Table S1. Full Search Strategy

Database	Search
AMED, CINHAL (via EBSCO)	S1 (MH "Multiple Sclerosis") S2 "multiple sclerosis" S3 "MS" S4 "demyelinat*" S5 S1 OR S2 OR S3 OR S4 S6 (MH "Dancing+") S7 (MH "Dance Therapy") S8 "danc*" S9 "ballet" S10 "ballroom" S11 "tango" S12 "jazz" S13 "Zumba" S14 "movement to music" S15 S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 S16 S5 AND S15 Expanders: Apply equivalent subjects → AMED: 10 → CINHAL: 60
Medline (via Ovid)	S1 Multiple Sclerosis/ S2 multiple sclerosis.mp. S3 MS.mp. S4 demyelinat*.mp. S5 S1 OR S2 OR S3 OR S4 S6 exp Dancing/ S7 exp Dance Therapy/

	S8 danc*.mp. S8 ballet.mp. S10 ballroom.mp. S11 tango.mp. S12 jazz.mp. S13 zumba.mp. S14 movement to music.mp. S15 S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 S16 S5 AND S15 → 91
Web of Science (Core Collection)	(TS=("multiple sclerosis" OR "MS" OR "demyelinat*")) AND TS=((danc* OR "ballet" OR "ballroom" OR "tango" OR "jazz" OR "Zumba" OR "movement to music")) → 216
ProQuest (Health & Medical Collection, Nursing & Allied Health Database, and PsycINFO)	S1 (noft("multiple sclerosis") OR TI,AB("MS") OR noft("demyelinat*")) S2 (noft(danc*) OR noft("ballet") OR noft("ballroom") OR noft("tango") OR noft("jazz") OR noft("zumba") OR noft("movement to music")) S3 S1 AND S2 → Health & Medical Collection: 173 → Nursing & Allied Health Database: 84 → PsychINFO: 50
Scopus	(TITLE-ABS-KEY ("multiple sclerosis" OR "demyelinat*")) AND (TITLE-ABS-KEY (danc* OR "ballet" OR "ballroom"

	OR "tango" OR "jazz" OR "zumba" OR "movement to music")) → 50

Table S2. Complete Characteristics of Included Studies

Author, Date, Design	Sample Characteristics (size[a], sex, age, MS type, disability status, disease duration)	Intervention Characteristics (type, delivery mode, dosage, frequency, duration, adverse events, adherence, dropouts)	Outcome Measures	Main Findings	Quality
Randomized Controlled Trial					
Young et al,[35] 2019; proof-of-concept trial	81 (self-reported diagnosis); 66F/15M; Mean age dance group, 49.67 ± 9.40 years; MS type, NR; PDDS range, 0-6 (no disability - bilateral support); Mean disease duration of dance group, 13.56 ± 8.26 years	**Movement-to-music** (M2M, n = 27); Group, in-person; 60 minutes x 3/week for 12 weeks; AE (study-related), 1; Adherence, 53.7% Lost to follow-up, n = 3 Adapted yoga (AY, n = 26); Group, in-person; 60 minutes x 3/week for 12 weeks; AE (study-related), 0;	Primary: Mobility (TUG) Walking endurance (6MWT) Lower-extremity functional strength (5XSTS) Secondary: Fatigue and pain (PROMIS Fatigue and Pain Interference Short Forms 8a)	Primary: TUG Pre M2M group: 12.3 ± 12.4 Post M2M group: 12.2 ± 14.1 Group difference (P = .03)* Post hoc, between M2M-WC (P = .01)* Cohen's d = 0.7, medium ES Post hoc, between AY-WC (P = .09)° 6MWT Pre M2M group: 341.7 ± 110.1 Post M2M group: 383.9 ± 134.1 Group difference accounting for PDDS (P = .04)* Post hoc, between M2M-WC (P = .04)*	Moderate (60% quality criteria met)

				Cohen's d = 0.6, medium ES Post-hoc, between AY-WC (P = .25) <u>5XSTS</u> Group difference (P = .41) Secondary: <u>PROMIS-Fatigue</u> Group difference accounting for PDDS (P = .08)° Post hoc, between M2M-WC (P = .09)° Cohen's d = 0.49, medium ES <u>PROMIS-Pain</u> Group difference (P = .70)	
		Adherence, 67.7% Lost to follow-up, n = 5 Waitlist control (WC, n = 28); Biweekly, educational newsletters; Lost to follow-up, n = 5			
Nonrandomized Studies					
Mandelbaum et al,[38] 2016; uncontrolled, before-and-after study	8 (confirmed diagnosis); 5F/3M; Age range, 29-63 years; 7 RRMS/1 SPMS; PDDS range, 0-3 (no disability-walking disability);	**Salsa dance**; Group, in-person; 60 minutes x 2/week for 4 weeks; AE, 0; Adherence, 98% Dropouts, 0	Gait (T25-FW, MSWS-12) Balance (DGI, BBS) Mobility (TUG) Balance confidence (ABC) Self-efficacy (MSSS)	*Pre-post, within group* TUG (P = .02)* Pre: 9.5 (8.6; 10.0) Post: 8.5 (8.1; 8.9) GLTEQ (P = .01)* Total minutes/week Pre: 250.0 (25.0; 447.5) Post: 450.0 (305.0; 731.3) Moderate exercise (min) Pre: 70.0 (0.0; 338.8)	Moderate (60% quality criteria met)

| | Disease duration range, 1-22 years | | Motivation for PA (MPAM-R)

Physical activity (GLTEQ)

MS symptom checklist (MS Symptoms)

Neurological disability (PDDS) | Post: 325.0 (240.0; 492.5)

Total leisure activity (METs)
Pre: 28.0 (4.5; 50.8)
Post: 43.0 (30.0; 67.5)

MS Symptoms ($P = .05$)*
Pre: 5.0 (2.0; 6.8)
Post: 5.5 (2.3; 8.5)

DGI ($P = .09$)°

ABC ($P = .09$)°

T25-FW, MSWS-12, BBS, MSSS, PDDS, MPAM-R, ($P > 0.1$)

Pre 3-month follow-up
DGI ($P = .04$)*
Pre: 22.5 (20.3; 23.8)
3-month: 24.0 (22.3; 24.0)

TUG ($P = .05$)*
Pre: 9.5 (8.6; 10.0)
3-month: 8.3 (8.0; 8.9)

MSWS-12 ($P = .05$)*
Pre: 29.2 (1.0; 59.9)
3-month: 17.7 (1.6; 41.7)

GLTEQ ($P = .07$)° | |

				T25-FW, ABC, BBS, MSSS, MS Symptoms, MPAM-R, PDDS ($P > .1$) *Pre 6-month follow-up* All outcomes ($P > .1$)	
Scheidler et al,[39] 2018; uncontrolled, before-and-after study	8 (confirmed diagnosis); 8F/0M; Age range, 36-65 years; All RRMS; EDSS range, 2.5-6.5 (mild disability-moderate disability); Disease duration, NR	**Targeted ballet**; Group, in-person; 60 minutes x 2/week for 16 weeks; AE, 0; Adherence, preset criteria of over 94% of classes Dropouts, 2	Ataxia (ICARS and smoothness of movement in 5-meter walk from motion capture data [Uni-Lateral S-index]) Balance (MBT and center of pressure measurements of balance in step-to-stand task [GBM])	*Pre-post, within group* ICARS Pre: 19.6 ± 6.3 Post: 8.19 ± 6.6 ($P < .001$)* Cohen's d = 2.6, huge ES Unilateral S-index, right Pre: -81.7 ± 10.9 Post: -75 ± 8.7 ($P = .028$)* Cohen's d = 0.87, large ES Unilateral S-index, left Pre: -78.6 ± 10.3 Post: -73.2 ± 7.5 ($P = .027$)* Cohen's d =0.87, large ES MBT Pre: 16.6 ± 5.0 Post: 23.6 ± 2.6 ($P = .001$)* Cohen's d =1.2, very large ES GBM, back direction	Moderate-high (80% quality criteria met)

				Pre: -4.82 ± 6.9 Post: -17 ± 10.4 (P = .025)* Cohen's d = .68, medium ES GBM, right, left, and front (P > .05)	
Ng et al,[37] 2020; controlled, before-and-after study	13 (confirmed diagnosis); 12F/1M; Age range, 40-59 years; 12 RRMS/1 PPMS; PDDS range, 1-4 (mild disability-cane use); Disease duration, NR	**Ballroom dance** (n = 7); Group, in-person; 60 minutes x 2/week for 6 weeks; AE, 0; Adherence, all complete at least 75% sessions (preset criteria) Dropouts, 0 No-dance control group (n = 6)	HR-QoL (PROMIS-GH) Self-efficacy (MSSE) MS Exercise Self-efficacy Fatigue (FIS) Depression (BDI) Balance (BBS, DGI) Mobility (TUG) Physical function (MSFC: 9-HPT, T25-FW, PASAT) Exercise intensity (HR, RPE)	*Within group, dance group:* PROMIS-GH (P = .03)* Pre: 40 (29,45) Post: 42 (34,48) MSFC (P = .03)* Pre: 0.25 (-1.33, 0.35) Post: 0.47 (-0.90, 0.55) PASAT (P = .03)* Pre: 49 (31, 55) Post: 55 (45, 60) FIS (P = .07)° BDI (P = .07)° BBS (P = .07)° TUG (P = .08)° MSSE-Control (P = .46), MSSE-Function (P = .18), MS Exercise Self-efficacy (P =	Moderate-high (80% quality criteria met)

| | | | | .21), DGI (*P* = .11), 9HPT (*P* = .35), T25-FW (*P* = .53)

Within group, control group:
All outcomes (*P* > .1)

Between dance & control groups:
PROMIS-GH
(*P* ≤ .05)*

MSFC
(*P* ≤ .05)*

PASAT
(*P* ≤ .05)* | |
| Van Geel et al,[36] 2020; controlled, pilot, before-and-after study | 17 (confirmed diagnosis);

16F/1M;

Age range, 29-65 years;

MS Type, NR;

Disability status, cane (n = 1), walker (n = 2), crutch (n = 1);

Disease duration range, 3 21 years | **Choreo-based participatory dance** (n = 7);

Group, in-person;

90 minutes x 2/week for 10 weeks;

AE, NR;

Adherence, NR;

Dropouts, 1 | Primary:
Fatigue (MFIS, FSS, DWI, CFI)

Secondary:
Physical capacity (6MWT, T25-FW, ABC, DGI, 5TSTS, MSWS-12, 9HPT)

Sensory function (EmNSA)

Cognitive capacity (SMDT, PASAT) | *Within group, dance group:*
Primary:
MFIS (*P* = .03)*
Pre: 43 (19; 48)
Post: 26 (6; 49)

MFIS physical (*P* = .02)*
Pre: 19 (8; 24)
Post: 13 (3; 20)

FSS (*P* = .31), DWI (*P* = .87), CFI (*P* = .25)

Secondary:
5STS (*P* = .04)* | Moderate (60% quality criteria met) |

| | | Control art group (n = 10);

Group, in-person;

Approximately 90 minutes x 2/week for 10 weeks;

AE, NR;

Adherence, NR | Dual Task Performance

HR-QoL (MSIS-29, SF-36)

Leg coordination | ABC (*P* =.04)*

MSWS-12 (*P* =.046)*

9HPT-dominant (*P* =.02)*

DT - Cognitive (*P* =.03)*

Leg coordination (*P* =.046)*

PASAT (*P* =.068)°

MSIS-29 (*P* =.063)°

DT Cost (*P* = .063)°

Within group, art group:
Primary:
MFIS (*P* =.005)*
Pre: 48 (41; 54)
Post: 42 (28; 47)

MFIS, physical (*P* =.01)*
Pre: 25 (20; 30)
Post: 20 (13; 23)

FSS (*P* = .72), DWI (*P* =.74), CFI (*P* = .45)

Secondary:
SDMT (*P* = .04)*

DT - Cognitive (*P* = .02)* | |

				PASAT ($P = .085$)°	
Camacho et al,[40] 2021; uncontrolled, before-and-after study	5 (confirmed diagnosis); 4F/1M; Age range, 38-64 years; All RRMS; EDSS, mean of 3.5 ± 1.5 (mild-moderate disability); Disease duration, NR	**Targeted ballet**; Group, in-person; 60 minutes x 2/week for 12 weeks; AE, 0; Adherence, mean hours of 21.8 ± 4.65 (preset criteria of 24 hours) Dropouts, 0	Ataxia (ICARS and smoothness of movement in 5-meter walk from motion capture data [Bilateral S-index]) Balance (MBT)	*Pre-post, within group:* ICARS ($P = .01$)* Hedge's g = -1.21, large ES MBT ($P = .015$)* Hedge's g = 1.08, large ES Bilateral S-index ($P = .0499$)* Hedge's g = .69, medium ES	Moderate (60% quality criteria met)
Quantitative Descriptive Studies					
Salgado and de Paula Vasconcelos,[43] 2010; case report	1 (confirmed diagnosis); Female; Age, 45 years; RRMS; EDSS, 3 (moderate disability); Disease duration, 10 years	**Dance/movement therapy**; 1 on 1, in-person; 100 minutes x 2/ week for 20 weeks; AE, NR; Adherence and dropouts, N/A	Neurological disability (EDSS, MRD, NRS)	*Pre-post changes* EDSS Pre: 3 Post: 2 (-1) MRD Pre: 6 Post: 5 (-1) NRS Pre: 64 Post: 71 (+7)	Low (40% quality criteria met)

Charlton et al,[42] 2010; evaluation	11 (confirmed diagnosis); 11F/0M; Age range, 32-70 years; MS type, NR; Disability status, ambulatory without assistance (n = 7), use walkers (n = 4); Disease duration, NR	**Jazzercise**; Group, in-person; 45 minutes x 2/ week for 16 weeks; AE, 0; Adherence, 67-75% Dropouts, n = 3	Questionnaire evaluating participant-reported changes in balance, confidence, coordination, energy, flexibility, mood, and strength	Percentage agreed or strongly agreed outcome improved postintervention: 56% balance and coordination 67% strength and flexibility 78% confidence 100% energy & mood 100% enjoyment & satisfaction with classes & motivation to continue with classes	Low (40% quality criteria met)
Lachance et al,[41] 2021; single-case experimental study	1 (confirmed diagnosis); +6 other people with reduced mobility Female; Age, 60 years; MS Type, NR; Disability status, walks with a limp; Disease duration, NR	**Clinical dance therapy**; Group, in-person; 90 minutes x 2/ week for 12 weeks; AE, NR; Adherence, 71% Dropouts, N/A	Primary: Mobility (FSST) Secondary: Mobility (MDRT-behind, MBT)	Tau-U analysis Primary: FSST ($P = .86$) Tau-U: 0.08 Secondary: MDRT-behind ($P = .034$)* Tau-U: -1, Very large ES MBT ($P = .034$)* Tau-U: 1, Very large ES	Moderate (60% quality criteria met)

| Ares-Benítez et al,[44] 2021; case report | 1 (confirmed diagnosis); Female; Age, 49 years; RRMS; EDSS, 5 (moderate disability); Disease duration, 24 years | **Spanish dance & physiotherapy**; 1 on 1, in-person; 60 minutes x 5/week for 3 weeks; AE, NR; Adherence & dropouts, N/A | Spasticity (MAS) Balance (BBS) Walking endurance (6MWT) Spatiotemporal gait patterns (Gaitrite) Muscle strength (MMT) Range of motion (goniometry) | *Pre-post changes* <u>BBS</u> Pre: 30 Post: 55 (+25 points) <u>6MWT</u> Pre: 427.24 m and 1.19 m/s Post: 465 m and 1.46 m/s (+37.76 m and +0.27 m/s) <u>MMT</u> Ankle dorsiflexors, +2 points Ankle plantar flexors, +1 point Knee and hip muscles, no change <u>MAS</u> Sural triceps, -1 point Quadriceps, hamstrings, psoas & adductors, no change <u>Spatiotemporal gait parameters, left lower limb, right lower limb</u> Stride time (s), -0.04, -0.02 Step length (cm), +12.6, +13.6 Stride length (cm),+26.4,+26.1 Base of support (cm),+3.9,+2.8 Single support (%GC), +5.2, +3.3 Double support (%GC), -10.2, -9.8 Balance (%GC), +3.3, +5.4 | Low (40% quality criteria met) |

				Speed (cm/s), +24.8 Cadence (steps/minute), +4.6	
Mixed Methods Studies					
Mason,[45] 2020; thesis	5 (self-reported diagnosis); Sex, age, MS type, disability status, and disease duration, NR	**Participatory dance**; Group, in-person; 75 minutes x 1/week for 6 weeks; AE, NR; Adherence, 93% Dropouts, n = 0	*Quantitative* Self-efficacy (MSSE-10) *Qualitative* Exit questionnaire	*Quantitative* Pre-post, within group <u>MSSE-10</u> Pre: 880 Post: 906 ($P = .225$) *Qualitative* Participants reported experiencing improvements in self-efficacy, self-confidence & physical well-being.	Low (20% quality criteria met)
Whiteside and Ruckert,[46] 2020; evaluation	22 (self-reported diagnosis) including n = 12 (AM group) and n =10 (PM group) 21F/1M; Age, NR; MS type, NR; Disability status, multiple walking aids, wheelchairs (n = 2); Disease duration, NR	**Participatory dance**; Group, in-person; 75 minutes x 1/week for 10 weeks; AE, NR; Adherence & dropouts, N/A (drop-in format)	*Quantitative* Fatigue (FSS) Balance confidence (ABC) Gait (MSWS-12) *Qualitative* Interviews & participant observation	*Quantitative* Pre-post, within group <u>ABC</u> AM group ($P > .05$) PM group ($P = .07$)° <u>FSS</u> AM group ($P = .02$)* Pre: 5.4 Post: 4.7 PM group ($P = .06$)° <u>MSWS-12</u> AM group ($P = .06$)°	Moderate (60% quality criteria met)

				PM group ($P > .05$) *Qualitative* Participants reported experiencing improvements in body confidence & awareness, well-being, belonging & quality of life.	
Qualitative Study					
Baeza and Fuertes,[47] 2022	1 (confirmed diagnosis); Female; Age, 53 years; MS type, NR; Disability status, carries out daily activities independently using a cane at home and wheelchair outside; Disease duration, 18 years	**Creative movement practice**; Solo, remote; 100 minutes x 1/week for 6 weeks; AE, NR; Adherence & dropouts, N/A	Interviews using visual narratives from photographs as metaphors	Participant reported improvements in body confidence & awareness, emotional confidence & well-being & connectedness with family members.	Low (40% quality criteria met)

5STS, Five Times Sit-to-Stand; 6MWT, 6-Minute Walk Test; 9HPT, 9-Hole Peg Test; ABC, Activities-Specific Balance Confidence Scale; AE, adverse events; BBS, Berg Balance Scale; BDI, Beck Depression Inventory; CFI, Cognitive Fatigability Index; DGI, Dynamic Gait Index; DT, dual task; DWI, Distance Walked Index; EDSS, Expanded Disability Status Scal;, EmNSA, Erasmus modified Nottingham Sensory Assessment; ES, effect size; F, female; FIS, Fatigue Impact Scale; FSS, Fatigue Severity Scale; FSST, Four Square Step Test; GC, gait cycle; GLTEQ, Godin Leisure Time Exercise Questionnaire; HR, heart rate; HR-QoL, health-related quality of life; ICARS, International Cooperative Ataxia Rating Scale; M, male; MAS, Modified Ashworth Scale);MBT, Mini-Balance Evaluation Systems Test; MDRT, Multi-Directional Reach Test; MFIS, Modified Fatigue Impact Scale; MMT, Daniels-Worthingham Manual Muscle Test; MPAM-R, Motives for Physical Activity Measure-Revised; MRD, Minimal Record Disability; MSFC, MS Functional Composite Score; MSIS-29, MS Impact Scale-29; MSSE, Multiple Sclerosis Self-efficacy Scale; MSSS, MS Self-Efficacy Scale; MSWS-12, 12-Item Multiple Sclerosis Walking Scale; N/A, not applicable; NR, not reported; NRS, Scripps Neurologic Rating Scale; PASAT, Paced Auditory Serial Addition Test; PDDS, Patient Determined Disease Steps scale; PPMS, primary progressive MS; PROMIS-GH, Patient-Reported Outcomes Measurement Information System Global Health; RPE, rating of perceived exertion; RRMS, relapsing-remitting MS; T25-FW, Timed 25-Foot Walk Test; TUG, Timed Up and Go; SF-36, Short Form Health Survey; SDMT, Symbol Digit Modalities Test; SPMS, secondary progressive MS.

[a]All people with MS unless otherwise specified.
*$P \leq .05$
°trend towards significance ($P < .1$)

Table S3. Examples of Qualitative Data

Themes	Sample Qualitative Data
Theme 1: Body awareness and physical confidence	"When I fell, again in the same place during the week, this time instead of battering and bruising and injuring myself, I kept on my feet because I automatically did that backward, straight leg, and it kept me on my feet. It then let me reach forward and hold onto the sink, so I could get my balance back."[46] "I have noticed that I am more confident in trying things that I thought I couldn't do, or that I knew I would end up exhausted after, like running or stretching."[45]
Theme 2: Psychological well-being	"I enjoy the class. Sometimes I end the class feeling tired but in a better and more energetic mood. In those days where I felt tired even before starting the class, I knew that I would not be forced to do more than I was able to."[45]
Theme 3: Sense of belonging	"You're going somewhere where you don't have to explain as much. Because I don't mind going in and saying 'this is what my symptoms are; this is what I find difficult; this is what I want to get out of it,' but it's more just that when I'm saying that, I don't then have to explain what that actually means on top of having to have that initial explanation."[46] "The class is a totally nonjudgmental atmosphere, so self-conscious inhibition is minimal."[45]
Theme 4: Social relationships	"When you feel the heat and it is heat that comes into your body…you're smiling; you're feeling warmer. And I think when you see each other and we're passing and you're smiling, I love

	that part when you're just doing the dancing with each other and that's lovely."[46] "This image reflects union, and it is what I have felt with my daughter in the last activity of embracing slowly. It is something we never do and should being such a simple and good gesture, we should do it more often." [47] (translated from Spanish to English)

Table S4. Mixed Methods Appraisal Tool (MMAT) Quality Assessment

Studies	Qualitative studies					Randomized controlled trials					Nonrandomized studies					Quantitative descriptive studies					Mixed-methods studies					MMAT score	Overall quality
Author, Date, Design	1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	2.4	2.5	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3	4.4	4.5	5.1	5.2	5.3	5.4	5.5		
Baeza and Fuertes,[47] 2022	Y	Y	CT	N	N																					**	Low
Young et al,[35] 2019; proof-of-concept trial						Y	Y	N	Y	N																***	Moderate
Mandelbaum et al,[38] 2016; uncontrolled, before-and-after study											Y	Y	CT	N	Y											***	Moderate
Scheidler et al,[39] 2018; uncontrolled, before-and-after study											Y	Y	Y	Y	CT											****	Moderate-high
Ng et al,[37] 2020; controlled, before-and-after study											N	Y	Y	Y	Y											****	Moderate-high
Van Geel et al,[36] 2020; controlled, before-and-after study											Y	Y	Y	N	CT											***	Moderate
Camacho et al,[40] 2021; uncontrolled, before-and-after study											CT	Y	Y	Y	CT											***	Moderate
Salgado and de Paula Vasconcelos,[43] 2010; case report																CT	N	Y	Y	CT						**	Low
Charlton et al,[42] 2010; survey																N	N	N	Y	Y						**	Low

Study																								
Lachance et al,[41] 2021; single-case experimental study										CT	Y	Y	N	Y									***	Moderate
Ares-Benítez et al,[44] 2021; case report										CT	N	Y	Y	N									**	Low
Mason,[45] 2020; mixed-methods thesis	CT	CT	Y	Y	Y					CT	Y	Y	Y	Y					Y	N	N	CT	N	*	Low
Whiteside and Ruckert,[46] 2020; mixed-methods evaluation	Y	Y	Y	Y	Y					CT	Y	N	Y	Y					N	Y	Y	Y	N	***	Moderate

Y (Yes), N (No), CT (Can't tell)