF flex aff .43±.02, BF stiff aff .45±.01, AFO stiff less-aff .49±.03, CAMO stiff less-aff .5±.03, BF stiff less-aff .45±.01</p> <p>Ankle IC (°): AFO flex aff 4.2±1.5, AFO stiff aff 2.9±1.3, CAMO flex aff 6.8±1.5, CAMO stiff aff 1.7±.7, BF flex aff -10.3±1.8, BF stiff aff -6.4±1.5, AFO flex less-aff 2.1±1.4, AFO stiff less-aff 6.4±1, CAMO flex less-aff 5.3±1.6, CAMO stiff less-aff 7.3±1, BF flex less-aff .9±1.4, BF stiff less-aff-.3±1.4</p> <p>Max DF (°): AFO flex aff 17.9±1.5, AFO stiff aff 15.7±1.8, CAMO flex aff 19.8±1.1, CAMO stiff aff 19.7±4.2, BF flex aff 5.5±1.9, BF stiff aff 8.6±2.4, AFO stiff less-aff 17.9±1.8, CAMO flex less-aff 19.5±1.4, CAMO stiff less-aff 20.4±1.2, BF flex aff 17.9±1.1, BF stiff aff 12.8±1.8</p> <p>Max PF in Sw: AFO flex aff 1.8±2.3, AFO stiff aff 5.9±3.7, CAMO flex aff 6.4±2.1, CAMO stiff aff 1.5±1.3, BF flex aff -23.6±3.3, BF stiff aff -12.1±2.5, AFO flex less-aff -6.6±2.5, AFO stiff less-aff -2.6±3.6, CAMO flex less-aff -4.1±1.9, CAMO stiff less-aff -5.2±2.1, BF flex less-aff -12.8±2.3, BF stiff less-aff -14.1±2.6</p>

										<p>Knee at IC (°): AFO flex aff 22.1±2.3, AFO stiff aff 11.3±.8, CAMO flex aff 20.1±2.7, CAMO stiff aff 13.3±1.4, BF flex aff 20.1±2.3, BF stiff aff 15.71±1.1, AFO stiff less-aff 9.6±1.7, CAMO stiff less-aff 8.8±1.8, BF flex less-aff 14.5±1.4, BF stiff less-aff 15±1.6</p> <p>Max KE (°): AFO flex aff 9.7±2.5, AFO stiff aff .7±1.2, CAMO flex aff 5.2±2.2, CAMO stiff aff .4±1.1, BF flex aff 9±2.4, BF stiff aff .9±1, AFO flex less-aff 11.9±2.1, AFO stiff less-aff 4.5±1.5, CAMO flex less-aff 10.9±2.1, CAMO stiff less-aff 7.4±1.6, BF flex less-aff 10.8±1.8, BF stiff less-aff 3.7±1.8</p> <p>Max KF (°): AFO flex aff 59.9±1.9, AFO stiff aff 57.9±2.6, CAMO flex aff 58.4±2.03, CAMO stiff aff 56.8±1.9, BF flex aff 67.5±2.2, BF stiff aff 62.5±2.1, AFO flex less-aff 68.5±2.3, AFO stiff less-aff 62.4±1.8, CAMO flex less-aff 67.9±1.8, CAMO stiff less-aff 60.2±2.8, BF flex less-aff 67.5±2, BF stiff less-aff 63.2±1.5</p> <p>Hip at IC (°):AFO flex less-aff 45±2.1, AFO stiff less-aff 39.4±1.8, CAMO flex less-aff 43.7±2, BF flex less-aff 41.9±1.1, BF stiff less-aff 36.7±1.8</p> <p>HE (°): AFO flex aff -2.3±1.5, AFO stiff aff -10.9±1.4, CAMO flex aff -2.8±1.7, CAMO stiff aff -11.3±1.4, BF flex aff -4.1±1.29, BF stiff aff -8.9±1.8, AFO stiff less-aff -9.9±1, BF flex less-aff -4.9±1.9</p> <p>Max ankle pw generation (W/Kg): AFO flex aff 1.15±.11, AFO stiff aff 1.26±.13, CAMO flex aff 1.1±.12, CAMO stiff aff 1.61±.26, BF flex aff 1.85±.13, AFO flex less-aff 2.48±.41, AFO stiff less-aff 2.21±.3, CAMO flex less-aff 2.02±.18, CAMO stiff less-aff 2.38±.29, BF flex less-aff 3.55±.25, BF stiff less-aff 2.96±.25</p> <p>Max ankle pw absorption (W/Kg): AFO flex aff -1.1±.10, AFO stiff aff -1.1±.10, CAMO stiff aff -1±.21, BF flex aff -1.9±.19</p> <p>Max ankle internal moment (Nm): AFO flex aff .96±.07, AFO stiff aff 1.16±.08, CAMO stiff aff 1.03±.04, BF flex aff .9±.06, BF stiff aff .94±.02</p>
										<p>PLS vs CFO® vs Orteams ® vs BF</p>
Van Gestel L et al. 2007 [58]	Retrospect ive study	37 (15 M and 22 F)	8yrs mo± 2yrs 8mo, range 4- 14 yrs	5	HCP (14 pt left side, 22 pt right side)	GMFCS: I (30 pt), II (6 pt)	Unsp	<p>3 groups of 12 pt (of different joint-level involvement: A1–A2, K1–K2, and H1–H2): - group 1= Ortheam - group 2= PLS - group 3= CFO</p>	3DGA: kinetics, kinematics, STP; sEMG	<p>Ankle at IC (°): PLS 11.2, CFO 5,3</p> <p>Maximal flexion hip moment in ST (Nm/kg): Orteam -.06, CFO -.29</p>
Wahid F et al. 2015 [59]	Crossover trial	51 (30M, 21F)	11,2±3,5		SDCP	GMFCS: I-III	Unsp	SAFO BF	vs 3DGA	<p>SL: ↑ SAFO vs BF</p> <p>swing time: ↑ SAFO vs BF</p> <p>After normalisation using dimensionless equation differences SAFO and BF also: cad and step time.</p> <p>Using MR (multiple regression normalization): significant improvement in all gait parameters with AFOs, except DS time.</p>

White H et al. 2002 [60]	Retrospective study	115, (52 M, 63 F)	9 yrs, range 5-15 yrs	DCP (97 pt), HCP (18 pt)	GMFCS: I/II (62 pt)- III (53 pt)	Unsp (clinically prescribed)	SAFO (29 pt) and HAFO (86 pt) vs BF	3DGA: kinematics, kinetics, sEMG	Ws (cm/sec): SAFO/HAFO 88±3, BF 77±3 SL (cm): SAFO/HAFO 92±2, BF 79±2 sl (cm): SAFO/HAFO 45±1, BF 39±1 % GC in SS (%): SAFO/HAFO 34±1, BF 32±1 Ws % of age normal: SAFO/HAFO 74±3, BF 65±3 SL % of age normal: SAFO/HAFO 83±2, BF 71±2
White H et al. 2023 [61]	Retrospective study	124 (79M, 45F)	8,8±3,3	SDCP	GMFCS: I-II	Unsp	HAFO e SAFO, BF	3DGA, GMFM	Ws (% mean value fo age-matched TDC): SAFO/HAFO 91±20, BF 81±21 SL (% mean value fo age-matched TDC): SAFO/HAFO 92±15.3, BF 78±16.2 GDI: SAFO/HAFO 64.8±10.6, BF 63.2±10 Right knee GDI: SAFO/HAFO 70.3±9.1, BF 69.2±8.1 Left knee GDI: SAFO/HAFO 69.7±9.1, BF 68.5±7.9

Legend: 3DGA: 3D gait analysis; AA-AFO: angle of the ankle in the AFO; ADRAFO adjustable dynamic response AFO; AFO ankle foot orthoses; Aff: affected side; AFO-FC AFO- Footwear Combination; AV: antiversion; BCP: bilateral cerebral palsy; BSCP: bilateral spastic cerebral palsy; BF barefoot; BOTMP: Bruininks-Oseretsky Test of Motor Proficiency; BR: bad responders; BSCP: bilateral spastic cerebral palsy; c-AFO carbon-composite ankle foot orthoses; Cad: cadence; Ca.M.O Carbon Modular Orthosis; CFO Dual Carbon Fibre Spring AFO; CGAS: Clinical Gait Assessment Score; d: day/days; DAFO: Dynamic Ankle Foot Orthosis; DESA: DAFO with Dynamic, Elastic Shank Adaptation; DF dorsiflexion: (+) Value denotes dorsiflexion; (-) value denotes plantar flexion; DO Day orthosis; DCP: diplegic cerebral palsy; DS double support; WEC walking energy cost; EEI energy expenditure index; EMTS: Electromagnetic Motion Tracking System; ES early stance; F2H: forefoot orientated upwards with respect to the floor; FL: flexion; FPA: foot progression angle; FRT functional reach test; GC: gait cycle; GDI: Gait Deviation Index; GGI: Gillette Gait Index; GMFM gross motor functional measure; GPS gait profile score; GR: good responders; GRAFO: Ground (or floor) Reaction Force AFO- Ankle-Foot Orthosis; GVS: Gait Variable Score; HAFO hinged ankle-foot orthosis; HAFOf: hinged ankle-foot orthosis with flatter, unmodified footplate; HAFOc: hinged ankle-foot orthosis with contoured footplate; HCP hemiplegic cerebral palsy; HF: hip flexion; HE: hip extension; HPwA: hip power absorption; HR: heart rate; hrs hours; HS: heel strike; iAA-AFO: instantaneously Adjustable Alignment Ankle-Foot Orthosis; IC initial contact; IS index of symmetry; ISw: Initial Swing; KEn: kinetic energy; KF: knee flexion; KE: knee extension; KPwA: knee power absorption; Less-aff: less affected side, non affected; LF lateroflexion; LR: loading response; LSt: late stance; Max: maximum; MCID: Minimal Clinically Important Difference; MG: medial gastrocnemius; mGRAFO: modified GRAFO; ML: medio lateral; ML_MoS: Medio-Lateral Margin of Stability; MRC: Medical Research Council; Mo: month; MoS: Margin of Stability; MST/MST: mid stance; MSw: mid swing; ND: non dimensional; netEC: net Energy Cost; NiO Night orthosis; NN-cost%: NN-cost as percentage of speed-matched controls; NN-cost: non dimensional energy cost of walking; NoO no ortosis; NR: non responders; NS-SHOES: non supporting shoes; Orteams® (orthoses with the dorsal part containing 11 sleeves); PADA passive ankle dorsiflexion angle; PCI physiological cost index; PE: potential energy; PEDI: Pediatric Evaluation of Disability Inventory; PhE: physical examination; PF: plantarflexion; PKF: instance of peak knee flexion; PLS Posterior leaf spring; PP: peak pressure; PROM passive range of motion; PSw: Pre-Swing; Pw: power; pt: patient/patients; QUAD: quadriplegia; RMS the root mean square; SAFO: solid (or fixed) ankle-foot orthosis; SDCP spastic diplegic cp; sdML_MoS: standard deviation Medio-Lateral Margin of Stability; sl: step length; SL: stride length; SMO Sopra malleolar orthoses; SS single support; ST: stance phase; STP spatio temporal parameters; SVA: shank to vertical angle; SW: stride width; Sw: swing phase; TA: tibialis anterior; TDC: typically developing children; TO: toe off; TRAFO: tone reducing AFO; TSt terminal stance; TSw terminal swing; Unsp: unspecified; USCP: unilateral spastic cerebral palsy; vAFO ventral shell spring-hinged AFO; WA: walking activity; wk: week/weeks; ws: walking speed; yrs years. Δ: difference.*