

Therapeutic use of the Arts for Patients with Multiple Sclerosis

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People with multiple sclerosis (MS) face a wide variety of physical, emotional, and social challenges. A multidisciplinary comprehensive care approach is recommended for the management of MS and its consequences, and non-traditional treatments are increasingly considered by patients and health care providers, particularly for the promotion of wellness in the context of this chronic disease. Previous research has demonstrated the benefits of the therapeutic arts (art therapy, dance and movement therapy, and music therapy) in addressing some of the physiological, psychological, cognitive, social, and spiritual needs of patients facing a variety of chronic illnesses. Our review of the literature suggests that therapeutic art can be beneficial to individuals with MS, particularly in promoting self-efficacy, emotional well-being, and motor control. However, the body of evidence is limited, and further research is needed regarding the outcomes and mechanism of action of therapeutic arts in MS to better understand their role in the management of the consequences of the disease.

Keywords

Music therapy, art therapy, dance therapy, multiple sclerosis

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Multiple sclerosis (MS) is a chronic neurological disorder which causes demyelination and axonal damage in the central nervous system (CNS), leading to various neurological impairments and worsening disability over time in a majority of affected individuals. MS is presumed to be an autoimmune disease, although its cause remains unknown.¹ The direct and indirect consequences of MS often negatively impact activities, participation, and quality of life; and may lead to a loss of functional independence. In addition, comorbidities such as depression are frequently associated with MS.² The comprehensive management of MS includes disease-modifying therapies, symptom management, rehabilitation, and lifestyle changes to optimize wellness.³ Patient empowerment and promotion of self-efficacy are important strategies in the management of MS. Individuals with MS have been encouraged to utilize coping strategies that are problem-focused and provide a sense of control.⁴ It has been found that interacting with others and engaging in leisure activities can improve mental and physical health in individuals with MS.⁵

A large number of people with MS have expressed interest in using complementary and alternative therapies (CAT), including yoga, mindfulness, stress management exercises, acupuncture, meditation, and journaling, among many others.^{5–12} Indeed, in one survey, 84% of respondents reported using at least one CAT modality in the past year.¹³ Therapeutic arts constitute a group of CAT modalities which have been seldom investigated in MS.¹⁴

Therapeutic arts and multiple sclerosis

Using the arts for therapeutic purposes is not a new idea. Philosophers in ancient Greece referred to the healing power of music, and for Plato: “Man’s music is seen as a means of restoring the soul, as well as confused and discordant bodily afflictions, to the harmonic proportions that it shares with the world soul of the cosmos.” (Timaeus, 429–347 BC). More recently, publications directed to a general audience, such as Dr. Oliver Sacks’ *Musicophilia: Tales of Music and the Brain*, have highlighted the potential benefits of music in individuals with various medical conditions, including neurological disorders.¹⁵ Therapeutic uses of the arts can take many forms and involve a variety of professionals. We will mostly limit our discussion to therapeutic art disciplines including art therapy (AT), dance/movement therapy (D/MT), and music therapy (MT). These therapies are performed by individuals with degrees and specialized training in these areas, and who are registered or certified.

The American Art Therapy Association (AATA) defines AT as “an integrative mental health profession that combines knowledge and understanding of human development and psychological theories and techniques with visual arts and the creative process to provide a unique approach

Table 1: Studies about art and multiple sclerosis

Publication	Intervention	Type of study/article	Setting/population	Demographic and MS information	Session number/length	Outcome measures - change (when applicable)	Summary of findings
Fraser and Keating ⁵ (2014)	Art	Uncontrolled pilot study (n=14)	Creative art program	14 F, 0 M; age range 29–70 years (average 51.3 years); no information on MS subtype or disability	One 2-hour session weekly for 4 weeks	Rosenberg Self-Esteem Scale - significant improvement (p=0.009) Modified Social Support Survey - significant improvement (p=0.046) MS Self-Efficacy Scale - significant improvement of self-efficacy to control MS (p=0.007) and to function with MS (p=0.019) Herth Hope Index - significant improvement (p=0.002)	Art program was effective; had potential to improve lives of patients with MS; and had positive impact on social support, self-efficacy, self-esteem, and hope.
Hunt, et al. ²³ (2014)	Art	Qualitative interviews (n=5)	Physiotherapy clinic	3 F, 2 M; age range 40–65 years; time since MS diagnosis, range 1–30 years	N/A: individuals participated in visual arts as leisure activity, not in art therapy sessions	Semi-structured interviews	Art-making helped with opening new doors, coping with functional losses, identity maintenance, emotional well-being, self-worth, life satisfaction, using time well, filling occupational voids, decreasing worry about illness, learning, development, and social camaraderie.
Kelly ²² (2009)	Art	Case study (n=1)	Family health practice	1 F; 51-years-old; newly diagnosed with MS	Not reported	N/A	Art was an outlet to decrease stress, describe vision problems to physicians, describe emotions, change view on life, change relationships, and cope with illness.
Sutherland ²⁴ (1999)	AT	Case study (n=1)	Female geriatric ward at veteran's hospital	1 F; 63-years-old; chronic progressive MS with paraplegia and left upper monoplegia	28 sessions over 9 months	N/A	Rich symbolism found in paintings, but patient refused to discuss. Therefore, art therapist suggested interpretations and themes such as cancer, death, anger regarding illness, integration of feminine and masculine parts of personality, and termination of relationship with AT.
Field ²⁵ (1976)	AT	Case study (n=1)	Neurological hospital	1 M; 60-years-old; "almost totally paralyzed by MS"	One 2-hour session weekly for almost 2 years	N/A	Improved emotional expression; increased self-esteem; gratification through art; and recovery of the use of impaired limbs.

AT = art therapy with intervention of an art therapist; F = female; M = male; MS = multiple sclerosis; N/A = not applicable. 'Significant' refers to statistical significance.

for helping clients improve psychological health, cognitive abilities, and sensory-motor functions".¹⁶ Through the use of various art media and verbal processing, art therapists seek to enable communication with the ultimate goal of providing help with emotional and behavioral issues. D/MT is defined by the American Dance Therapy Association (ADTA) as "a psychotherapeutic approach that uses movement to encourage the cognitive, social, physical, and emotional integration of the patient".¹⁷ With D/MT, the focus is on expression through body movement. According to the American Music Therapy Association, MT is the clinical and evidence-based use of music interventions to accomplish individualized goals within a therapeutic relationship by a credentialed professional who has completed an approved MT program.¹⁸ While they differ in the art form used, therapeutic art disciplines share a strong focus on generating and sharing emotions, and generally include a motor activity component. The interventions can be implemented one-on-one, or in a group setting.

In 2013 the National Multiple Sclerosis Society conducted a survey among close to 200 individuals with MS on their use of the arts.¹⁹ Arts-related activities included visual arts for 55% of respondents, music for 46%, and writing for 45%. Most respondents were involved with their current creative activity before being diagnosed with MS, and over one half of those found a way to continue pursuing this activity through adaptations.^{19,20} Reported benefits included taking their mind off their disease, channeling emotions, and promoting a sense of control and self-esteem. Anecdotally, individuals with MS who engaged in art-related activities have consistently reported emotional benefits, and sometimes improvement of cognition and motor control.^{20,21}

The goals of this narrative review are to increase awareness of therapeutic art use in MS patients, to summarize key evidence regarding the effects of therapeutic arts in this population, and to assess the need for further research.

Art therapy

We found a few studies and informational articles regarding the use of art and art therapy with individuals with MS (*Table 1*). Kelly wrote a case report about a newly diagnosed patient with MS who experienced depression and anxiety, and was advised to find strategies for stress relief. The patient, who was an artist, chose to create pieces of art to describe the vision problems she was having, to her physicians, as well as to describe her emotions. The art became an outlet for her, and she found that it helped her change her view on life, and identify ways to cope with her illness and not let it overwhelm her.²²

The meaning of participating in leisure-based visual art-making for individuals with MS was explored in a qualitative study in Ireland.²³ Semi-structured interviews were conducted among five adults (three women). Participants found that art-making helped to decrease worrying about MS and to maintain self-identity, filled time and “occupational voids” left by lifestyle changes, helped in dealing with decreased functional abilities; and improved life satisfaction, self-worth, and emotional well-being. The positive effects of art classes were also emphasized.

A case study reported the use of painting in the setting of AT for a 63-year-old woman with chronic progressive MS who was paraplegic with upper left monoplegia, leaving her with only one functional limb.²⁴ There was a lot of symbolism in her paintings, but she often refused to discuss their meanings; therefore, the art therapist suggested interpretations and themes such as cancer, death, anger regarding her illness, integration of feminine and masculine parts of personality, and termination of relationship with the art therapist.

Field, an art therapist, reported on her work with patients diagnosed with a variety of neurological disorders, including MS. The AT goals in this group of patients were to help them more effectively use their bodies; to improve their motor function; and to improve their emotional issues, particularly guilt, fear, depression, and anxiety; while providing them with art experiences that were enjoyable and rewarding.²⁵

In a case series involving 12 individuals with MS who participated in eight 2-hour weekly sessions of AT, Stutsman et al. found that both the creative process and the group activity generated positive outcomes.²⁶ Participants reported increased focus on the positive aspects of life, as well as improved depressive symptoms and self-esteem. The team comprised an art therapist, a counselor, and an occupational therapist.

Fraser and Keating conducted a 4-week creative art program that utilized a specific art form each week including beading, collage-making, knitting, and watercolor.⁵ The program was facilitated by a nurse and creative artists, and there were 14 women with MS in attendance. At the end of the program, there was a statistically significant improvement on the Rosenberg Self-Esteem Scale, the Herth Hope Index, the Modified Social Support Survey, and the MS Self-Efficacy Scale. Effect sizes of change were large for hope, self-esteem, and self-efficacy (control subscale).

Dance and movement therapy

Dance can be seen as a form of physical exercise, but adds components of movement creativity, structured movement, rhythm, and dancing with a partner. D/MT has been shown to have value for patients with neurological

disorders such as Parkinson’s disease, spinal cord injury, autism, traumatic brain injury, sensory loss, and stroke.^{27,28} The Dance for PD® program, issued from a collaboration between the Mark Morris Dance Group and the Brooklyn Parkinson Group, offers specialized dance classes to individuals with Parkinson’s disease and their care partners in the New York City area, with affiliates in several countries.²⁹

Based on this body of evidence, and considering the high prevalence of motor symptoms in MS, it is reasonable to assume that individuals with MS could benefit from participating in dance as a means of improving control over their muscles and body movements. However, there has been very little published research into the use of dance or D/MT with these patients. In fact, at the time this article was written, only two studies were found regarding the use of dance in patients with MS (*Table 2*).

Salgado and de Paula Vasconcelos published a case study of a 45-year-old woman with relapsing-remitting MS who participated in dance interventions twice a week for over 5 months.³⁰ Results from the Minimal Record of Disability (MRD), the Expanded Disability Status Scale (EDSS), and the Scripps Neurological Rating Scale (NRS) reflected decreased neurological impairment after the intervention. Qualitative improvement was noted in emotional states and control of balance, and she did not require as much support to walk safely. After participating in this therapeutic dance intervention, the patient was able to perform activities of daily life that she previously had to limit.

A pilot study was conducted by Mandelbaum et al. in which seven patients with MS participated in a structured salsa dance intervention twice a week for 4 weeks.²⁸ Statistically significant improvements were found from baseline to the end of the program on the Dynamic Gait Index (DGI), Timed Up and Go (TUG), Godin Leisure Time Questionnaire, and Activities-specific Balance Confidence Scale. In addition, comparison between baseline and 3-month post-intervention follow-up demonstrated significant improvement on the DGI, TUG, and MS Walking Scale. These findings suggest that MS patients who participate in structured dance might improve their balance, gait, and physical activity level.

Dance therapy was integrated into a 3-day intensive multidisciplinary social cognitive wellness program for individuals with MS in the Netherlands (Can Do Treatment, inspired from the CAN DO MS program in the United States). Preliminary efficacy data showed improved self-efficacy, as well as physical and mental health-related quality of life, but the specific effects of the dance intervention cannot be teased out.³¹

Music therapy

Several studies reported on the effects of music, or MT, in patients with chronic neurological conditions such as stroke, Parkinson’s disease, Huntington’s disease, and traumatic brain injury. MT interventions include singing, playing instruments, improvisation, making music, music listening, rhythmic entrainment, rhythmic auditory stimulation (RAS), song choice, sharing meaningful songs, musical autobiographies, musical life review, music mnemonics, recording music, musical identity, movement to music, and overall engagement with music.³²⁻⁴³ Approaches have included Nordoff Robbins, neurologic MT (neuro-MT), psychodynamic MT, and cognitive behavioral therapy.^{8,33,37,39,40,44,45} The goals of MT may include improving emotional status (adjustment to illness, mood states, expression of emotions), and enhancing neurologic performance (gait,

Table 2: Studies about dance and multiple sclerosis

Publication	Intervention	Type of study/article	Setting/population	Demographic and MS information	Session number/length	Outcome measures - change (when applicable)	Summary of findings
Mandelbaum, et al. ²⁸ (2016)	Dance	Uncontrolled pilot study (n=8)	Dance class	5 F, 4 M; age range 29–63 years (average 49.5 years); PDDS scores 0 = 2 F, 1 M 1 = 2 F, 1 M 3 = 1 F, 1 M	Two 1-hour sessions weekly for 4 weeks	TUG test - statistically significant improvement (p<0.05) DGI - statistically significant improvement (p<0.10) Activities-Specific Balance Confidence Scale - statistically significant improvement (p<0.10) Godin Leisure Time Questionnaire - statistically significant improvement (p<0.05 post-treatment; p<0.10 at 3 month follow-up) Significant improvement on DGI, TUG, and MS Walking Scale-12 at 3-month follow-up (each p<0.05)	Patients with MS who participate in dance may have improved balance, gait, and physical activity.
Salgado and de Paula Vasconcelos ³⁰ (2010)	Physical therapy emphasizing dance	Case study (n=1)	Physical therapy	1 F; 45-years-old; relapsing-remitting MS diagnosed 10 years earlier	Two 1-hour and 40-minute sessions weekly for 5 months	MRD improved from 6 to 5 NRS improved from 64 to 71 EDSS improved from 3 to 2	Improved balance control, postural control physical functioning and ability to complete activities of daily living noted; and patient stated her self-esteem and emotional state improved.

DGI = Dynamic Gait Index; EDSS = Expanded Disability Status Scale; F = female; M = male; MRD = Minimal Record of Disability; MS = multiple sclerosis; NRS = Scripps Neurological Rating Scale; PDDS = Patient-Determined Disease Steps; TUG = Timed Up and Go. 'Significant' refers to statistical significance.

speech, cognitive function), thereby facilitating activities of daily living and improving quality of life.^{32,33,35, 39–42}

Neuro-MT was shown to be effective in the sensorimotor and cognitive rehabilitation of individuals with neurological disorders;⁴⁶ in many cases the music therapist works in conjunction with the rehabilitation team, particularly the physical therapist or occupational therapist.^{39,43} Neuro-MT techniques encompass the use of: rhythmic entrainment to help with motor synchronization (RAS); rhythmic speech cueing to assist with speech production, fluency, and intelligibility; respiratory and oral motor exercises to assist with lung function, communication, and respiratory muscle strength; executive function training through music to assist with problem solving, decision making, organizing, sequencing, and planning; singing to assist with word recall; and music mnemonics to assist with memory challenges and learning.^{8, 33,34,39,40,47,48} The proposed mechanism for the effects of MT on neurologic function is promotion of central neuroplasticity.

Few MT studies are specifically focused on MS (Table 3), but these include several randomized controlled trials (RCTs). Aldridge et al. randomized 20 patients with MS to MT (using the Nordoff Robbins approach) or no intervention (10 participants in each group).³⁷ Active treatment consisted of 8–10 MT sessions over the course of a year, and assessments were conducted at baseline, every 3 months during the treatment period, and 6 months after treatment. Although there was no statistically significant difference between the control group and the MT group, there was a medium between-group effect size for measures of anxiety, depression, and self-esteem. Significant within-group improvement was noted on the same parameters for the MT group. Fatigue, anxiety, and self-esteem scores worsened after treatment in the MT group.

Conklyn et al. compared a 2-week home-based walking program (HBWP) utilizing RAS to no intervention, in 10 individuals with MS and gait disturbance.⁴⁴ The HBWP involved walking for a total of 20 minutes daily for 2 weeks, with RAS music at a tempo 10% above the participant's spontaneous walking cadence. There was a significant between-group difference for double support time favoring active treatment, and medium to large between-group effect sizes were noted for other gait parameters. Participants expressed high satisfaction with the RAS-based walking program.

Improved perceived functional use of the hand (ABILHAND questionnaire) was reported in a RCT of keyboard playing (with versus without audio feedback) in an inpatient setting. There was also a significant time effect for hand function and pinch strength tests.³² In a pilot RCT of MT versus music appreciation sessions to improve respiratory muscle strength in individuals with advanced MS, no significant between-group differences were noted, although there was improvement of expiratory muscle strength in the MT group contrasting with deterioration in the control group.⁴⁷ Moore et al. compared learning via speech with learning through music on a recognition memory task, and their findings suggest that music mnemonics may help less impaired patients.³⁴

One case study reported on a woman with MS in her thirties who used song-writing to gain insight and delve into her personal problems.⁴⁹ When she first started participating in MT she exhibited a self-defeating mindset, but after engaging in 10 MT sessions she was able to express her feelings and engage in self-disclosure, performed and recorded her song, and improved her self-esteem.

Qualitative studies have shed light on the perceptions of individuals with MS who experienced MT. Magee and Davidson, utilizing grounded

Table 3: Studies about music and multiple sclerosis

Publication	Intervention	Type of study/article	Setting/population	Demographic and MS information	Session number/length	Outcome measures - change (when applicable)	Summary of findings
Gatti et al. ³² (2015)	Music	RCT (n=19)	Inpatient hospital	12 F, 7 M; average age: 46±9 years; primary or secondary progressive MS; Mean Functional Independence Measure score: 103±14.7	5 days a week, 30 minutes a day for 3 weeks	ABILHAND questionnaire - significant time x group interaction favoring music (p<0.05) 9HPT - significant time effect for both groups (p<0.05) Pinch dynamometer - significant time effect for both groups (p<0.05) Jamar dynamometer - no significant effect	Patients with MS seemed to improve their functional hand use by playing a musical keyboard.
Conklyn et al. ⁴⁴ (2010)	MT (home-based walking program with RAS) versus no intervention	RCT (n=10, 5 MT and 5 controls)	Outpatient MS/neurology clinic	7 F, 3 M; average age: MT group 47±10.5 years, control group 50.2±5.4 years; average disease duration: MT group 16.6±10.4 years, control group 12.2±5.7 years; Ambulation Index: MT group 4.4±0.5, control group 5.3±0.5	MT group received RAS daily for 4 weeks; control group received no intervention for 2 weeks then RAS for 2 weeks Assessments at baseline, 1, 2, 3, and 6 weeks	GAITrite System - statistically significant improvement in double support time in MT group versus control group (p=0.0176 left side and p=0.0247 right side); medium to high effect sizes for between-group differences in change for most other gait parameters Satisfaction survey - high satisfaction level	Feasibility and safety of RAS-based home walking program were demonstrated. Potential benefit of RAS for improving gait parameters.
Moore et al. ³⁴ (2008)	MT (learning via speech versus learning through music)	RCT (n=38)	Individuals with MS	30 F, 30 M; average age 53.3 years for the spoken group and 50.3 years for the music group; EDSS score range 3.5–7	One session	EDSS, Buschke's SRT, WCST Logical Memory I, subset from WMS-III), Yes-No Recognition Test, subset of Rey's AVLT, Seashore Rhythm Test No significant difference on any tests between MT group and spoken group on recognition tasks or baseline neuropsychological functioning (p>0.05)	Correlation analyses suggested music mnemonics may assist learning in individuals with less impairments.
Aldridge et al. ³⁷ (2005)	MT	RCT (n=20)	Music therapy sessions	14 F, 6 M; age range 29–47 years; relapsing, primary and secondary progressive MS; average time since diagnosis 11 years; average EDSS 2.6	8–10 sessions over 1 year (three blocks of single sessions)	EDSS, HADS, BDI, HAQUAMS, SESA (each p>0.05 with exception of HAQUAMS, p=0.07) No significant difference between control and MT group, but medium effect size for anxiety, depression, and self-esteem. Significant within-group improvement in the MT group for depression, self-esteem, and anxiety. Worsening of self-esteem, anxiety, and fatigue in MT group at follow-up	Individuals who participated in music therapy demonstrated improved fatigue, mood, and self-acceptance. It is possible that the scales worsened at follow-up because the music therapy was removed.

Table 3: Cont.

Publication	Intervention	Type of study/article	Setting/population	Demographic and MS information	Session number/length	Outcome measures - change (when applicable)	Summary of findings
Schmid ⁷ (2006) Schmid ³⁶ (2005) Schmid and Aldridge ⁴⁵ (2004)	MT	RCT (n=20)	Patients with MS	14 F, 6 M; age range 29–47 years; average duration of disease 11 years	Three blocks of 8–10 sessions per year	EDSS, MSFC, HADS, BDI, HAQUAMS, SESA Qualitative analysis: therapeutic narrative analysis and repertory grid method to review videos, music therapy interview No significant difference (p>0.05) between the control and MT groups from baseline to one year Within-group improvement (p<0.05) in MT group for anxiety, depression, and self-acceptance; minimal improvement in communication subscale of HAQUAMS No recognizable changes in functional or motor skills in either group	MT was found to be valuable in relief of emotional burden, increasing personal activity, improving well-being, and increasing positive self-identity and self-confidence. Increased coping, creativity, understanding of patient needs, self-image, personal experience perspective, social relationships; importance of not focusing on symptoms but on resources and abilities. Due to the stigmatizing effects of having MS, and the positive effects of MT, it is important to take aesthetics into consideration when assessing clinical improvement.
Wiens et al. ⁴⁷ (1999)	MT	Pilot RCT (n=19)	Long-term care center	Predominantly female participants; age range 37–68 years; advanced MS with average EDSS score 8.3	Three 30 minute sessions per week for 12 weeks	Mouth-pressure testing (inspiratory and expiratory) No statistically significant results; MT group demonstrated improved expiratory muscle strength; control group demonstrated deterioration	It is imperative that interventions need to begin early on in the disease process.
Moreira et al. ³⁵ (2009)	Music	Uncontrolled pilot study (n=8)	Multiple Sclerosis Investigation Center	3 F, 5 M; age range 22–58 years; six relapsing-remitting MS, one with secondary progressive MS, one primary progressive MS	One interview	Qualitative analyses, Even Rudd categories	Recalling music gave patients better perception of body awareness and feelings, and provided a means of activating memories, maintaining life continuity, and self-expression.
Magee and Davidson ⁴¹ (2002)	MT	Uncontrolled pilot study (n=14)	Day care and residential facility for complex neuro-disabilities	No demographic information provided; five of the 14 participants were diagnosed with MS	One weekly session for 2 weeks	POMS-BI form Significant change in positive direction in agreeable-hostile (p=0.003), energetic-tired (p=0.05), and composed-anxious (p=0.01) mood states pre- and post-MT; no significant results for elated-depressed mood subscale	MT may be effective in addressing negative mood states in patients undergoing neuro-rehabilitation.

Table 3: Cont.

Publication	Intervention	Type of study/article	Setting/population	Demographic and MS information	Session number/length	Outcome measures - change (when applicable)	Summary of findings
McNab ³³ (2010)	MT	Article and case vignettes (n=2)	Home-based services: neuro-palliative care	1 F in her early 60s (motor neuron disease); 1 F in her mid-70s (progressive MS and EDSS score 8.5)	Multiple sessions over several months (first case); or years (second case)	N/A	Described use of music therapy with individuals with progressive neurological diseases; included two case vignettes; proposed that music therapy enhances QoL and coping.
Lee ⁴⁹ (2007)	MT	Case study (n=1)	Long-term care facility	1 F in her 30s; diagnosed with MS in early adolescence	10 weekly sessions	N/A	Song-writing used with a woman with MS in order to develop insight into her situation and explore personal issues.
Steele ⁴ (2005)	MT	Case series (n=3)	Inpatient neurology ward	#1: 39-year-old F, EDSS score 9 #2: 35-year-old F, EDSS score between 8–8.5 #3: 52-year-old F, EDSS score 8.5 All secondary progressive MS	Not reported	N/A	MT assisted with coping strategies, sense of self, and sense of control.
Magee and Davidson ⁴² (2004)	MT	Systematic qualitative analysis of individual case studies (n=6)	Day care residential facility for complex neuro-disabilities	4 F, 2 M; age range 31–59 years; chronic progressive MS; time since diagnosis: range 3–25 years	Weekly 45-minute sessions for around 6 months (average 18 sessions)	Grounded theory	Music therapy affects expressive and interpersonal self, physical, and emotional challenges of living with an acquired disability.

9HPT = 9-Hole Peg Test; AVLT = Auditory-Verbal Learning Test; BDI = Beck Depression Inventory; EDSS = Expanded Disability Status Scale; F = female; HADS = Hospital Anxiety and Depression Scale; HAQUAMS = Hamburg Quality of Life Questionnaire in Multiple Sclerosis; M = male; MS = multiple sclerosis; MSFC = MS Functional Composite; MT = music therapy; POMS-BI = Profile of Mood States Bipolar; QoL = quality of life; RAS = Rhythmic Auditory Stimulation; RCT = randomized controlled trial; SESA = Scale for the Evaluation of Self-Acceptance; SRT = Selective Reminding Task; WCST = Wisconsin Card Sorting Test; WMS-III = Wechsler Memory Scale - 3rd edition. 'Significant' refers to statistical significance.

theory, identified three main themes in six individuals with progressive MS: ways of coping with emotions, the experience of participating in MT, and the experience of living with MS.⁴² Moreira et al. asked eight patients to identify 10 to 15 preferred songs that were significant in their lives, then conducted interviews which were analyzed, utilizing Even Ruud categories.³⁵ The authors found that recalling these preferred songs activated the participants' affective memories; improved their body perception, feelings, and identities; enabled them to express themselves; and provided them with a coping strategy for living with MS.³⁵

Summary and conclusions

This narrative review highlights the breadth of therapeutic art interventions that can be offered to individuals with MS, at every stage of the disease and in a variety of settings (inpatient versus outpatient, group versus individual sessions), with a wide range of emotional and physical outcomes. These interventions are accessible to all; although, adaptations may be needed to accommodate for physical or cognitive impairment. The choice of activity is usually preference-based, fostering patient empowerment and self-efficacy, which may result in higher motivation and better long-term

adherence, compared to more traditional interventions. Therapeutic art professionals provide a supportive environment, focus on the person, not the disability, and offer a success-oriented experience.^{4,33} Finally, art-based therapies can be used in combination with traditional interventions such as physical or occupational therapy.

Our review also demonstrates the paucity of evidence regarding the effects of therapeutic art interventions in MS, particularly for art and D/MT. Sample sizes are often small, and few studies include follow-up assessments after the intervention is completed. In addition, many studies have been conducted in clinical settings, while the majority of individuals with MS are community-dwelling. Access to a therapeutic arts professional may be limited by many factors, including distance and cost, therefore the long-term pursuit of arts-based activities initiated under the guidance of a skilled and qualified professional should be assessed. Investigation of the mechanism of action of arts-based interventions, particularly neuroplasticity, is lacking in MS. All of these evidence gaps constitute opportunities for future research on therapeutic arts interventions in MS. □

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