

**Supplementary Table 1. Detailed information on studies focusing on wearables in real-life setting. Time is expressed in years. Mean (SD) and median [IQR]. MS: multiple sclerosis, HC: healthy controls, RR: remitting relapsing, PP: primary progressive, SP: secondary progressive, PDDS: patient determined disease steps, EDSS: expanded disability status scale. ns: non-significant, s: significant, nt: not tested. \*refer to Box 1**

Authors DOI	Population of interest Number of patients % female Age	Type of MS	Severity Duration of disease	Comparator population type Sample size (% female) Age (unless stated otherwise)	Wearables type of sensor, number of axes, number of wearables, primary position (respectively)	Domain* Results reported (significance)
Ng et al, 1997 10.1097/00005768-199704000-00014	n=17 64.7% 46 (6)	RR: n=10, CP: n=8	EDSS : 3 (median), range: 1.5-6 not reported	healthy sedentary n=15 (60% female) age: 44 (7)	TriTrac-R3D accelerometer 3 axes 1 wearable waist	Physical activity Association with MS severity (ns) Association with other measures (ns) Group differences MS vs HC (mixed)
Motl et al, 2006 10.1207/S15324796ABM3202_13	n=196 88.3% 46.1 (9.8)	RR: n=174, PP: n=3, SP: n=19	not reported 9.0 (7.1)	none	ActiGraph 7164 accelerometer 1 axis 1 wearable position not reported	Physical activity Association with other measures (s)
Motl et al, 2006 10.1002/NUR.20161	n=196 88.3% 46.1 (9.8)	RR: n=174, PP: n=3, SP: n=19	not reported 9 (7.1)	none	ActiGraph 7164 accelerometer 1 axis 1 wearable position not reported Yamax SW-200 mechanical pedometer 1 wearable waist	Physical activity Association with other measures (s)
Motl et al, 2006 10.1080/09638280600551476	n=30 93.3% 42.3 (9.5), range: 27-61	RR: n= 26, PP: n=2, SP: n=2	EDSS: 2.5 (median), range: 0-5 6.2 (4.3)	none	ActiGraph 7164 accelerometer 1 axis 1 wearable waist	Physical activity Association with other measures (s)
Motl et al, 2007 10.1037/0090-5550.52.4.463	n=133 78.2% 51.1 (11.4)	RR: n=86, PP: n=6, SP: n=41	not reported 12.0 (9.0)	none	ActiGraph 7164 accelerometer 1 axis 1 wearable position not reported	Physical activity Association with other measures (s)

Kos et al, 2007 10.1080/07420520701282364	n=19 47.4% 47.2 (12.1)	not reported: n=19	EDSS: 5.5 [5-6] not reported	healthy n=10 (60% female) age: 39.6 (12.3)	ActiGraph accelerometer 3 axes 2 wearables wrist, ankle Yamax SW-200 mechanical pedometer 1 axis 1 wearable not reported	Physical activity Association with other measures (s) Group differences MS vs HC (mixed)
Gosney et al, 2007 10.1097/01.FCH.0000264411.20766.0C	n=196 88.3% 46.1 (9.8)	RR: n=174, P/SP: n=22	not reported 9.0 (7.1)	none	ActiGraph 7164 accelerometer 1 axis 1 wearable not reported	Physical activity Association with other measures (nt)
Motl et al, 2007 10.1037/0090-5550.52.2.143	n=292 83.9% 48.0 (10.3), range: 20-69	RR: n=246, PP: n=12, SP: n=34	not reported 10.3 (7.9), range: 1-35	none	ActiGraph 7164 accelerometer 1 axis 1 wearable position not reported Yamax SW-200 mechanical pedometer 1 axis 1 wearable not reported	Physical activity Association with MS severity (mixed) Association with other measures (mixed)
Motl et al, 2007 10.1123/APAQ.24.3.245	n=193 88.1% 46.2 (9.7)	RR: n=171, PP: n=3, SP: n=19	not reported 9.0 (7.1)	none	ActiGraph 7164 accelerometer 1 axis 1 wearable not reported	Physical activity Test-retest reliability (nt)
Kayes et al, 2007 10.1177/0269215507075516	n=30 76.7% 54 (median), range: 27-76	not reported: n=30	not reported not reported	none	Actical accelerometer 3 axes 1 wearable (non- wheelchair user), 2 wearables (wheelchair users) waist, wrist (wheelchair users only)	Physical activity Test-retest reliability (ns)

Klassen et al, 2008 10.1177/0269215507082740	n=30 63.3% 42.9 (mean), range: 32-60	not reported: n=30	EDSS: range: 1-6 not reported	healthy n=9 (89% female) age: 41.6 (4.4), range: 37-51	TriTrac RT3 accelerometer 3 axes 1 wearable waist	Physical activity Association with MS severity (s) Association with other measures (s) Group differences MS vs HC (mixed) Group differences MS vs MS (mixed)
Motl et al, 2008 10.1016/J.JNS.2007.11.003	n=133 78.2% 51.1 (11.1)	RR: n=85, PP: n=6, SP: n=52	EDSS: 4.9 (2.0) 12.0 (9.0)	none	ActiGraph 7164 accelerometer 1 axis 1 wearable position not reported	Physical activity Association with other measures (nt)
Motl et al, 2008 10.1007/S12160-008-9049-4	n=292 83.9% 48.0 (10.3)	RR: n=246, PP: n=12, SP: n=34	not reported 10.3 (7.9)	none	ActiGraph 7164 accelerometer 1 axis 1 wearable position not reported	Physical activity Association with other measures (s)
Hale et al, 2008 10.1016/J.APMR.2008.02.027	n=11 72.7% 63.7 (15.5), range: 28-91	not reported: n=11	not reported not reported	healthy sedentary n=9 (89% female) age: 51 (18.1), range: 28-76	TriTrac RT3 accelerometer 3 axes 1 wearable waist	Physical activity Group difference MS vs HC (nt) Group difference MS vs Parkinson's disease (nt) Test-retest reliability (s) Subjective patient acceptability (nt)
Snook et al, 2008 10.1016/J.JPAINSYMPT.2007.09.007	n=80 81.3% 49.0 (11.4)	RR: n=62, PP: n=1, SP: n=15, benign: n=2	EDSS: 3.9 (1.8) 10.1 (7.9)	none	ActiGraph 7164 accelerometer 1 axis 1 wearable position not reported	Physical activity Association with other measures (s)
Motl et al, 2008 10.1097/NMD.0B013E318177351B	n=80 81.3% 49.0 (11.4)	RR: n=65, PP: n=1, SP: n=14	EDSS: 4 (mean), range: 1-6.5 10.1 (7.9)	none	ActiGraph 7164 accelerometer 1 axis 1 wearable position not reported	Physical activity Association with MS severity (s) Association with other measures (mixed)

Motl et al, 2009 10.1016/J.JNS.2009.06.015	n=133 not reported not reported	RR: n=82, progressive: n=51	EDSS: 5.5 (median), range: 1-8.5 12 (9)	none	ActiGraph 7164 accelerometer 1 axis 1 wearable position not reported	Physical activity Association with other measures (nt)
Motl et al, 2009 10.1037/A0015770	n=292 83.9% 48.0 (10.3), range: 20-69	RR: n=246, PP: n=12, SP: n=34	PDDS: 3.0 (median), range : 0-6 10.3 (7.9), range: 1-35	none	ActiGraph 7164 accelerometer 1 axis 1 wearable waist	Physical activity Association with other measures (s) Responsiveness to change (mixed)
Motl et al, 2009 10.1037/A0015985	n=292 83.9% 48.0 (10.3), range: 20-69	RR: n=246, PP: n=12, SP: n=34	PDDS: 3.0 (median), range: 0-6 10.3 (7.9), range: 1-35	none	ActiGraph 7164 accelerometer 1 axis 1 wearable position not reported	Physical activity Responsiveness to change (mixed)
Motl et al, 2009 10.1080/13548500802241902	n=292 83.9% 48.0 (10.3), range: 20-69	RR: n=246, PP: n=12, SP: n=34	not reported 10.3 (7.9), range: 1-35	none	ActiGraph 7164 accelerometer 1 axis 1 wearable position not reported	Physical activity Association with MS severity (s) Association with other measures (mixed)
Motl et al, 2009 10.1097/MRR.0B013E328325A5ED	n=16 87.5% 43.4 (8.7)	RR: n=16	not reported not reported	none	ActiGraph 7164 accelerometer 1 axis 1 wearable position not reported	Physical activity Association with other measures (mixed) Responsiveness to change (nt)
Motl et al, 2009 10.1016/J.JPAINSYMMA.2008.08.004	n=292 83.9% 48.0 (10.3)	RR: n=239, PP: n=12, SP: n=34, benign: n=7	not reported 10.3 (7.9)	none	ActiGraph 7164 accelerometer 1 axis 1 wearable position not reported	Physical activity Association with other measures (s)

Snook et al, 2009 10.1177/0269215508101757	n=74 82.4% 49.0 (11.6)	RR: n=58, PP: n=1, SP: n=13, benign: n=2	EDSS: 3.9 (1.8) 10.1 (8.0)	none	ActiGraph 7164 accelerometer 1 axis 1 wearable waist	Physical activity Association with other measures (mixed) Group difference MS vs MS (s)
Motl et al, 2010 10.1016/J.APMR.2010.08.011	n=26 84.6% 43.1 (11.9)	RR: n=26	PDDS: 1.8 (1.6) 11.6 (8.4)	none	ActiGraph 7164 accelerometer 1 axis 1 wearable waist  Cosmed K4b2 portable metabolic system measuring oxygen consumption head	Physical activity and O <sub>2</sub> cost of walking Association with MS severity (s) Association with other measures (s) Group difference MS vs MS (s)
Weikert et al, 2010 10.1016/J.JNS.2009.12.021	n=269 82.9% 45.9 (9.6)	RR: n=269	PDDS: 2 (median), range: 0-6 13.3 (9.2)	none	ActiGraph 7164 accelerometer 1 axis 1 wearable waist	Physical activity Association with MS severity (nt) Association with other measures (nt)
Rietberg et al, 2010 10.1016/J.APMR.2010.07.018	n=43 69.8% 48.7 (7.0)	RR: n=26, PP: n=7, SP: n=10	EDSS: 3.5 [2.5], range: 1-6 14.3 (9.2), range: 2-51	none	Vitaport Step Watch accelerometer 2 axes 5 wearables sternum, waist, upper leg	Physical activity Test-retest reliability (s)
Suh et al, 2010 10.1016/J.DHJO.2009.09.002	n=96 78.1% 42.8 (10.2), range: 20-64	RR: n=91, PP: n=2, SP: n=3	not reported 3.0 (1.5), range: 0.5-5	none	ActiGraph 7164 accelerometer 1 axis 1 wearable position not reported	Physical activity Association with MS severity (s) Association with other measures (mixed)

Gijbels et al, 2010 10.1177/1352458510361357	n=50 66.0% 49 (10), range: 25-66	RR: n=23, PP: n=14, SP: n=13	EDSS: 4.5 (1.2), range: 1.5-6.5 not reported	none	<b>SAM 2D</b> accelerometer 2 axes 1 wearable ankle	<b>Physical activity</b> Association with MS severity (mixed) Association with other measures (mixed)
Sosnoff et al, 2010 10.1177/1352458510373111	n=70 80.0% Age by self-reported disability status: mild: 47.4 (10.1), moderate: 49.4 (13.1), severe: 53.2 (10.3)	RR: n=56, PP: n=1, SP: n=13	SR-EDSS: mild: 2.1 (0.77), moderate: 5.05 (0.53), severe: 6.02 (0.12) Disease duration by SR- EDSS: mild: 10.3 (8.4), moderate: 10.7 (9.6), severe: 11.5 (5.1)	none	<b>ActiGraph 7164</b> accelerometer 1 axis 1 wearable waist	<b>Physical activity</b> Association with other measures (s) Group difference MS vs MS (mixed)
Motl et al, 2010 10.1097/NMD.0B013E3181D14131	n=269 82.9% 45.9 (9.6)	RR: n=269	PDDS: 2 (median), range: 0-6 13.3 (9.2)	none	<b>ActiGraph 7164</b> accelerometer 1 axis 1 wearable waist	<b>Physical activity</b> Association with MS severity (nt) Association with other measures (nt)
Motl et al, 2011 10.1080/08964289.2011.636769	n=18 88.9% 45.1 (9.5)	RR: n=18	PDDS: 1.0 (median), range: 0-4 7.3 (5.0)	none	<b>ActiGraph 7164</b> accelerometer 1 axis 1 wearable waist	<b>Physical activity</b> Responsiveness to change (mixed) Responsiveness to intervention (mixed)
Schlesinger et al, 2011 10.1055/S-0031-1271750	n=16 50.0% 47.56 (7.78), range: 39-70	SP: n=16	EDSS: 3.56 (1.05), 3.5 (median), range: 2-5.5 not reported	healthy n=26 (42% female) age: 37.3 (12.9), range= 25-67	<b>Actibelt</b> accelerometer 3 axes 1 wearable waist	<b>Physical activity</b> Association with MS severity (ns) Group difference MS vs HC (s)

Grčić et al, 2011 10.12659/MSM.882130	n=49 79.6% 35 (median), range: 18-56	RR: n=49	EDSS: 3.0 (median), range: 1.5-6.0 8 (median), range: 1.3-27	none	<b>StepWatch Activity Monitor</b> accelerometer 3 axes 1 wearable ankle	<b>Physical activity</b> Association with MS severity (nt) Responsiveness to change (mixed)
Yu et al, 2012 10.1088/0967-3334/33/12/2033	n=17 not reported range: 20-65 [inclusion criteria]	not reported: n=17	not reported not reported	healthy n=9 (sex-matched to MS patients) age: not specified	<b>FAMOS prototype</b> accelerometer, ECG, sEMG, temperature 1 axis 8 wearables upper back, upper leg, lower leg, ankle	<b>Physical activity, ECG, EMG, temperature</b> Group difference MS vs HC (mixed)
Weikert et al, 2012 10.1016/J.MEDENPHY.2011.09.005	n=33 81.8% 47.5 (10.6)	RR: n=28, not reported: n=5	PDDS: 2 (median), range: 0-6 9.2 (6.7)	healthy n=33 (82% female) age: 47.7 (11.3)	<b>ActiGraph 7164</b> accelerometer 1 axis 1 wearable waist	<b>Physical activity</b> Association with other measures (mixed) Group difference MS vs HC (nt)
Sosnoff et al, 2012 10.1682/JRRD.2011.11.0218	n=22 77.3% 46.9 (11.7), range 23-64	not reported: n=22	EDSS: 3.0 [2.5] range: 1-6 11.0 (6.9), range: 1-23	none	<b>ActiGraph GT3X</b> accelerometer 3 axes 1 wearable waist	<b>Physical activity</b> Association with MS severity (s) Association with other measures (mixed)
Sosnoff et al, 2012 10.1155/2012/315620	n=37 75.7% 53.4 (10.0)	not reported: n=37	EDSS: 5.0 [4] 14.6 (10.6)	<b>MS patients - no fallers</b> n=38 (82% female) age: 50.1 (13.9) Type: not reported Severity of MS: 3.0 [2.0] Disease duration [yrs]: 11.0 (9.6)	<b>ActiGraph GT3X</b> accelerometer 3 axes 1 wearable waist	<b>Physical activity</b> Association with MS severity (s) Association with other measures (ns) Group difference MS vs MS (s)

Sandroff et al, 2012 10.1111/J.1600-0404.2011.01634.X	n=77 85.7% 47.3 (9.7)	RR: n=66, not reported: n=11	PDSS: 1 (median), range: 0-6 10.1 (7.3)	healthy n=66 (85% female) age: 47.0 (10.5)	ActiGraph 7164 accelerometer 1 axis 1 wearable waist	Physical activity Association with other measures (mixed) Group difference MS vs HC (s)
					Yamax SW-200 mechanical pedometer 1 axis 1 wearable waist	
				MS patients n=20 (80% female) age: 48.3 (9.8) Type: RR: n=18, not reported: n=2 Severity of MS: not reported Disease duration [yrs]: 9.9 (8.9)	ActiGraph 7164 accelerometer 1 axis 1 wearable waist	
Motl et al, 2012 10.1037/A0025965	n=18 83.3% 45.4 (11.2)	RR: n=18	not reported 7.7 (5.5)		Omron HJ-720ITC accelerometer 1 axis 1 wearable waist	Physical activity Responsiveness to intervention (s)
Ranadive et al, 2012 10.1249/MSS.0B013E31822D7997	n=33 81.8% 47.0 (1.83)	RR: n=29, PP: n=1, SP: n=3	PDSS: 2 (median), range: 0-6 9.2 (6.7)	healthy n=33 (82% female) age: 47.0 (1.97)	ActiGraph 7164 accelerometer 1 axis 1 wearable position not reported	Physical activity Association with other measures (mixed) Group difference MS vs HC (s)
Motl et al, 2013 10.1111/ANE.12036	n=256 81.3% 49.5 (10.2)	RR: n=215, PP: n=13, SP: n=24, not reported: n=4	EDSS: 4.0 [3.5], range: 0- 6.5 11.3 (8.7)	none	ActiGraph GT3X accelerometer 3 axes 1 wearable wrist	Physical activity Association with MS severity (s) Association with other measures (s)
					Yamax SW-200 mechanical pedometer 1 axis 1 wearable position not reported	
Motl et al, 2013 10.1371/JOURNAL.PONE.0073247	n=786 84.9% 47.3 (10.5)	RR: n=705; not reported: n=81	PDDS: 2.0 [2.0] 9.9 (8.0)	healthy n=157 (91% female) age: 43.4 (9.8)	ActiGraph 7164 accelerometer 1 axis	Physical activity Association with MS severity (s) Group difference MS vs HC (s)



					1 wearable position not reported	
Filipović Grčić et al, 2013 10.1007/S13760-013-0187-5	n=82 74.4% 37.8 (9.9)	not reported: n=82	EDSS: 2.5 (median), range: 0-6.5 9.0 (6.3)	none	<b>StepWatch Activity Monitor</b> accelerometer 3 axes 1 wearable ankle	<b>Physical activity</b> Association with MS severity (s) Association with other measures (s)
Motl et al, 2013 10.2522/PTJ.20120479	n=269 82.9% 45.9 (9.6)	RR: n=269	PDDS: 2 [3] 8.8 (7.0)	none	<b>ActiGraph 7164</b> accelerometer 1 axis 1 wearable waist	<b>Physical activity</b> Responsiveness to change (s)
Sandroff et al, 2013 10.1016/J.MHPA.2013.08.001	n=82 75.6% 49.0 (9.1)	RR: n=65, PP: n=3, SP: n=10, not reported: n=4	SR-EDSS: 3.5 (median), range: 0-6.5 11.8 (8.2)	none	<b>ActiGraph GT3X</b> accelerometer 3 axes 1 wearable waist	<b>Physical activity</b> Association with other measures (s)
Dlugonski et al, 2013 10.1016/J.APMR.2012.12.014	n=645 85.3% 46.3 (10.6)	RR: n=575, P: n=63, not reported: n=7	PDDS<=2: n=255 PDDS=>3: n=194 <10 years: n=395, >10 years: n=250	none	<b>Yamax SW-200</b> mechanical pedometer 1 axis 1 wearable position not reported  <b>ActiGraph 7164</b> accelerometer 1 axis 1 wearable position not reported	<b>Physical activity</b> Association with MS severity (s)

Learmonth et al, 2013 10.1177/1352458513483890	n=82 75.6% 49.2 (9.0)	RR: n=65, PP: n=7, SP: n=10	SR-EDSS: 3.5 (2.0), 3.5 [3.5], range: 0-6.5, PDDS: 2.6 (1.8), 3 [3], range: 0-6 11.8 (8.2), range: 0.5-32	none	ActiGraph GT3X accelerometer 3 axes 1 wearable waist	Physical activity Test-retest reliability (s)
Learmonth et al, 2013 10.1186/1471-2377-13-37	n=96 80.2% 53.5 (14), range: 30-78	RR: n=79, not reported: n=17	EDDS: 4.5 [3.0], range: 2- 6.5, PDDS: 3.0 [3.0], range: 0-6 9 (12), range: 1-43	none	ActiGraph GT3X accelerometer 3 axes 1 wearable waist	Physical activity Association with MS severity (s)
Sandroff et al, 2014 10.1016/J.MSARD.2013.06.014	n=84 78.6% 51.8 (11.3)	RR: n= 69, PP: n=4, SP: n= 7, not reported: n= 4	EDDS: 4.5 (median), range: 2.0-6.5 10.8 (9.3)	none	ActiGraph GT3X accelerometer 3 axes 1 wearable waist	Physical activity Association with other measures (s)
Sandroff et al, 2014 10.1371/JOURNAL.PONE.0093511	n=63 76.2% 50.68 (9.22)	RR: n=50, not reported: n=13	EDSS: 4.0 (median), range: 1.0-6.5 12.83 (8.50)	none	ActiGraph GT3X accelerometer 3 axes 1 wearable waist  StepWatch Activity Monitor mechanical pedometer 1 wearable ankle	Physical activity Group difference MS vs MS (s)
Shammas et al, 2014 10.1186/1475-925X-13-10	n=11 63.6% 41 (9.3)	RR: n=8, PP: n=1, SP: n=2	Group EDSS 1-2.5: EDSS: 1.75 (0.82), Group EDSS 3-5: EDSS: 4.40 (0.89) 2.18 (10.67)	none	Move II activity sensor accelerometer 3 axes 2 wearables waist, ankle	Physical activity Responsiveness to change (s)

Schwartz et al, 2014 10.1016/J.JNS.2014.10.021	n=269 82.9% 45.85 (9.73)	RR: n=269	PDDS: 2 [3] 8.8 (7.0)	none MS patients without spasticity n=40 (90% female) age: 47.7 (11.1) Type: RR: n=37 Severity of MS: EDDS: 3.5 [2.0-6.5] Disease duration [yrs]: 11.5 (9.7), range: 0-39	ActiGraph 7164 accelerometer 1 axis 1 wearable waist	Physical activity Association with other measures (ns) Responsiveness to change (ns)
Balantrapu et al, 2014 10.1155/2014/649390	n=44 72.7% 52.8 (7.6)	RS: n=36, not reported: n=8	EDSS: 6 (median), range: 2.5-6.5 10.3 (8.4), range: 0-39		ActiGraph GT3X accelerometer 3 axes 1 wearable waist	Physical activity, Dexterity/Tremor Group difference MS vs MS (s)
Ickmans et al, 2014 10.1016/J.CLINURO.2014.04.021	n=19 68.4% 39.74 (10.67)	not reported: n=19	EDSS: 1.64 (1.02) 83.52 (68.50) months	healthy n=32 (69% female) age: 39.3 (13.9)	Actical accelerometer 3 axes 1 wearable wrist	Physical activity Group difference MS vs HC (s)
Motl et al, 2014 10.1080/08964289.2013.821966	n=567 83.6% 47.0 (10.0), range: 19-84	RR: n=519, PP: n=12, SP: n=36	PDDS: 2.0 (median), range: 0-6 9.6 (7.5), range: 1-37	none	ActiGraph 7164 accelerometer 1 axis 1 wearable waist	Physical activity Test-retest reliability (s)
Suh et al, 2014 10.1007/S12529-013-9382-2	n=68 82.4% 49.1 (8.8)	RR: n=68	PDDS: 2 [0-3] 12.1 (7.9)	none	ActiGraph 7164 accelerometer 1 axis 1 wearable waist	Physical activity Association with other measures (s)
Kahraman et al, 2015 10.1016/J.CLINURO.2015.07.018	n=52 67.3% 36 (8)	RR: n=43, clinically isolated syndrom: n=9	EDSS: 1.5 (1.0) 5 (4.0)	none	Caltrac accelerometer 3 axes 1 wearable waist	Physical activity

Motl, 2015 10.7224/1537-2073.2014-016	n=41 73.2% 48.4 (9.1)	RR: n=31, P/SP: n=10	PDDS mild: n=22, PDDS moderate: n=19 10.6 (7.1)	<b>Waitlist control (MS patients)</b> n=41 (78% female) age: 49.5 (9.2) Type: RR: n=43, PP: n=7, SP: n=7 Severity of MS: PDDS mild: n=17, PDDS moderate: n=24 Disease duration [yrs]: 13.0 (9.1)	<b>Yamax SW-401</b> mechanical pedometer 1 wearable waist	<b>Physical activity</b> Group difference MS vs MS (s) Responsiveness to intervention (s)
Bove et al, 2015 10.1212/NXI.0000000000000162	n=22 72.7% 34.3 (11.0)	RR: n=15, PP: n=9, SP: n=4, clinically isolated syndrom: n=0, neruomyelitis optica: n=1, MS: n=1, undefined: n=1	EDSS: 2.5 (2.4) 8.0 (6.0)	<b>healthy cohabitants</b> n=17 (53% female) age: 39.9 (10.5)	<b>Smartphone (HTC Sensation 4G)</b> touchscreen 1 wearable hand	<b>Dexterity/Tremor</b> Association with other measures (mixed) Group difference MS vs HC (mixed) Responsiveness to change (mixed)
Sandroff et al, 2015 10.1016/J.GAITPOST.2014.10.011	n=96 80.2% 52.7 (11.1)	RR: n=79, P: n=13, not reported: n=4	EDSS: 4.5 (median), range: 2-6.5 11.8 (10.0)	<b>none</b>	<b>ActiGraph GT3X</b> accelerometer 3 axes 1 wearable waist	<b>Physical activity</b> Association with other measures (s) Group difference MS vs MS (s)
Blikman et al, 2015 10.1016/J.PPMR.2015.08.023	n=23 78.3% 45.7 (10.2), range: 24-66	RR: n=20, SP: n=3	EDSS : 2.0 [3.0] 9.3 (7.1), range: 0-21	<b>healthy (nonfatigued)</b> n=23 (78% female) age: 45.7(10.2), range: 27- 67	<b>ActiGraph GT3X</b> accelerometer 3 axes 1 wearable waist	<b>Physical activity</b> Group difference MS vs HC (mixed)
Ezeugwu et al, 2015 10.1016/J.PMEDR.2015.03.007	n=439 84.7% 47.3 (10.0)	RR: n=395, PP: n=9, SP: n=27, benign: n=6, not reported: n=2	PDDS<=2: n=245, PDDS>=3 : n=194 <= 10 years: n=279, > 10 years: n=159	<b>none</b>	<b>ActiGraph 7164</b> accelerometer 1 axis 1 wearable waist	<b>Physical activity</b> Group difference MS vs MS (mixed)

Klaren et al, 2015 10.1155/2015/482536	n=39 76.9% 48.7 (9.6)	RR: n=30, P: n=9	EDSS: 4.5 [2.5] 10.3 (8.5)	none	ActiGraph GT3X accelerometer 3 axes 1 wearable not reported	Physical activity Association with other measures (mixed)
Rice et al, 2015 10.1016/J.APMR.2015.06.011	n=9 66.7% 53.3 (11.1)	RR: n=3, PP: n=2, SP: n=4	not reported 13.2 (8.9)	MS patients n=5 (80% female) age: 54 (0.4) Type: RR: n=2, PP: n=1, SP: n=2 Severity of MS: bilateral gross upperextremity strength of at least 4-/5 and full-time wheelchair user (use of power or manual for>40h/wk and>80% ambulation (inclusion criteria) Disease duration [yrs]: 17.6 (8.5)	ActiGraph GT3X accelerometer 3 axes 1 wearable wrist	Physical activity Group difference MS vs MS (mixed) Responsiveness to intervention (nt)
Sandroff et al, 2015 10.1097/NPT.0000000000000087	n=31 87.1% 43.4 (7.7)	RR: n=29, SP: n=2	PDDS: 2 (median), range: 0-5 8.6 (6.3)	healthy n=31 (87% female) age: 42.4 (7.5)	ActiGraph GT3X accelerometer 3 axes 1 wearable waist	Physical activity Association with other measures (s) Group difference MS vs HC (mixed)
Hubbard et al, 2015 10.1139/APNM-2014-0271	n=82 75.6% 49.0 (9.1)	RR: n=65, not reported: n=17	SR-EDSS: 3.4 (2.3), 3.5 [4.5] 11.8 (mean)	none	ActiGraph GT3X accelerometer 3 axes 1 wearable waist	Physical activity Association with MS severity (mixed) Association with other measures (mixed) Group difference MS vs MS (nt)
Fjeldstad, 2015 10.7224/1537-2073.2014-037	n=13 69.2% 47.6 (3.0)	RR: n=13	EDSS: 2.5 (0.5) 7.5 (1.0)	healthy n=12 (42% female) age: 45.5 (5.4)	ActiGraph GT1M accelerometer 2 axes 1 wearable waist	Physical activity Association with MS severity (s) Group difference MS vs HC (ns)

Sola-Valls et al, 2015 10.1007/S00415-015-7764-X	n=23 52.2% 46.7 (10.0)	RR: n=15, SP: n=8	EDSS: 3.5 [1.5–6.5] 14.2 (9.9)	none  MS patients with placebo first and then treatment n=21 (52% female) age: 54 (0.4) Type: RR: n=13, PP: n=2, SP: n=6 Severity: EDSS score: 5.3 (0.2) Disease duration [yrs]: 13.5 (1.5)	ActiGraph GT3X accelerometer 3 axes 1 wearable waist	Physical activity Association with MS severity (s) Association with other measures (s) Group difference MS vs MS (s)
Brown, 2016 10.7224/1537-2073.2015-035	n=22 86.4% 55.0 (2.5)	RR: n=13, PP: n=4, SP: n=5	EDSS: 5.1 (0.3) 13.3 (1.7)		StepWatch 3 accelerometer 3 axes 1 wearable ankle	Physical activity Group difference MS vs MS (ns) Responsiveness to intervention (ns)
Klaren et al, 2016 10.14336/AD.2015.1025	n=963 84.0% By age category: Young: 33.1 (4.7), Middle-aged: 49.6 (5.4), Older: 63.0 (3.6)	RR: n=885, not reported: n=78	EDSS by age group: Young: 1.0 [3.0] Middle-aged: 2.0 [2.0] Older: 3.0 [3.0] Disease duration by age group: Young: 6.3 (5.0) Middle-aged: 10.8 (7.2) Older: 16.5 (9.2)	none	ActiGraph 7164 accelerometer 1 axis 1 wearable waist	Physical activity Group difference MS vs MS (s) Physical activity Association with other measures (s) Group difference MS vs HC (s) Group difference MS vs monophasic acquired demyelinating syndromes (s)
Grover et al, 2016 10.1016/J.JPEDS.2016.08.104	n=27 66.7% 16.0 (4.0)	not reported: n=27	EDSS: 1.5 [0.5] 2.0 (2.0)	healthy n=37 (68% female) age: 15.0 (3.0)	ActiGraph 7164 accelerometer 1 axis 1 wearable waist	
Kinnett-Hopkins et al, 2016 10.1016/J.MSARD.2016.08.010	n=27 66.7% 15.73 (3.2)	not reported: n=27	EDSS: 1.5 (0.5) 2.03 (2)	healthy n=45 (67% female) age: 14.76 (3.8)	ActiGraph 7164 accelerometer 1 axis 1 wearable waist	Physical activity Group difference MS vs HC (mixed) Association with other measures (mixed)

Zörner et al, 2016 10.1177/1352458515622695	n=55 61.8% 48.6 (9.8)	RR: n=29, PP: n=5, SP: n=21	EDSS: 4.9 (1.3), range: 2.5-6.5 11.9 (7.4)	none	<b>Actiwatch 2</b> accelerometer 3 axes 1 wearable ankle	<b>Physical activity</b> Responsiveness to intervention (mixed)
Klaren et al, 2016 10.1123/APAQ.2015.0007	n=422 85.1% 47.3 (10)	RR: n=380; not reported: n=42	PDDS: 2.0 [4.0] 9.6 (7.4)	none	<b>ActiGraph 7164</b> accelerometer 1 axis 1 wearable waist	<b>Physical activity</b> Test-retest reliability (s)
Sebastião et al, 2017 10.1097/PHM.0000000000000581	n=47 not reported 53.1 (11.4)	RR: n=44, PP: n=1, SP: n=2	EDSS: 4 [3.0] 13.1 (9.6)	none	<b>ActiGraph GT3X</b> accelerometer 3 axes 1 wearable primary position not reported	<b>Physical activity</b> Group difference MS vs MS (s)
Norris et al, 2017 10.1016/J.GAITPOST.2017.02.005	n=26 not reported 44.5 (11.9)	RR: n=21, PP: n=2, SP: n=1, benign: n=2, not reported: n=1	not reported 6.5 (6.2)	none	<b>SenseWear Armband</b> accelerometer 2 axes 1 wearable wrist	<b>Physical activity</b> Test-retest reliability (nt)
Sebastião et al, 2017 10.3233/NRE-161401	n=21 90.5% 55.5 (9.1)	RR: n=18, not reported: n=3	EDSS: 6.0 [2.0] 14.7 (10.5)	<b>MS patients (normal fall risk)</b> n=26 (88% female) age: 51.2 (12.9) Type: RR: n=26 Severity: EDSS: 3.0 [1.5] Disease duration [yrs]: 13.5 (1.5)	<b>ActiGraph GT3X</b> accelerometer 3 axes 1 wearable waist	<b>Physical activity</b> Group difference MS vs MS (s)
Klaren et al, 2017 10.2217/NMT-2016-0036	n=36 80.6% 49.1 (9.1)	RR: n=28, not reported: n=8	EDSS: 4.5 [2.5] 10.1 (8.6)	none	<b>ActiGraph GT3X+</b> accelerometer 3 axes 1 wearable waist	<b>Physical activity</b> Association with other measures (ns)

Klaren et al, 2017 10.1123/JPAH.2016-0335	n=269 82.9% 45.9 (9.8)	RR: n=269	PDDS: 2.0 [3.0] 8.8 (7.1)	none	ActiGraph 7164 accelerometer 1 axis 1 wearable waist	Physical activity Group difference MS vs MS (nt) Responsiveness to change (nt)
Motl et al, 2017 10.1016/J.JNS.2016.11.070	n=49 85.7% 50.1 (8.3)	not reported: n=49	EDSS: 4.75 [2.0], PDDS: 4.0 [2.0] not reported	none	ActiGraph 7164 accelerometer 1 axis 1 wearable waist	Physical activity Association with MS severity (s) Association with other measures (s)
Dalla-Costa et al, 2017 10.1016/J.JNS.2017.10.043	n=73 50.7% 47.6 (7.9)	RR: n=53, P: n=20	not reported 14.4 (7.3)	none	Garmin Forerunner 230 GPS 3 axes 1 wearable wrist	Physical activity Association with other measures (nt)
Krüger et al, 2017 10.1186/S12883-016-0783-0	n=26 69.2% 50.9 (5.2)	RR: n=18, PP: n=1, SP: n=7	EDSS: 4.0 (median), range: 1.5-6.0 not reported	healthy n=30 (67% female) age: 49.7 (8.3)	SenseWear Model mini accelerometer 2 axes 1 wearable upper arm ActiGraph Actisleep accelerometer 3 axes 1 wearable wrist	Physical activity Association with MS severity (mixed) Association with other measures (s) Group difference MS vs HC (mixed)
Aburub et al, 2017 10.1016/J.MSARD.2016.12.010	n=60 not reported 35.62 (9.14)	RR: n=60	EDSS: 2.47 (1.63), range: 0-5 7.29 (4.37)	none	ActiGraph 7164 accelerometer 1 axis 1 wearable waist	Physical activity Association with MS severity (s) Association with other measures (s)



Fakolade et al, 2018 10.3138/PTC.2017-36.EP	n=14 71.4% 52.0 (11.7)	RR: n=6, PP: n=3, SP: n=2, not reported: n=3	not reported 13.2 (8.2)	healthy (caregivers) n=14 (29% female) age: 54.1 (13.5)	Actical accelerometer 3 axes 1 wearable waist	Physical activity Group difference MS vs HC (ns)
Neven et al, 2018 10.1177/0361198118772952	n=108 61.1% not reported	not reported: n=108	not reported not reported	none	GPS Logger GPS 3 axes 1 wearable pocket or handbag (others)	Physical activity Group difference MS vs MS (ns)
Dasmahapatra et al, 2018 10.1159/000488040	n=114 75.4% 52 (9)	RR: n=90, PP: n=10, SP: n=14	not reported 16 (10)	none	Fitbit One accelerometer 3 axes 1 wearable belt, pocket or bra (others)	Physical activity Association with other measures (mixed)
Ketelhut et al, 2018 10.1080/09638288.2017.1336647	n=34 76.5% 53.8 (12.4)	RR: n=29, SP: n=2, not reported: n=3	not reported 13.7 (8.6)	none	ActiGraph GT3X accelerometer 3 axes 1 wearable waist	Physical activity Association with other measures (mixed)
Cederberg et al, 2018 10.1123/JAPA.2016-0358	n=40 75.0% 60 (5.0)	RR: n=28, PP: n=1, SP: n=3, not reported: n=8	EDSS: 4.5 [2.5] 18 (14)	none	ActiGraph GT3X+ accelerometer 3 axes 1 wearable waist	Physical activity Association with other measures (mixed)
Engelhard et al, 2018 10.1016/J.GAITPOST.2017.10.015	n=88 83.0% Age by MS severity: mild: 41.43 (9.94), moderate: 47.19 (7.85), severe: 46 (8.66)	RR: n=73, PP: n=2, SP: n=8, PR: n=5	EDSS: mild: range: 0-2.5, moderate: range: 3-4, severe: range: 4.5-6.5 Disease duration by MS severity: mild: 13.17 (6.87), moderate: 18.29 (8.3), severe: 18.55 (5.07)	healthy n=38 (71% female) age: 35.1 (12.4)	ActiGraph GT3X accelerometer 3 axes 1 wearable waist  Polar S610i ECG 1 wearable sternum	Physical activity Association with MS severity (mixed) Association with other measures (mixed) Group difference MS vs HC (s) Group difference MS vs MS (mixed)

Supratak et al, 2018 10.3389/FNEUR.2018.00561	n=32 53.1% 39.9 (8.6)	not reported: n=32	EDSS: 2.5 (mean), range: 1-6 not reported	healthy n=22 (50% female) age: 39.8 (8.9)	Axivity AX3 accelerometer 3 axes 1 wearable lower back	Physical activity Association with other measures (mixed)
Motl et al, 2018 10.1037/REP0000162	n=684 81.0% 47.1 (10.2)	RR: n=598, P: n=71, unknown: n=15	PDDS: 2.0 [3.0] 9.8 (7.5)	none	ActiGraph 7164 accelerometer 1 axis 1 wearable waist	Physical activity Association with other measures (mixed)
Bernhard et al, 2018 10.1186/S12883-018-1111-7	n=23 not reported not reported	not reported: n=23	not reported not reported	none	Rehawatch accelerometer, gyroscope, magnetometer 3 axes 3 wearables lower back, ankle	Gait Group difference MS vs other diseases (mixed)
Midaglia et al, 2019 10.2196/14863	n=76 69.7% 39.5 (7.9)	RR: n=69, PP: n=3, SP: n=4	EDSS: 2.4 (1.4) 11.3 (7.0)	healthy n=25 (28% female) age: 34.9 (9.3)	Undefined smartphone accelerometer, gyroscope, touchscreen 3 axes 1 wearable pocket, hand	Physical activity, Gait, balance, dexterity/tremor Subjective patient acceptability (nt)
Block et al, 2019 10.1001/JAMANETWORKOPEN.2019.0570	n=95 62.1% 49.6 (13.6)	not reported: n=95	EDSS: 4.0 (median), range: 0-6.5 not reported	none	Fitbit Flex accelerometer 3 axes 1 wearable wrist	Physical activity Association with MS severity (s) Group difference MS vs MS (mixed) Responsiveness to change (mixed)

Kratz et al, 2019 10.1093/ABM/KAY018	n=107 69.2% 45.16 (11.73)	RR: n=78, P: n=29	not reported 9.49 (8.36)	none	<b>PRO-Diary</b> accelerometer 3 axes 1 wearable wrist	<b>Physical activity</b> Association with other measures (mixed)
Silveira et al, 2019 10.1016/J.CONCTC.2019.100366	n=22 90.9% 52.2 (10.5)	RR: n=19, not reported: n=3	PDDS: 1.5 [4.0], EDSS: 3.5 [2.0] 13.9 (10.3)	none	<b>ActiGraph GT3X+</b> accelerometer 3 axes 1 wearable waist	<b>Physical activity</b> Responsiveness to change (mixed)
Baird et al, 2019 10.1016/J.MSARD.2019.07.003	n=124 75.0% By age group: young: 33.3 (5.0), middle-aged 48.5 (5.8), older 65.8 (4.5)	RR: n=107, not reported: n=17	not reported Disease duration by age group: young: 6.7 (5.0), middle-aged: 12.4 (5.8), older: 19.9 (8.7)	none	<b>ActiGraph GT3X+</b> accelerometer 3 axes 1 wearable waist	<b>Physical activity</b> Group difference MS vs MS (mixed)
Rooney et al, 2019 10.1080/09638288.2019.1634768	n=91 68.1% 48.1 (11.9)	RR: n=63, PP: n=14, SP: n=14	EDSS: 2.9 (1.5), range: 0- 6.5 8.8 (7.2)	none	<b>Axivity AX3</b> accelerometer 3 axes 1 wearable upper leg	<b>Physical activity</b> Association with other measures (s)
Cederberg et al, 2019 10.1016/J.JNS.2019.116531	n=253 80.6% 59.4 (10)	RR: n=170, PP: n=29, SP: n=51, benign: n=3	not reported 20.3 (9.7)	none	<b>ActiGraph GT3X+</b> accelerometer 3 axes 1 wearable waist	<b>Physical activity</b> Association with other measures (mixed)
Bollaert et al, 2019 10.1519/JPT.00000000000000163	n=40 62.5% 65.3 (4.3)	RR: n=27, not reported: n=13	EDSS: 4.0 [2.0] 21.5 (8.6)	<b>healthy</b> n=40 (63% female) age: 66.5 (6.7)	<b>ActiGraph GT3X+</b> accelerometer 3 axes 1 wearable position not reported	<b>Physical activity</b> Group difference MS vs HC (mixed)

Bollaert, 2019 10.7224/1537-2073.2018-001	n=40 62.5% 65.3 (4.3)	RR: n=27, not reported: n=13	EDSS: 4.0 [2.0] 21.5 (8.6)	none	ActiGraph GT3X+ accelerometer 3 axes 1 wearable waist	Physical activity Association with other measures (s)
Motl et al, 2019 10.1016/j.DHJO.2019.05.002	n=275 81.1% 57 (10.1)	RR: n=181, not reported: n=94	not reported 20.4 (9.7)	none	ActiGraph GT3X+ accelerometer 3 axes 1 wearable waist	Physical activity Association with other measures (mixed)
Braakhuis et al, 2019 10.1186/S12984-019-0573-1	n=212 73.6% 47.9 (10.4)	RR: n=155, PP: n=22, SP: n=21, other: n=14	EDSS: 2.5 [1.5] 6.4 (7.5)	none	ActiGraph GT3X+ accelerometer 3 axes 1 wearable waist	Physical activity Group difference MS vs MS (s)
Block et al, 2019 10.1177/2055217319888660	n=31 54.8% 53.4 (11.7)	RR: n=16, P: n=15	EDSS: 4.0 (mean), range: 0-6.5 17.5 [8.5-23]	none	ActiGraph GT3X accelerometer 3 axes 1 wearable waist  Fitbit Flex accelerometer 3 axes 1 wearable wrist  Fitbit Flex2 accelerometer 3 axes 1 wearable wrist	Physical activity Association with other measures (mixed)
Motl et al, 2019 10.1037/REP0000280	n=295 75.6% 59.7 (10.1)	RR: n=181, not reported: n=114	not reported 20.4 (9.7)	none	ActiGraph GT3X+ accelerometer 3 axes 1 wearable waist	Physical activity Association with other measures (mixed)

Sasaki et al, 2019 10.1080/02640414.2018.1554614	n=63 76.2% 56.6 (7.3)	RR: n=50, SP: n=7, P: n=3, other: n=3	not reported not reported	none	<b>ActiGraph GT3X</b> accelerometer 3 axes 1 wearable waist	<b>Physical activity</b> Association with other measures (s)
Schwab et al, 2020 10.1109/JBHI.2020.3021143	n=774 not reported not reported	not reported: n=774	not reported not reported	healthy n=372 (female ratio not reported) age: not reported	<b>Bring-your-own-device (smartphone)</b> accelerometer, gyroscope, touchscreen 3 axes 1 wearable pocket, hand	<b>Gait, Dexterity/tremor, Other: cognition</b> Group difference MS vs HC (nt)
Mosquera-Lopez et al, 2020 10.1109/JBHI.2020.3041035	n=25 68.0% 54 (mean), range: 33-76	RR: n=11, PP: n=6, SP: n=8	EDSS: range: 4.0-6.0 not reported	none	<b>MotioWear</b> accelerometer 3 axes 1 wearable waist	<b>Gait, balance</b>
Mate, 2020 10.7224/1537-2073.2019-047	n=125 78.4% 45.4 (10.0)	not reported: n=125	not reported 6.1 (3.4)	none	<b>activPAL3</b> accelerometer 3 axes 1 wearable upper leg	<b>Physical activity</b> Association with other measures (nt)
Næss-Schmidt et al, 2020 10.1080/2331205X.2020.1713280	n=28 78.6% 56.3 (8.8)	not reported: n=28	not reported 12.4 (7.4)	mixed stroke: n=22 (55%, female), age: 65.1 (10.8); PD: n=34 (29% female), age: 67.9 (7.8); RA: n=15 (100% female), age: 57.3 (17.0)	<b>Axivity AX3</b> accelerometer 3 axes 1 wearable upper leg	<b>Physical activity</b> Association with other measures (s) Group difference MS vs other diseases (stroke, Parkinson's, rheumatoid arthritis) (nt)
Sandroff et al, 2020 10.1017/S1355617720000284	n=385 78.2% 49.9 (11.6)	RR: n=299, P: n=45, not reported: n=41	PDDS: 2.0 [4.0] 12.3 (9.4)	none	<b>ActiGraph GT3X+</b> accelerometer 3 axes 1 wearable waist	<b>Physical activity</b> Association with other measures (s)

Pau et al, 2020 10.3390/IJERPH17238848	n=45 51.1% Age by sex: women: 49.4 (9.0), men: 51.2 (11.8)	RR: n=30, PP: n=8, SP: n=7	EDSS: 3.6 (1.8) Disease duration by sex: women: 17.6 (10.2), men: 18.4 (13.4)	healthy n=41 (51% female) age: women: 46.7 (14.6), men: 49.6 (14.4)	ActiGraph GT3X accelerometer 3 axes 1 wearable wrist	<b>Physical activity</b> Group difference MS vs HC (mixed) Group difference MS vs MS (mixed)
Twose et al, 2020 10.1063/5.0022031	n=34 not reported range: 18-65 [inclusion criteria]	not reported: n=34	not reported not reported PDDS: normal: n=153, mild disability: n=109, moderate disability: n=142, gait disability: n=2	healthy n=24 (female ratio not reported) age: not reported	Bring-your-own-device (smartphone) touchscreen 1 wearable hand	<b>Dexterity/Tremor</b> Association with MS severity (nt) Association with other measures (nt) Responsiveness to change (nt)
Pratap et al, 2020 10.2196/22108	n=495 46.9% Age by MS diagnosis: self-referred: 45.2 (11.6), clinic-referred: 48.93 (11.20)	RR: n=423, PP: n=40, SP: n=30, not reported: n=2	Disease duration by MS diagnosis: self-referred: 11.14 (8.84), clinic-referred: 14.29 (8.89)	healthy n=134 (64% female) age: 39.3 (11.4)	Bring-your-own-device (smartphone) accelerometer, gyroscope, touchscreen 3 axes 1 wearable hand	<b>Gait, balance, dexterity/tremor</b> Association with MS severity (s) Association with other measures (s) Group difference MS vs HC (nt) Group difference MS vs MS (nt)
Nasseri et al, 2020 10.7717/PEERJ.9303	n=18 50.0% 49.6 (8.5)	chronic progressive: n=18	EDSS: 3.5 (median), range: 2.5-6.0 13.1 (5.6)	MS patients n=20 (64% female) age: 52.5 (7.3) Type: chronic progressive: n=20 Severity: EDSS: 3.5 [3.0- 6.0] Disease duration [yrs]: 20.1 (13.0)	ActiGraph GT3X+ accelerometer 3 axes 1 wearable position not reported	<b>Physical activity</b> Group difference MS vs MS (ns) Responsiveness to change (s) Responsiveness to intervention (ns)
Bourke et al, 2020 10.3390/S20205906	n=76 69.7% 39.5 (7.9)	RR: n=69, PP: n=3, SP: n=4	EDSS: 2.4 (1.4) 11.3 (7.0)	healthy n=25 (28% female) age: 34.9 (9.3)	Samsung Galaxy S7 (smartphone) accelerometer, gyroscope, magnetometer 3 axes 1 wearable waist	<b>Gait</b> Group difference MS vs HC (nt) Test-retest reliability (mixed)

				<b>MS patients (non-fatigued FSS &lt; 4)</b> n=78 (96% female) age: 60.6 (8.9) Type: RR: n=57, P: n=21 Severity: PDDS: 1.0 [0.0-4.0] Disease duration [yrs]: 20.7 (8.5)		
Neal et al, 2020 10.1177/1545968320916159	n=174 81.0% 58.7 (10.4)	RR: n=115, P: n=59	PDDS: 4.0 [2.0] 20.1 (10.2)		<b>ActiGraph GT3X+</b> accelerometer 3 axes 1 wearable waist	<b>Physical activity</b> Association with other measures (s) Group difference MS vs MS (s)
Hibner et al, 2020 10.1016/j.MSARD.2020.101941	n=50 76.0% 46 (12)	RR: n=50	EDSS: 3.3 [2.5-4] not reported	<b>none</b>	<b>ActiGraph 7164</b> accelerometer 3 axes 1 wearable waist	<b>Physical activity</b> Association with other measures (s)
Stuart et al, 2020 10.1177/2055217320975185	n=56 53.6% 53.6 (8.0)	PP: n=32, SP: n=24	EDSS: 5.7 (1.3) 12.2 (8.6)	<b>none</b>	<b>SenseWear Armband</b> accelerometer, thermometer, galvanic skin response 3 axes 1 wearable upper arm	<b>Physical activity</b> Association with MS severity (s) Association with other measures (mixed) Responsiveness to change (s)
Shah, 2020 10.1007/S00415-020-09696-5	n=13 not reported 48.69 (11.10)	not reported: n=13	PREDSS: range: 3.5-6.0 not reported	<b>healthy</b> n=21 (female not reported) age: 46.4 (11.1)	<b>APDM Opal IMU</b> accelerometer, gyroscope, magnetometer 3 axes 3 wearables lower back, foot	<b>Gait</b> Association with MS severity (s) Association with other measures (s) Group difference MS vs HC (mixed)
Lam et al, 2020 10.1177/1352458520968797	n=85 75.3% 46.4 (10.1)	RR: n=51, PP: n=9, SP: n=25	EDSS: 3.5 [2.5-4.0] 11.3 [ 5.1-17.7]	<b>healthy</b> n=18 (56% female) age: 45.2 (13.5)	<b>Bring-your-own-device (smartphone)</b> touchscreen 1 wearable hand	<b>Dexterity/Tremor</b> Association with MS severity (mixed) Association with other measures (mixed) Group difference MS vs HC (mixed) Group difference MS vs MS (ns) Test-retest reliability (nt)

Zhai et al, 2020 10.3389/FNEUR.2020.00688	n=67 62.7% 42.9 (10.9)	RR: n=34, P: n=33	EDSS: 3.0 (median), range: 1.0-6.0 8.5 (8.1)	healthy n=70 (67% female) age: 41.5 (12.8)	<b>Samsung Galaxy S4 (smartphone)</b> accelerometer, gyroscope, magnetometer 3 axes 1 wearable habitual phone position  <b>ActiGraph GT3X+</b> accelerometer 3 axes 1 wearable waist	<b>Physical activity</b> Association with MS severity (mixed) Association with other measures (mixed) Group difference MS vs HC (s) Group difference MS vs MS (ns)
Creagh et al, 2020 10.1088/1361-6579/AB8771	n=71 69.0% 40 (8)	RR: n=64, PP: n=3, SP: n=4	EDSS: normal 9PHT: 2.1 (1.26), abnormal 9HPT: 3.3 (1.4) not reported	healthy n=22 (32% female) age: not reported	<b>Samsung Galaxy S7 (smartphone)</b> touchscreen 1 wearable hand	<b>Dexterity/Tremor</b> Association with other measures (mixed) Group difference MS vs HC (nt) Group difference MS vs MS (nt)
Abbadessa et al, 2021 10.3390/JCM10061160	n=25 48.0% 40.08 (8.87)	RR: n=25	EDSS: 4.45 (1.39) 9.3 (6.6)	none	<b>Samsung Gear S2</b> accelerometer 3 axes 1 wearable wrist  <b>APDM instrumented socks prototype</b> accelerometer, gyroscope 3 axes 2 wearables foot	<b>Physical activity</b> Association with MS severity (mixed) Association with other measures (mixed)
Shah et al, 2021 10.1016/J.GAITPOST.2020.11.024	n=15 not reported 49 (10.25)	RR: n=15	not reported not reported	healthy n=16 (female ratio not reported) age: 44.7 (10.7)	<b>APDM Opal IMU</b> accelerometer, gyroscope, magnetometer 3 axes 1 wearable lower back	<b>Gait</b> Group difference MS vs HC (nt)



Abonie et al, 2021 10.3390/IJERPH18010017	n=11 27.3% 57.9 (8.0)	RR: n=6, PP: n=1, SP: n=4	PDDS: 2.0 [2.0] 12 [24]	MS patients (no tailored information group) n=10 (30% female) age: 60.9 (9.5) Type: RR: n=4, PP: n=1, SP: n=5 Severity: PDDS: 3.5 [2.0] Disease duration [yrs]: 9.5 [19.5]	ActiGraph GT3X+ accelerometer 3 axes 1 wearable waist	Physical activity Group difference MS vs MS (s) Responsiveness to intervention (s)
					Samsung Galaxy S7 (smartphone) accelerometer, gyroscope, magnetometer 3 axes 1 wearable upper leg	Gait Association with MS severity (mixed) Association with other measures (mixed) Group difference MS vs HC (s) Group difference MS vs MS (s) Test-retest reliability (mixed)
Creagh et al, 2021 10.1109/IJBHI.2020.2998187	n=73 68.5% Age by MS severity: moderate: 40.5 (6.9), mild: 39.3 (8.3)	not reported: n=73	EDSS: moderate: 4.2 (0.7), mild: 1.7 (0.8) not reported	healthy n=24 (75% female) age: 35.6 (8.9)	Motorola 360 Sport accelerometer, gyroscope 3 axes 1 wearable wrist	
Jeng et al, 2021 10.1080/09638288.2019.1614683	n=233 80.7% 59.1 (9.8)	RR: n=171, P: n=62	PDDS: 3 [1-5] 19.8 (9.7)	none	ActiGraph GT3X+ accelerometer 3 axes 1 wearable waist	Physical activity Association with MS severity (s) Group difference MS vs MS (s)
					Samsung Galaxy S7 (smartphone) accelerometer, gyroscope, magnetometer 3 axes 1 wearable upper leg	Gait Association with MS severity (s) Association with other measures (s) Group difference MS vs HC (nt) Test-retest reliability (s)
Cheng et al, 2021 10.1016/J.GAITPOST.2020.11.025	n=76 69.7% 39.5 (7.9)	RR: n=69, PP: n=3, SP: n=4	EDSS: 2.4 (1.4) 11.3 (7.0)	healthy n=25 (28% female) age: 34.9 (9.3)		