Additional file 3: Overview of studies that report correlation of parameters to a clinical comparator instrument

	Measured parameters	*Comparator instrument*	*Correlation*	*p-value*
Abel, 2003 (39)	-Variability of ankle trajectory during swing	-Visual analog scale rating of swing variability	r=0.79	p<0.001
Young, 2011 (47)	-Co-contraction (% of MVC)	-Co-contraction correlation to BADS arm	r=0.68	p<0.001
Gordon, 2006 (51)	-Kinematic overflow -Peak velocity -Curvature of path -Hold distance -End point error	-Kinematic overflow correlation to BADS -Peak velocity correlation to BADS -Curvature of the path correlation to BADS -Hold distance correlation to BADS -End point error correlation to BADS	r=0.75 r=0.35 r=0.70 r=0.39 r=-0.65	p<0.005 p=0.24 p=0.008 p=0.19 p=0.02
Butler, 2010 (52)	-Movement time -Index of curvature during reach -Number of movement units during the reach, transport to mouth and total (i.e. number of acceleration–decelerations in the velocity profile of the wrist marker)	-Movement time correlation to MACS level - Index of curvature correlation to MACS level -Number of movement units during reach to MACS level -Number of movement units during transport to mouth to MACS level -Total number of movement units to MACS level	rho=0.96 rho=0.87 rho=0.91 rho=0.78, rho=0.91,	p<0.001 p<0.001 p<0.001 p=0.003 p<0.001
Butler, 2012 (53)	-Peadiatric Upper Limb Motion Index (PULMI)	-Peadiatric Upper Limb Motion Index (PULMI) correlation to MACS level	rho=-0.78	p<0.0001 (in whole CP group)
De Campos, 2014 (55)	-Intralimb coordination: shoulder flexion/elbow extension correlation -Reach time -Hand orientation error -Hold time	-Shoulder flexion/elbow extension correlation to BFMDRS arm -Reach time correlation to BFMDRS arm, -Hand orientation error correlation to BFMDRS arm -Hold time correlation to BFMDRS arm:	rho=0.64 rho=0.81 rho= 0.45 rho=0.85;	p=0.013 p<0.001 p=n.s. p<0.001
Kukke, 2016 (56)	-Atypical kinematics score (global score to summarize deviations from typical movement)	-Atypical kinematic score correlation to BFMDRS arm;	rho=0.70	p<0.0001
Sanger, 2006 (58)	-Signal-to-noise ratio (ratio of first principal component of the joint velocity time serie to the sum of the remaining 10 components)	-Signal-to-noise ratio correlation to BADS arm to BFMDRS arm to UDRS arm	 r=0.82	p=n.s. p=n.s. p<0.004
Malfait, 2007 (59)	-Co-contraction -Duration of pause phase	-Co-contraction correlation to BADS arm, to BFMDRS arm , to UDRS arm -Duration of pause correlation to BADS to BFMDRS to UDRS	r=0.44 r=0.20 r=0.23 r=0.57 r=0.64 r=0.71	p=0.326 p=0.666 p=0.618 p=0.177 p=0.123 p=0.074
Pons, 2017 (60)	-Index of dystonia (kinematic measure of overflow) -Target accuracy	-Index of dystonia correlation to BFMDRS arm -Target accuracy correlation to BFMDRS arm	r=0.82	p=0.02 p=n.s.
Kawamura, 2012 (61)	-Kinematic dystonia measure (kinematic overflow: summation of joint angle movement of wrist, elbow and shoulder)	-Kinematic dystonia measure during hand tapping correlation to BADS total: to BADS arm to QUEST -Kinematic dystonia measure during eye blinking correlation (after outlier removal) to BADS total:, to BADS arm to QUEST	 r=0.79 r=0.76 r= -0.60 r=0.41 r=0.72 r=-0.17	 p=0.003 p=0.007 p=0.05 p=0.24 p=0.02 p=0.63
Legros, 2004 (62)	-Integral/area under the curve of acceleration power spectrum during rest and posture	-Integral under the curve during rest correlation to BFMDRS to BFMDRS arm -Integral under the cure during posture to BFMDRS: to BFMDRS arm	rho=0.58	p<0.01 p=n.s. p=n.s. p=n.s.
Bertucco, 2014 (69)	-Movement time -Throughput (ratio of index of difficulty to movement time calculated by Fitts' Law)	-Movement time correlation to BADS arm -Throughput correlation to BADS arm,	r =0.33 r=0.28	p<0.05 p<0.05
Young, 2011 (71)	-Tracking error -Overflow (sEMG)	-Tracking error correlation to BADS arm -Overflow (sEMG) correlation to BADS arm,	r=0.73 r=0.56	p<0.001 p<0.001
Young, 2013 (72)	-Tracking error -Overflow (sEMG)	-Tracking error correlation to BADS arm, -Overflow (sEMG) correlation to BADS arm,	r=0.28 r=0.28	p=not rep. p=not rep.
Young, 2014 (73)	-Tracking error -Overflow (sEMG)	-Tracking error correlation to BADS arm -Overflow (sEMG) correlation to BADS arm,	r=0.59 r=0.50	p= not rep. p= not rep..

BADS= Barry-Albright Dystonia scale ;BFMDRS = Burke-Fahn-Marsden Dystonia Rating Scale; MACS= Manual Ability Classification System ; QUEST=Quality of Upper Extremity Skills Test score; UDRS=Unified Dystonia Rating Scale; n.s.=not significant; not rep.=not reported