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REVIEW ARTICLE

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Social dance and movement for mental health: A narrative review

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Abstract

Across the fields of psychology, neuroscience, and psychiatry, dance—broadly and heterogeneously defined across cultures and movement styles—has been investigated for a range of potential benefits in healthy and clinical populations. There is a growing body of literature investigating the potential for dance, and in particular social forms of dance, to have a positive impact on mental health and well-being. Given widespread availability through community providers, social dance and movement could be an accessible, non-invasive, and affordable approach to the prevention and treatment of mood disorders, including depression. However, the existing literature is heterogenous, and there is a lack of methodological cohesiveness and systematization in the field of dance for mental health research. In this narrative review, we propose a novel classification system for social dance mental health research, which encompasses solo dance, partner dance, group dance, dance movement therapy, and cooperative movement. We review the existing literature examining the effects of social dance and movement in the context of low mood and depression and identify future research directions for building a solid evidence base for the application of social dance and movement in the prevention and treatment of mood disorders.

KEYWORDS

dance, depression, mental health, mood disorders, social dance, partner dance, psychosocial interventions

1 | INTRODUCTION

Depression directly impacts approximately 280 million individuals worldwide and is among the leading causes of disability globally (GBD 2019 Mental Disorders Collaborators, 2022). Within this context, identifying cost-effective, accessible, and evidence-based approaches to both its treatment and prevention are key public health priorities (World Health Organization [WHO], 2023). Loneliness, a lack of social support, and disruptions in social functioning are key risk factors for depression (Wang et al., 2018). Further, social support, and in particular feeling accepted, cared about, and encouraged by others are associated with positive treatment outcomes (Buckman et al., 2021). Given the important role of loneliness and social functioning in depression risk and symptomatology (Kupferberg et al., 2016; Pearce et al., 2021) targeting individuals' feelings of social disconnectedness may be a useful approach to depression prevention and treatment.

A number of lifestyle interventions, particularly those with a physical activity or social component, show great promise for the prevention and treatment of mental disorders (Choi et al., 2020; Firth

et al., 2020). For example, there is now a convincing and wide-ranging evidence base supporting exercise as an effective approach for the prevention and treatment of depression, which is based on studies of tens of thousands of participants followed over the course of more than a decade, as well as from meta-analytic reviews of randomized controlled trials (Dunn et al., 2005; Harvey et al., 2018; Kvam et al., 2016). Consistent with this, there is a growing body of evidence to suggest that dance and movement activities may have positive mental health impacts (Karkou & Oliver, 2017; Karkou et al., 2022). In particular, socially-based dance and exercise, such as partnered dance or group-based dance and movement activities, may be useful approaches for the treatment and prevention of depressive disorders by delivering both social connection and physical activity components simultaneously.

A large body of research has investigated the effects of social dance and movement on mental health. The types of movement and research outcomes studied have been diverse, including Irish Cèilidh dancing to promote mental wellbeing in older adults (Clifford et al., 2019); *capoeira* (an Afro-Brazilian cooperative movement art) in adolescents experiencing aggression and social exclusion (Amitay, 2022; Burt, 2015; Burt & Butler, 2011); contact improvisational dance exercises with prisoners to destigmatize touch (Houston, 2009); dance movement therapy (DMT) to assist in the psychological recovery of former child soldiers in Sierra Leone (Harris, 2007); salsa dancing for people with severe and enduring mental illness (Hackney & Earhart, 2010); and social movement-based classes for the mental health of adults with Parkinson's disease in Brazil (Carvalho de Melo et al., 2018).

There is a clear demand for evidence-based psychosocial interventions which capitalize on the mental health benefits of creative arts. For example, the World Health Organization (WHO) has recently published a report on the growing investigations into the efficacy and benefits of creative arts for mental health and health more broadly (Fancourt & Finn, 2019) and allocated funding for an upcoming research collaboration into the health and well-being benefits of the arts (World Health Organization [WHO], 2023). In the United Kingdom, more than 60% of public mental health service users have reported that they would like to have creative forms of psychological interventions available to them (Karkou et al., 2022). Further, the National Institute for Health and Care Excellence (NICE) depression guidelines suggest that more diverse psychological therapies should be made available to reflect diverse population needs.

However, despite the growing literature suggesting the positive impacts of dance and movement-based interventions, the methodologies used in studies within this field are heterogeneous, with a lack of standardization. This heterogeneity is problematic when attempting to establish the potential efficacy of social dance and movement activities as a prevention or treatment for depressive disorders, and the existing evidence base lacks the methodological rigor needed to inform NICE recommendations (Millard et al., 2021). In this narrative review, we summarize and evaluate the existing literature examining the effects of social dance and movement in the context of low mood and depression (for search strategy and selection criteria, see Box 1). To facilitate this, we propose a novel classification system to categorize and standardize research into dance and social movement for depressive disorders. In our review, we focus on the commonly described effects of the interventions on mental health-related outcomes and proposed mechanisms (e.g., social connectedness), as well as identifying gaps in the literature and priorities for future research.

2 | TYPES OF DANCE AND DANCE-BASED MOVEMENT

Dance is a multifaceted construct. During dance, individuals could potentially derive mental health benefits from numerous different aspects of dance, including moving in synchronization, the music that accompanies their movements, maintaining eye contact with others, and physical activity. Realistically, they are likely to benefit from multiple factors in combination. To create shared terminology across the heterogenous field of dance and dance-based movement research, we propose a classification system to more precisely describe and categorize types of dance and dance-based movement. This classification system was developed on the basis of dance and social movement lived experience, as well as by reviewing the ways in which researchers and dance/movement practitioners describe the components of their different arts.

(1) **Solo Dance** refers to dance styles that take place either alone, or in a group setting, but such that the movements themselves and focus are centered on the individual's body. Examples include solo ballet or at-home online high-intensity interval training (HIIT) dance classes.
(2) **Partner Dance** is defined as dance styles where most of an individual's time is spent in a two-person partnership, moving together. Examples of partnered dance include many ballroom, swing-dance, and Latin dance styles.
(3) **Group Dance** refers to styles in which participants interact with two or more others, and the main focus centers on the greater context of the group.
    a. *Interactive Group Dance* is when most of participants' time is spent interacting with each other; this might involve individual sets of partner interaction, but involves frequent partner switches and requires awareness of, and interactions with, more than one other individual over the course of the dance. Examples of this include modern Western square dancing, Rueda de Casino, and Cèilidh dancing.
    b. *Together-but-Separate Group Dance* necessitates synchronization from its participants, which requires peripheral awareness of, rather than direct interaction with, other participants and the group. Examples include Korean traditional dance, many group performance dance styles, and Chinese square dance.
(4) **Dance Movement Therapy (DMT)** refers to dance adapted for and applied within a therapeutic setting and led by a trained,

Box 1: Search Strategy and Selection Criteria

This narrative review includes representative, rather than complete, citations pertaining to the research that has been conducted on social dance and mood. Searches were conducted using MEDLINE (via Ovid), PsycINFO, Cochrane Database of Systematic Reviews, Google Scholar, and Web of Science (Core Collection)—as well as by reviewing reference lists of relevant studies and examining related suggested search results within these electronic databases, hand-searching, and "snowballing" citations contained within relevant publications. Search terms included "dance" OR "social dance" OR "partner dance" OR "Latin dance" OR "group dance" OR "ballroom dance" OR "cultural dance" OR "salsa" OR "contact improvisation" OR "dance movement therapy" OR "capoeira" OR "tango" OR "square dance" OR "Cèilidh" AND "mood" OR "depression" OR "mental health" OR "well-being" and common variations of these terms. A full list of the search terms used can be found in the protocol which is available here: https://osf.io/vzthj.

Our search was restricted to papers that were published in English, Spanish, and Portuguese (the languages in which at least one author has fluency; only BD reviewed the limited articles published only in Spanish and Portuguese). BD and BA independently reviewed article titles and abstracts to decide whether the papers were of relevance to the objective of this review. Papers were excluded if they did not include pre-post mood or well-being measures, unless they were hand-selected as furthering the narrative of the review (e.g., relevant survey data of individuals who completed online dance classes during social isolation within the COVID-19 pandemic). We also included studies of clinical populations in which the primary diagnosis of participants was not depression, so long as a pre-post mood or well-being measure was included (Appendix I). While we were primarily interested in the effects of engaging in community-based social dance and movement in the context of low mood and depression, we also discuss studies of DMT and solo dance styles. Manuscripts were then read in full for further information and assessment of pertinence to the aims of the review. Ultimately, two hundred fifty-four unique papers were considered and eighty-five were included. The full inclusion and exclusion criteria can be found in the OSF search protocol.

often certified, dance movement therapist. As DMT is regulated and formalized, relatively more research has been conducted into the potential benefits of dance-movement therapy for various populations, including those with depression.

(5) **Cooperative Movement** refers to movement styles that necessitate working together collaboratively with a partner or group to create and execute the movement style, such as *capoeira* or contact improvisation.

Importantly, these categories are not always mutually exclusive. For example, an hour of participating in a street dance troupe performance could be classified under separate-but-together group dance, if participants were performing routine movements towards an audience, or interactive group dance and cooperative movement, if they were "passing" the dance between each other. Many partner and group dances fall under the umbrella of cooperative movement, so while this review summarizes literature on solo, partner, and group dance, as well as dance movement therapy, in separate sections, cooperative movement is not reviewed separately due to the likelihood of overlap.

3 | THE EFFECTS OF SOLO DANCE STYLES ON MOOD AND DEPRESSION

The existing literature on the effects of solo dance on mental health is relatively sparse, with mixed results (Table 1). However, two studies of adolescent girls aged 13 to 18 with "internalizing problems" in Sweden found that attending dance classes twice weekly that "focused on joy, not on performance" was associated with significant improvements in quality of life (QoL) and depressive symptoms (Duberg et al., 2013; Philipsson et al., 2013). Solo dance as a supplement to ongoing treatment was also investigated in a recent study by Polanco-Zuleta and colleagues (2021), in which it was found that hospitalized patients with major depressive disorder (MDD) who received a dance program of moderate to vigorous intensity, in addition to pharmacological treatment, experienced greater decreases in depressive symptoms and increases in perceptions of self-efficacy, compared with a treatment as usual control group (Polanco-Zuleta et al., 2021).

Aside from these examples, there have been few controlled studies of the effects of solo dance within the context of mood and anxiety (Hellem et al., 2020; Humphries et al., 2023; O'Toole et al., 2015) and many have had small sample sizes (Alpert et al., 2009; Boing et al., 2018; Bouquiaux et al., 2022; Dahmen-Zimmer & Jansen, 2017; Duarte et al., 2023; Ho et al., 2022). The interpretation of findings from some studies is limited by confounds introduced by participant self-selection into the experimental (dance) or control conditions (Dahmen-Zimmer & Jansen, 2017; Fausto et al., 2022; Gurley et al., 1984) or the recruitment of active and control samples from different populations. For instance, in a study that reported improvements in mood for female participants of an aerobic dance intervention, the control group included a mixture of university students studying physical education and "advanced education college" students, whereas the intervention participants were all already aerobic dance participants recruited from their existing classes (McInman & Berger, 1993). These differences in study population across groups may have confounded the findings.

The COVID-19 pandemic offered an opportunity to further investigate the effects of solo dance on mood, given many dance classes moved to an online format. For example, Humphries and colleagues (2023) reported that engagement in online modern, jazz, and ballet classes was associated with improvements in affective state and social connection in socially isolated individuals (Humphries et al., 2023). Interestingly, although these activities fit the definition of "solo dance," the authors note that many participants reported the importance of social connection, despite the online format. Likewise, in an in-person study of older adults in Macau, a guided chair dance intervention was associated with significant improvements in depressive symptoms, a decrease in loneliness, and an increase in perceived social support, and resilience (Ho et al., 2022). This suggests that being guided by an instructor through an otherwise-individual activity, in the company of others (online or otherwise), could increase feelings of social connectedness, which may be an important factor in mood improvement. Overall, the existing literature on solo dance is tentatively promising already and merits further investigation for potential mental health benefits.

4 | THE EFFECTS OF PARTNER DANCE STYLES ON MOOD AND DEPRESSION

There is some evidence to suggest positive impacts of partner dance and movement styles on mood (Table 2). The existing literature in this category includes studies of partnered Latin dance, ballroom dance, tango, and *capoeira*, an Afro-Brazilian collaborative movement art. While each of these styles have elements of group-based movement—for example, completing warm up activities in "together-but-separate" lines—most of these movement sessions happen in pair work.

Latin dance has been shown to be related to changes in participants' enjoyment of physical activity, QoL, and self-confidence (Marquez et al., 2014; Meric & Ilhan, 2016). Although these effects are likely to be of relevance for mental health outcomes, it is important to note that there have been a limited number of studies that have directly investigated the impact of Latin dance on depression. In one study of Latin dance classes for people with depression, participants experienced modest mood improvements, although the study suffered from a greater than 50% attrition rate over the course of the 8-week intervention (Pinniger et al., 2013). As it was held over the lunchtime hour, participants reportedly had difficulty making time to attend class. This result suggests the importance of providing dance and movement-based interventions with participant convenience and accessibility in mind.

In a study of ballroom dance and ukulele music classes for community-dwelling older individuals, Ambegoankar and

TABLE 1 Studies of solo dance and movement with mental health outcome measures.

Number	Author, year	Research Design (e.g., RCT, Experimental Design, Quasi-experimental, Survey Data)	Target group	Type of movement	Relevant Psychological Outcome Measure(s)	Participants (*n* =)	Summary points
Healthy/control participants							
1	Netz and Lidor (2003)	Quasi-experimental	Female general curriculum & physical education teachers	One session of yoga, Feldenkrais (awareness through movement, low-intensity), aerobic dance, and swimming, versus computer class control	STAI (state); depression adjective checklist; T-DACL; Subjective Well-Being Scale	147	In another study comparing individuals' moods following yoga, Feldenkrais (defined as awareness through low-intensity movement), aerobic dance, swimming, and computer class, Feldenkrais and swimming enhanced mood the most over a single session compared to the higher intensity (aerobic dance) activity and lower intensity (computer) activity, leading researchers to suggest a low-intensity movement "sweet spot" for maximum benefits to healthy participants (Netz & Lidor, 2003).
2	Humphries et al. (2023)	Questionnaire (Pre-Post)	Adults during "COVID-19 social isolation crisis"	Modern, Ballet, Jazz (Solo Dance Styles)	Positive and Negative Affect (PANAS); Self-Esteem (Rosenberg Self-Esteem Scale; RSES), Depressive Symptoms (BDI); Anxiety (BAI); Social Connectedness Scale; Loneliness (UCLA-L); community inclusion (Inclusion in Community in Self Scale); Subjective Exercise Experiences Scale (SEES)	47	In an online investigation of modern jazz and ballet during the COVID-19 pandemic, while all dance styles were associated with improvements in affective state and social connection, the largest gains in self-esteem and decreases in negative affect corresponded with the greatest feelings of social connectivity participants experienced in the classes.
3	Fausto et al. (2022)	Quasi-experimental	Older African Americans	Cardio-dance exercise classes	BDI-II (and other measures)	64 (32 no-contact controls, 32 participants)	Older African Americans that participated in cardio dance exercises showed significant improvement in depressive symptoms compared to a no-contact control group (Fausto

(Continues)

TABLE 1 (Continued)

Number	Author, year	Research Design (e.g., RCT, Experimental Design, Quasi-experimental, Survey Data)	Target group	Type of movement	Relevant Psychological Outcome Measure(s)	Participants (*n* =)	Summary points
							et al., 2022); however, participants self-selected into experimental versus control activities, so it could be that enjoyment of dance moderated the decrease in depressive symptoms seen in the dance group.
4	O'Toole et al. (2015)	Quasi-experimental (no control group)	Community-dwelling adults age 50+ in Dublin, Ireland	Six-week creative expression & contemporary dance routines	Quality of life (EQ-5D-3L)	32 study completers	O'Toole and colleagues (2015) saw no significant changes in quality of life following 6 weeks of creative expression and contemporary dance routines for community-dwelling older adults in Ireland, although participants anecdotally reported enjoyment and increased emotional and psychological well-being.
5	Alpert et al. (2009)	Quasi-experimental (no control group)	Older adults	Jazz dance class	GDS	13	In a study of older adults taking part in jazz dance classes, researchers saw no significant change in geriatric depression scores (Alpert et al., 2009), but the study included just 13 participants, and so was too small to conclusively determine changes to depressive symptoms.
6	McInman and Berger (1993)	Survey data	Female aerobic dance participants and female university students	Aerobic dance participants	Profile of mood states	117 (75 aerobic, 42 control)	In this study of female aerobic dance and university students, significant positive changes were associated in aerobic dance participants' mood versus their university student control counterparts (McInman & Berger, 1993). However, the

TABLE 1 (Continued)

Number	Author, year	Research Design (e.g., RCT, Experimental Design, Quasi-experimental, Survey Data)	Target group	Type of movement	Relevant Psychological Outcome Measure(s)	Participants (*n* =)	Summary points
							experimental group included individuals who already voluntarily participated in aerobic dance classes doing dance movement activities, while the nondance university students participated in a session of a seated class.
7	Gurley et al. (1984)	Pre-Post Questionnaire	Students at Reed College in the United States	Single class period of dance versus sport versus academic	Self-rated evaluations of their own psychological well-being; questionaire with positive & negative feelings about self (similar to STAI-S)	133 (45 dance, 32 sports, 56 academic control)	In a survey-based study by Gurley and colleagues (1984), students at a university in the United States completed a self-rated psychological well-being questionnaire before and after their dance, sports, or academic classes; while those participating in dance experienced the most positive overall change in well-being compared to the sports and academic conditions, participants again self-selected into their courses, and enjoyment could moderate this effect.
Participants with depression							
8	Hellem et al. (2020)	Pilot study (no control group)	Women diagnosed with depressive disorders	"OULA (registered trademark) is choreographed dance that can be used as a vehicle to process emotions through movement to songs that focus on connection with the self and others, femininity, power, determination, letting go and love"	HAM-D; BAI; Subjective Happiness Scale (SHS)	53	This study demonstrated significant decreases in depressive and anxious symptoms over the course of an OULA dance intervention, in which "choreographed danced is used as a vehicle to process emotions through movement to songs that focus on connection with the self and others, femininity, power, determination, letting

(Continues)

TABLE 1 (Continued)

Number	Author, year	Research Design (e.g., RCT, Experimental Design, Quasi-experimental, Survey Data)	Target group	Type of movement	Relevant Psychological Outcome Measure(s)	Participants (*n* =)	Summary points
							go, and love" for women diagnosed with depressive disorders (Hellem et al., 2020).
9	Polanco-Zuleta et al. (2021)	RCT	Hospitalized patients with MDD	Dance program of "moderate to vigorous intensity": (so pharmacological treatment vs. pharmacological treatment + dance)	GSE (general self-efficacy scale); BDI	27 (14 control, 13 experimental)	When using a dance program of moderate to vigorous intensity plus pharmacological treatment versus pharmacological treatment only, patients hospitalized with major depressive disorder were suggested to experience greater decreases in depressive symptoms and significant increases in perceptions of self-efficacy in the experimental group versus the control group (Polanco-Zuleta et al., 2021).
10	Ho et al. (2022)	Quasi-experimental study	Older people with depressive symptoms in residential care in Macau	Chair-based (solo) dance	Geriatric Depression Scale (GDS) Short-Form; Multidimensional Scale of Perceived Social Support (MSPSS); UCLA-L; Connor-Davidson Resilience Scale-10 item (CD-RISC-10)	13	Older adults with depressive symptoms in Macau showed significant improvements in their depressive symptoms, loneliness, perceived social support, and resilience following a guided chair dance intervention (Ho et al., 2022)

TABLE 2 Studies of partner dance and movement with mental health outcome measures.

Number	Author, year	Research Design (e.g., RCT, Experimental Design, Quasi-experimental, Survey Data)	Target group	Type of movement	Relevant Psychological Outcome Measure(s)	Participants (n =)	Summary points
Healthy/control participants							
11	Ambegaonkar et al. (2022)	RCT	Adults over 65 years of age	Ballroom dance versus ukelele playing (music) versus social conversation control	Technically this is just 'improved cognition'/cognitive measure, but 'consistently mentioned increased social engagement as the major reason for participation'	64 (23 ballroom, 17 ukelele playing, 24 social conversation control)	In this study, which included social movement versus music and non-movement controls, mental health of adults over the age of 65 improved equally across ballroom dance, ukulele-playing, and social conversation conditions (Ambegaonkar et al., 2022). Ambegaonkar and colleagues suggested that while participants having psychological function within a normal range before the intervention did not leave much room for scores to improve, participants consistently cited their increased social engagement as their major reason for participation.
12	Carvalho de Melo et al. (2018)	Quasi-experimental (no control group)	Elderly people (60–85) in Belo Horizonte, Brazil	Ballroom dancing in a studio in Belo Horizonte (available 3×/week, 60 min/class)	BDI	51	This study recruited existed ballroom dancing participants to see if there was a correlation between for how long they'd been dancing and their depression levels. Among older individuals, dance participants with more than 84 months appeared to be significantly less depressed, and researchers also found a negative and significant correlation between the time individuals had practiced dance and their depression scores.
13	Quiroga Murcia et al. (2009)	Quasi-experimental	Tango dancers	Tango Argentino	PANAS	22	With respect to potential benefits of social dance and movement for nonclinical adult populations, Quiroga Murcia and colleagues

(Continues)

TABLE 2 (Continued)

Number	Author, year	Research Design (e.g., RCT, Experimental Design, Quasi-experimental, Survey Data)	Target group	Type of movement	Relevant Psychological Outcome Measure(s)	Participants (n =)	Summary points
							(2009) found more positive effects on the emotional state in individuals participating in partnered tango with music with compared to those participating in just the motions of tango with no music or the motions of tango with no partner; however, a limitation of this study was that it recruited existing tango dancers.
14	Marquez et al. (2014)	Feasibility study	Older Latino adults	Latin dance	Enjoyment of physical activity and quality of life	9	This study of Latin dance for older Latino adults suggested greater enjoyment of physical activity and improved physical quality of life following the dance intervention (Marquez et al., 2014).
15	Meric and Ilhan (2016)	Controlled trial (unclear if randomized)	University students	12-week Latin dance training, 2 h/week	Self-confidence	60 (30 control, 30 experimental)	A study of university students that underwent 12 weeks of Latin dance training demonstrated significant improvements in self-confidence in the experimental group versus the control group, which could point to another possible mechanism for mental health improvements (Meric & Ilhan, 2016).
16	Delattre and Collaer (2017)	Quasi-experimental (not randomized)	Practitioners of capoeira in Brazil	One session of capoeira versus acro-yoga, savate, mathematics class	State anxiety (STAI-S), state self-efficacy (GSE), prosocial behavior tendencies	132 (15 control, 117 experimental)	In a study of a single session of capoeira versus acro-yoga, French boxing, and an academic nonmovement control in nonclinical participants in Brazil, participants in all conditions experienced reductions in state anxiety and increases in self-efficacy, but pro-social behavior

TABLE 2 (Continued)

Number	Author, year	Research Design (e.g., RCT, Experimental Design, Quasi-experimental, Survey Data)	Target group	Type of movement	Relevant Psychological Outcome Measure(s)	Participants (n =)	Summary points
							tendencies were found to be higher in capoeira versus control participants (Delattre & Collaer, 2017).
Participants with depression							
17	Haboush et al. (2006)	RCT	Elderly adults (geriatric depression)	Private Ballroom dance lesson (partner) dance with an instructor: foxtrot, waltz, rumba, swing, cha-cha, and tango	HAM-D and Geriatric Depression Scale	20	Individuals with geriatric depression that participated in private ballroom dance lessons comprised of foxtrot, waltz, rumba, swing, cha-cha, and tango showed improvements in depression, with the study yielding some support for self-efficacy and hopelessness as outcome predictors and reporting that the treatment was enjoyable and well-received by participants (Haboush et al., 2006).
18	Pinniger et al. (2012)	RCT	Individuals with "self-declared depression" in Australia	Argentinian Tango versus mindfulness meditation versus waitlist control	Depression, Anxiety, and Stress scale; The Self Esteem Scale; Satisfaction with Life Scale; Mindful Attention Awareness Scale	66	When adults with depression in Australia participated in a study comparing Argentinian tango dancing, to mindfulness training, and to a waitlist control, while both tango and mindfulness participants experienced decreased depressive symptoms, only tango participants also experienced reduced stress levels following the intervention, and tango significantly predicted increased levels of mindfulness in participants (Pinniger et al., 2012).
19	Pinniger et al. (2013)	RCT	Individuals with "self-reported feelings	Argentinian Tango versus waitlist control	Depression, Anxiety, Stress, Insomnia	41	When examining only the tango group and waitlist control group

(Continues)

TABLE 2 (Continued)

Number	Author, year	Research Design (e.g., RCT, Experimental Design, Quasi-experimental, Survey Data)	Target group	Type of movement	Relevant Psychological Outcome Measure(s)	Participants (n =)	Summary points
			of stress, anxiety, and/or depression"				in what appears to be the same study population as Pinniger and colleagues (2012) above, researchers found significant reductions in depression, anxiety, stress, and insomnia in the experimental versus the control group, as well as an increase in self-efficacy and satisfaction in life (Pinniger et al., 2013)
20	Birks (2007)	Quasi-experimental (no control group)	Individuals with depression	Salsa dancing (8 1-h classes within 9 weeks)	BDI	Not reported	In this study, individuals with depression were offered salsa classes over their lunchtime hour; although participants that remained in the study experienced modest mood improvements over the course of the 8-week investigation, this research had greater than 50% attrition rate, which the author suggested was due to the time of day that it took place (Birks, 2007).

colleagues (2022) found a significant improvement in mental health in the experimental conditions (ballroom and ukulele) compared with a social conversation control group. Participants in this study consistently reported that increased social engagement was a motivating factor for participating in the research (Ambegaonkar et al., 2022). This study more broadly speaks to the potential benefits of creative arts education for mental health, given that both dance and music interventions had a beneficial effect on mental health. The use of a social control group allows the additional benefit of dance/music to be examined over and above the nonspecific effects of increased social interaction.

In a study of ballroom dancing for older adults with depression, participating in private ballroom dance lessons was associated with significant improvements in depression (Haboush et al., 2006). Further, a study of individuals that regularly participated in ballroom dance classes found a significant negative correlation between how long individuals had been dancing and their depression scores, suggesting that individuals who had been dancing for more than 84 months were significantly less depressed (World Health Organization [WHO], 2023). While both studies provide initial evidence for the potential of partner dance as an approach for the prevention and treatment of depression, further research with an experimental design, contrasting partner dance with other interventions, as well as with larger sample sizes, is needed.

One partner dance study investigated the "active ingredient" of why partner dance might be good for mental health by comparing a partnered tango with music condition to the motions of partnered tango with no music, and the motions of tango with no music and no partner (Quiroga Murcia et al., 2009). Quiroga Murcia and colleagues (2009) found the most positive effects on emotional state in the condition with partnered tango and music. This suggests that using partner dance forms in their entirety rather than dividing them into their subcomponents may be the most effective way of implementing them. Interestingly, in a study of tango versus mindfulness meditation versus a waitlist control, both tango and mindfulness significantly decreased depressive symptoms, however only the tango group also experienced decreased stress levels following the intervention (Pinniger et al., 2012). While this study used a short (two week) intervention, this finding suggests that a partner dance intervention could be effective for multiple mental health dimensions.

Partner dance for mental health research has suggested numerous potential mechanisms for mood improvements and the alleviation of depressive symptoms, including: increased social connectivity and social engagement (Ambegaonkar et al., 2022); self-efficacy (Alpert et al., 2009; Delattre & Collaer, 2017; Haboush et al., 2006); self-confidence (Meric & Ilhan, 2016) or self-esteem augmentation (Haboush et al., 2006); and increased empathizing and prosocial behavior tendencies (Delattre & Collaer, 2017). Notably, while some of these factors are more individual-centric—for example, decreased anxiety and increased self-efficacy—some are explicitly interpersonal, such as heightened feelings of social connectedness. Consistent with this, a study conducted in Rio de Janeiro, Brazil suggested that practitioners of capoeira experienced an increase in feelings of self-efficacy and reduced feelings of state anxiety from before to after a session of capoeira using self-report questionnaire measures (Delattre & Collaer, 2017). However, these changes were not significantly different from changes experienced in the control groups, which were: *savate*; French boxing; acro-yoga; and a graduate-level mathematics class. Interestingly, this research also suggested that while control participants experienced a decrease in prosocial behavior tendencies from before to after a session of their activity, those in the capoeira condition did not experience the same decrease (Delattre & Collaer, 2017).

Overall, the existing literature includes a breadth of partner movement activities and tentatively suggests the utility of these paired forms of movement for mental health, but more research needs to be conducted on interpersonal changes that may result from participating in partner dance, capoeira, and other cooperative movement activities. As social functioning is commonly disrupted in depression, activities that promote positive interpersonal factors—such as an increased propensity to empathize, or incentive to behave prosocially—could contribute to alleviating depressive symptoms downstream.

5 | THE EFFECTS OF GROUP DANCE STYLES ON MOOD AND DEPRESSION

Group-based dance and movement styles have been somewhat consistently shown to have a positive impact on mood and mental wellbeing (Table 3). The types of group dance used in studies to date have varied, and include traditional Chinese cultural dancing, Turkish folkloric dancing, circle dance, and group dance performance.

As with partner dance and movement research, rather than explicitly measuring changes to depression symptomology, several studies instead examine related factors that may be relevant to depression. For example, Clifford and colleagues (2019) found no significant changes in QoL or emotional health measures following an Irish social dancing intervention (Clifford et al., 2019). Interestingly, however, participants reported a preference for dancing in a class environment in person rather than following an at-home program, as they found in-person dancing to be more motivating and enjoyable. This finding has implications for structuring dance interventions, and additionally, suggests the importance of investigating motivation and enjoyment as potential moderators of the mental health benefits of group dance. In another study examining Turkish folkloric "dance exercise" in older women, there was a significant improvement in QoL from before to after the dance intervention, although no significant changes in depression (Eyigor et al., 2009). A third study of group dancing for older individuals reported no significant mental health changes over the course of the 12-week intervention (Sun et al., 2013). However, two of these studies had relatively small sample sizes, one did not include a control group, and the length and type of group dance intervention differed across the studies. Overall, more research is needed to explicitly examine the impact of group dance on depression with established depression measures, adequate sample sizes, and appropriate control groups.

TABLE 3 Studies of group dance and movement with mental health outcome measures.

Number	Author, year	Research design (e.g., RCT, experimental design, quasi-experimental, survey data)	Target group	Type of movement	Relevant Psychological Outcome Measure(s)	Participants (*n*=)	Summary points
Healthy/control participants							
21	Eyigor et al. (2009)	RCT	Older women	Turkish folkloric "dance exercise"	Geriatric Depression Scale (GDS); Quality of Life (SF-36)	37	This study suggested improvements in quality of life (QoL) from pre-post study
22	Aydin and Akandere (2017)	Experimental Design	Children age 7–11 in Konya, Turkey	Folkloric dancing (10 wks) versus unspecified (no treatment?) control	Beck Depression Inventory (BDI) for children	500 (250 experimental; 250 control)	Participating in Turkish folkloric dance corresponded with a significant decrease in depressive symptoms in a study with children in Turkey, suggesting that group dance could be beneficial to even nonclinical youth populations, which furthers the case for potentially protective effects of social dance (Aydin & Akandere, 2017).
23	Aliberti and Raiola (2021)	Quasi-experimental (no control group)	Seniors "after" the COVID-19 pandemic in Italy (sample was women age 65+)	Line dancing	Geriatric Depression Scale (GDS)	14	This study found a statistically significant improvement in GDS scores
24	Clifford et al. (2019)	Feasibility study	Elderly individuals in Limerick, Ireland	Irish social dances (ceilidh)	Generic quality of life (Control, Autonomy, Self-Realization and Pleasure (CASP-19); EuroQol EQ visual analog scale (EQ VAS), health utility; NIH toolbox emotion battery (psychological wellbeing, social relationships, perceived stress, and self-efficacy)	12	This study identified no significant changes in QoL or emotional health (of note: "the main reason provided by participants for not complying with the home program was that they preferred dancing in a class as it was more motivating and enjoyable.")
25	Hui et al. (2009)	RCT	Older persons	23 sessions of group dancing tailored by an instructor and a	Medical Outcomes Survey Short Form (SF-36)	111	This study reported no mental health changes in participants.

TABLE 3 (Continued)

Number	Author, year	Research design (e.g., RCT, experimental design, quasi-experimental, survey data)	Target group	Type of movement	Relevant Psychological Outcome Measure(s)	Participants (*n*=)	Summary points
				physiotherapist over 12 weeks versus control			
26	Sun et al. (2013)	RCT	Chinese older adults	Fifteen months, four intervention groups (control + Tai Chi, dancing (Chinese Cultural Dancing and Latin dancing), playing a musical instrument, or singing) and one control group (Chinese literacy, history, computing)	Health Benefits scale, Resilience Scale, General Health Questionnaire (GhQ30) for psychological distress	750 (603 women)	In this study, Tai Chi & dancing had the best outcomes overall.
27	Lin et al. (2022)	Survey data	Older adults in Chengdu City, China	Guozhuang dance	Group identity scale, self-efficacy scale, subjective well-being scale	520	In this study of Guozhuang dance for older adults in China, dance not only increased subjective well-being, but was suggested to do so via the mediating effects of group identity and self-efficacy (Lin et al., 2022).
28	Douse et al. (2020)	Mixed Methods	Intergenerational participants in Bedford, UK	Worked together to produce a dance performance and photography exhibit	Confidence, willing to interact with others; mediating negative stereotypes older adults had of working w/ young people;	54 (older adults experimental: 12; older adults control: 6; young people experimental: 23; young people control: 13)	When intergenerational participants (older adults and youth) worked together to produce a dance performance and photography exhibit in the United Kingdom, the older generation reported enjoying the younger students' company and feeling encouraged and supported by them; in this study, that corresponded to an increased trend in social relatedness, affect, and

(Continues)

TABLE 3 (Continued)

Number	Author, year	Research design (e.g., RCT, experimental design, quasi-experimental, survey data)	Target group	Type of movement	Relevant Psychological Outcome Measure(s)	Participants (*n*=)	Summary points
							social well-being over time (Douse et al., 2020).
29	West et al. (2004)	Experimental Design	College students at Reed College, United States	African Dance versus Hatha yoga versus biology lecture	Perceived stress scale (PSS) and PANAS	69 (21 African dance vs. 18 Hatha Yoga vs. 30 biology lecture control)	In this study of college students in the United States examining perceived stress and positive and negative affect by comparing African dance, Hatha yoga, and a non-movement academic control, while participants in both the African dance and yoga conditions showed decreased perceived stress following their activities, positive affect increased in African dance, decreased in the academic classroom setting, and showed no significant change in the Hatha yoga condition, which suggests a case for different mechanisms of mental health improvement for different arts-based movement exercises (West et al., 2004).
30	Lee et al. (2009)	RCT	Healthy women	Turo (Qi Dance)	Psychological symptoms (SCL-90-R)	48 (21 experimental, 27 "mimicking movements" control)	For women participating in Qi dance, the psychological symptoms in response to stress-induced in an experimental context were less for dance compared to control participants (Lee et al., 2009).
31	Jeon et al. (2005)	Quasi-experimental (not randomized)	Older women	Korean traditional dance (12 weeks, 3 times per week)	Geriatric Depression Scale (GDS)	253 (130 experimental, 123 control)	This study examined the effects of a 12-week Korean traditional dance program

TABLE 3 (Continued)

Number	Author, year	Research design (e.g., RCT, experimental design, quasi-experimental, survey data)	Target group	Type of movement	Relevant Psychological Outcome Measure(s)	Participants (*n*=)	Summary points
							for older women, and found a significant ($p = 0.000$) reduction in depression
Participants with Depression							
32	Koch et al. (2007)	RCT	Psychiatric patients with depression in Heidelberg	A single session of either: a dance group with traditional upbeat circle dance (music + movement); a group that just listened to the music of the dance (music only); a group that moved on a home trainer bike (movement only)	Heidelberger Befindlichkeitsskala (HBS)	31	Patients with depression in Heidelberg were randomly assigned to a single session of either (a) upbeat circle dance, which involved music and movement, (b) listening to music only, or (c) riding a home trainer bike (movement only). While patients in the dance group demonstrated significantly fewer depressive symptoms following the intervention than participants in the music- and movement-only groups, this study did not include a non-movement and nonmusic control group.

There are some group dance studies that explicitly examined the impact on symptoms of depression. For example, Aliberti and Raiola (2021) reported a significant improvement in depression scores in older adults following a line-dancing intervention, although the study did not include a control group (Aliberti & Raiola, 2021). Jeon and colleagues (2005) found a similar significant decrease in depression in older adults following a 12-week Korean traditional dance movement program, although study participants were not randomly assigned to conditions (Jeon et al., 2005). In a younger population, Aydin and Akandere (2017) found a significant decrease in depressive symptoms in children aged 7–11 years in a controlled study using Turkish folkloric dancing (Aydin & Akandere, 2017). In another study that sought to parse out the "active ingredient" of social dance benefits, Koch and colleagues (2007) investigated circle dance versus a music-only condition versus an at-home trainer bike (movement only) group. These researchers found significantly fewer depressive symptoms in the circle dance group compared to the music- and movement-only conditions (Koch et al., 2007). However, it could be that, as both music and movement have been shown to have mood benefits (Dunn et al., 2005; Geipel et al., 2018; Gold et al., 2009; Harvey et al., 2018; Kvam et al., 2016; Ristevska-Dimitrðvska et al., 2015) the true magnitude of improvements due to participating in circle dance was underestimated.

Lastly, in a study of creative arts interventions for older individuals with chronic diseases, Sun and colleagues (2013) examined mental health and depression changes following tai chi, Chinese cultural dancing, Latin dance, playing a musical instrument, and choral singing, and found that tai chi and dancing had the largest positive effects on depression and mental health compared to the other study conditions (Sun et al., 2013). These researchers again emphasize the importance of using movement activities that appeal to the population of interest—in this case, older individuals—when implementing dance and movement-based interventions for depression. These study participants also showed improved resilience on a self-report scale, with a large effect size in the tai chi condition and a medium effect size in the dance group. This positive impact on resilience is interesting given evidence suggesting that higher levels of resilience are a protective factor against depression (Ristevska-Dimitrovska et al., 2015; Sun et al., 2013).

Studies have also investigated potential moderators and mediators of the effects of group dance on mental health. One study by Lin and colleagues (2022) suggested that *Guozhuang* dance significantly increased subjective well-being in older adults, and did so via the mediating effects of group identity and self-efficacy (Lin et al., 2022). In an intergenerational study in which older adults and young people worked together to produce a group dance performance and photography exhibit, researchers reported a trend-level increase in social relatedness, affect, and social well-being over time (Douse et al., 2020). Further, the older participants reported enjoying the company of the younger participants and feeling encouraged and supported by them (Douse et al., 2020). As with the solo and partner dance research, something important appears to be happening socially for participants in group dance and movement studies. Broadly, social connectivity and "group belongingness" have been suggested to be relevant mechanisms for the improvements seen in social dance interventions (Douse et al., 2020; West et al., 2004). This should be further investigated by including measures of social appraisal and interaction in future research.

Stress reduction from group dance has also been investigated as a potential mechanism through which these psychosocial interventions impact upon mood and wellbeing. One study reported that Qi dance (which focuses both on inner presence and the ability to co-create with others) significantly reduced stress reactivity overall and in response to an acute stressor in healthy women (Lee et al., 2009). However, in this study, it was not possible to determine whether the inner focus or social interaction components of the intervention drove this effect (Lee et al., 2009), particularly since the control group completed "mimicking movements," which could have elements of both social and individual focus. In another study examining group dance, stress, and mental health, West and colleagues (2004) compared African dance to Hatha yoga and a non-movement academic control (West et al., 2004). While both African dance and Hatha yoga decreased participants' feelings of stress, only African dance also significantly increased positive affect (West et al., 2004). Taken together, these studies suggest that dance interventions may influence stress and stress reactivity, which is another potential mechanism through which they may impact upon depression.

Overall, much of the existing evidence base examining the effects of social dance and movement styles (both partner and group) on mental health and depression comes from studies with quite small sample sizes, no non-dance control group, non-randomized conditions, or a combination thereof. Despite these methodological limitations, this existing evidence suggests that group dance may be a promising intervention to increase wellbeing, decrease stress, and improve symptoms of depression. The important role played by factors such as social connectedness and enjoyment of the intervention has been highlighted by this work.

6 | THE EFFECTS OF DANCE MOVEMENT THERAPY (DMT) ON MOOD AND DEPRESSION

The largest body of literature examining the effects of dance on mood and well-being comes from studies of the effects of DMT in individuals with low mood and depression (see Bräuninger & Bacigalupe, 2017; Karkou et al., 2019, for review) (Table 4). In general, these studies show that DMT, when used as a primary intervention in individuals both with and without an explicit depression diagnosis, reduces symptoms of depression from pre-intervention to post-intervention (Anderson et al., 2014; Punkanen et al., 2014; Van der Merwe, 2010). However, not all DMT studies include control groups or sufficiently sized samples to detect effects of the expected magnitude for DMT (Brooks & Stark, 1989; Hyvönen et al., 2020; Punkanen et al., 2017; Zhang & Wang, 2022). DMT interventions targeted at improving mental health and in which there

TABLE 4 Studies of Dance Movement Therapy (DMT) with mental health outcome measures.

Number	Author, year	Research Design (RCT, Experimental Design, Quasi-experimental, Survey Data)	Target group	Type of movement	Relevant Psychological Outcome Measure(s)	Participants (*n*=)	Summary points
Healthy/control participants							
33	Aithal et al. (2019)	RCT	Parents of children on the Autism Spectrum in India	Six weeks of Dance Movement Therapy group sessions versus waitlist control	Parenting Stress Index Short Form (PSI-SF) and Hamilton Depression Rating Scale (HAM-D)	12	In investigating the efficacy of DMT in a nonclinical adult population, Aithal and colleagues (2019) found reduced stress scores, but no significant decrease in depression, although low recruitment and randomly assigning participants to a condition were cited as difficulties with data collection.
34	Arman and Turkmen (2021)	Quasi-experimental (no control group)	Physiotherapy students	Dance therapy course practice (8-week)	Academic motivation (AMS), anxiety (STAI), body language and dance-related self-efficacy with the Body Language and Dance Self-Efficacy Assessment Form (BLDSEAF), stress level (Perceived Stress Scale)	102	Physiotherapy students who completed a dance therapy course were purported to have significant increases in academic motivation and dance-related self-efficacy and decreases in anxiety and stress level (Arman & Turkmen, 2021), but as there was no control group in this study, the dance therapy course cannot be concluded to be the only factor responsible for students' mental health and motivational changes over the relevant period.
35	Moula et al. (2022)	RCT	Children age 7–9	DMT versus waitlist	Health-realted quality of life (HRQOL; EQ-5D-Y); wellbeing & life functioning (Child Outcome Rating Scale, CORS); emotional and behavioral difficulties (Strengths and Difficulties Questionnaire, SDQ)	16	Moula and colleagues (2022) found improvements on measures of well-being and emotional and behavioral difficulties, but not quality of life, in children between the ages of seven and nine that participated in either DMT or a waitlist control; anecdotally, this intervention was said to be useful for self-expression, improved

(Continues)

TABLE 4 (Continued)

Number	Author, year	Research Design (RCT, Experimental Design, Quasi-experimental, Survey Data)	Target group	Type of movement	Relevant Psychological Outcome Measure(s)	Participants (*n*=)	Summary points
							self-confidence and self-esteem, stress reduction, and development of positive relationships.
Individuals with Depression							
36	Kella et al. (2022)	Experimental Design	Individuals age 18–64 years old diagnosed with depression in Finland	20-session (10 wk, 2x/week) DMT intervention	BDI, attachment styles	137	The research team saw evidence for some alleviation of depression symptoms across different subgroups; 97% of the participants in this study were female.
37	Punkanen et al. (2014)	Quasi-experimental (no control group)	Depressed patients	DMT (20 sessions of group DMT)	BDI	21 (experimental)	While researchers suggested that DMT had a positive effect, there was no control group, and a relatively small sample size.
38	Punkanen et al. (2017)	Quasi-experimental	Adults with primary depression diagnosis (but not excluding for anxiety diagnosis; many also diagnosed with anxiety)	Dance Movement Therapy	BDI, and "several secondary outcome measures for anxiety, personality, life satisfaction, alexithymia, and adult attachment style"	21	Researchers found a statistically significant drop in BDI scores premeasurement to postmeasurement, and a significant difference in pre to post scores, and suggested that a short-term group DMT intervention can indeed help people with mild, moderate, or severe depression in terms of reducing their levels of both depression and comorbid anxiety'
39	Zhang and Wang (2022)	Quasi-experimental (no control group)	Adults w/depression	moderate-intensity DMT	Not specified	65 (experimental)	This study found a significant difference in depression from pre to to poststudy in the experimental group, but lacked a control group for comparision.

TABLE 4 (Continued)

Number	Author, year	Research Design (RCT, Experimental Design, Quasi-experimental, Survey Data)	Target group	Type of movement	Relevant Psychological Outcome Measure(s)	Participants (*n*=)	Summary points
40	Hyvönen et al. (2020)	RCT	Participants diagnosed with depression across multiple sites in Finland	DMT (20 sessions 2×/week for 10 weeks) + TAU versus TAU	BDI, CORE-OM, SCL-90	109 (52 experimental and 57 control)	Participants that received DMT in addition to treatment as usual showed greater reduction in depressive symptoms and psychological distress versus the treatment as usual control condition.
41	Pylvänäinen et al. (2015)	Quasi-experimental (not randomized)	Psychiatric outpatients with a depression diagnosis	Dance Movement Therapy	Beck Depression Inventory (BDI); Hospital Anxiety and Depression Scale (HADS); Symptoms Check List-90 (SLC-90); Clinical Outcomes in Routine Evaluation--Outcome Measure (CORE-OM)	33	This study also suggested that adding DMT to treatment as usual (TAU) improved the effects of TAU for a population with depression.
42	Pylvänäinen et al. (2020)	RCT	Patients with depression	Dance Movement Therapy, 20 sessions total, 75 min, 2×/week	Body Image Assessment (BIA), BDI	143	Pylvänäinen et al. (2020) found that a DMT intervention with 143 depressed patients produced a decrease in symptoms of depression as well as a statistically significant positive change in body image following the DMT intervention.
43	Pylvänäinen and Lappalainen (2018)	Quasi-experimental (no control group)	Depressed adult outpatients	Dance Movement Therapy (12 90-min long sessions)	Body Image Assessment (BIA)	18	In this study, patients with depression in the treatment group undergoing a DMT intervention, there were positive changes in the body image, finding a better sensation of one's body, tolerating the sensations, settling in the body as well as finding pleasure and meaningfulness in the experiences. The Body Image Assessment (BIA) scores indicated large effect sizes in

(Continues)

TABLE 4 (Continued)

Number	Author, year	Research Design (RCT, Experimental Design, Quasi-experimental, Survey Data)	Target group	Type of movement	Relevant Psychological Outcome Measure(s)	Participants (*n*=)	Summary points
							the change between pretreatment and posttreatment assessments. Fewer depressive symptoms were observed at the follow-up assessment.
44	Jeong et al. (2005)	RCT	Adolescents girls (mean age: 16 years) with mild depression in Korea	12 weeks DMT (45-min DMT session 3 times a week) versus waitlist control	Symptom Check List-90-Revision (SCL-90-R)	40 (20 experimental, 20 control)	Using DMT as a primary approach for adolescent girls with mild depression in Korea showed decreases in psychological distress following 8 weeks of DMT (Jeong et al., 2005).
45	Anderson et al. (2014)	Survey Data (Retrospective)	Adolescents in a psychiatric hospital	One session DMT	Mood (Fast Assessment of Children's Emotions, FACE)	402	One session of DMT for adolescents in a psychiatric hospital yielded significant changes to total mood score after a single DMT session (Anderson et al., 2014).
46	Kong (2022)	Quasi-experimental	Students with depression	Twelve weeks of "dance performance experimental group," also called "dance performance therapy" and "psychological intervention" versus "psychological intervention control group"	Self-rating depression scale (SDS), self-rating idea of suicide scale (SIOSS)	500	While not expressly DMT, both students with depression allocated to a TAU plus performing dance condition versus students that just underwent TAU improved with respect to mood from preintervention to postintervention, but those allocated to performing dance and TAU improved to a greater extent (Kong, 2022).

was an observed improvement in depression symptoms ranged in length from a single session (Jeong et al., 2005; Van der Merwe, 2010) to 12 weeks or more, with multiple sessions a week (Ahmad et al., 2022; Anderson et al., 2014).

In addition to the alleviation of depressive symptoms, DMT interventions have also been associated with decreases in anxiety and stress, and improved QoL in adults (Arman & Turkmen, 2021; Koch et al., 2017; Moula et al., 2022) as well as improvements in well-being and emotional and behavioral difficulties in children (Kella et al., 2022). DMT has also been investigated as an adjunct to other treatments for depression. Pylvänäinen and colleagues (2015, 2020) and Hyvönen and colleagues (2020) compared treatment as usual (TAU) versus DMT plus TAU in a large sample of people with depression across multiple sites in Finland (Pylvänäinen & Lappalainen, 2018; Pylvänäinen et al., 2015, 2020). They reported that the DMT plus TAU group showed greater reductions in depressive symptoms, as well as reductions in measures of physical and psychological distress, although in one of these studies, participants were not randomized into conditions. In another study of students with depression, the addition of dance performance training to ongoing psychological treatment significantly improved self-rated depressive symptomology using the self-rating Depression Scale (SDS) compared with TAU (Ahmad et al., 2022). Additionally, some studies have highlighted the potential usefulness of DMT for depressed individuals struggling with body image to create more comfortable sensations within their bodies (Jeong et al., 2005; Pylvänäinen & Lappalainen, 2018). DMT has also been employed with a variety of clinical populations besides individuals with primary diagnoses of depression (Aithal et al., 2021; Barnet-Lopez et al., 2016; Conner et al., 2020; see Appendix I).

Overall, there is some evidence that DMT is an effective intervention in the context of depression when used as a standalone or adjunct therapy. Certainly, of the dance and movement activities covered in this review, DMT as a category has been the most systematically evaluated for its mental health benefits to date. However, it is important to note that DMT is resource intensive because of the need for specialist therapists.

7 | CULTURALLY TRADITIONAL DANCE AND POTENTIAL USES FOR CULTURALLY COMPETENT THERAPEUTIC SOLUTIONS

Culturally-oriented dance, which refers to dance within a community or group that serves "purposes related to traditional practices, cultural transmission, social acceptance, or connectedness" of that group, could provide opportunities to make dance-based interventions more relevant, accessible, and inclusive (Arundell et al., 2021; Jain & Brown, 2001). There is evidence that adapting psychological therapies in these ways is associated with better mental health outcomes (Roberson, 2010), and it seems likely that such adaptations to dance and movement-based interventions may be similarly important. Compared to movement styles found more frequently in dance academies, such as ballet, tap, or jazz, culturally-oriented dance as a form of physical activity has also been suggested to be likely to particularly appeal to certain populations, such as the elderly (Lin et al., 2022). In certain cultures, dance has been used as a method of cultural preservation and to communicate history, combat negative stereotypes, explore self-identity, and provide social connections within communities (Arundell et al., 2021; Boura, 2006; Marquez et al., 2022). However, there is a need to consider cultural suitability and relevance to the population of interest, the language of instruction, and linguistic appropriateness (Marquez et al., 2017; Murrock & Madigan, 2008), all of which are important for culturally competent care.

Studies of culturally-oriented group dancing rooted in participants' own culture have been associated with improvements in QoL and depression (Lin et al., 2022; Wang et al., 2020). This includes Turkish folkloric dancing in older adults (Eyigor et al., 2009) and children (Aydin & Akandere, 2017); line dancing in Italy for older adults (Aliberti & Raiola, 2021); Irish social dancing and other group dancing in older adults (Clifford et al., 2019; Hui et al., 2009), and Chinese square-dancing interventions in older adults (Marquez et al., 2017; Wang et al., 2020; Zhao et al., 2021). Specifically, studies in China of Chinese square dancing, Chinese cultural dancing, *Guozhuang* dance, and Tai Chi showed increased resilience, decreased psychological distress (Sun et al., 2013), increased subjective well-being (Lin et al., 2022), reduced depressive symptoms and increased QoL (Chang et al., 2021; Gao et al., 2016; Wang et al., 2020). Interestingly, cultural dancing also corresponded with a significant increase in family cohesion and group belongingness in China (Xie et al., 2021). Turkish traditional folk-dancing produced a significant decrease in depressive symptoms in children (Aydin & Akandere, 2017); an African circle dance intervention yielded significant improvements in depressive symptoms and stress in adults (Salihu et al., 2021). Murrock and Madigan (2008) implemented an intervention using a dance routine choreographed to gospel music with African American women and found that culturally specific dance can improve health outcomes (Murrock & Madigan, 2008). Given the impacts that social dance and culturally traditional dance can have on both physical and mental health outcomes, culturally-oriented dance should be explored further by researchers for its potential uses as a culturally competent psychosocial intervention.

8 | SOCIAL DANCE AND MOVEMENT AS PROTECTIVE AGAINST LOW MOOD AND DEPRESSION

Based on the existing literature, it is difficult to understand whether, and what, evidence exists for the potential of different forms of dance and movement to be used preventatively. While the majority of dance and movement studies have been conducted in a treatment-oriented rather than preventative context, it is also interesting to consider the evidence to suggest that social dance and movement may have a protective effect against low mood and depression. One

investigation of healthy adults participating in online solo dance classes during the COVID-19 pandemic suggested that online dance improved positive affect and increased feelings of community connectedness (Rugh et al., 2022). Interestingly, when including dance experience as a covariate in the study, researchers found that the more advanced a dancer, the less positive affect change they received from the dance class. Another study of ballroom dancing in elderly individuals in Brazil found a significant and negative correlation between participants' years of dance experience and their depression levels (Carvalho de Melo et al., 2018). In a third study, Muro and Artero (2017) saw high levels of mindfulness and life satisfaction in dance practitioners (Muro & Artero, 2017). After controlling for age, participating in dance was the factor most strongly associated with life satisfaction, explaining 28% of its variance (Muro & Artero, 2017).

Taken together, these studies suggest both that mood improvements seem to be strongest for with those with the least dance experience, as well as a negative correlation between dance experience and depression levels. These findings do not explicitly demonstrate that dance has a protective effect against depression; however, they do suggest that more research into whether dance and dance-based movement could have a potential protective effect may be fruitful.

Retrospective survey data also contributes to the idea that regular engagement with dance-based activities may be protective against depression. In a survey of frequent sports dance students and non-frequent sports dance students in China, Zhang and colleagues (2021) reported that frequent dance sport participants had significantly lower depressive symptoms (Zhang et al., 2021). In another survey-based study of isolated residents in China during the COVID-19 pandemic, a negative association between home high-intensity interval training (HIIT) dance and depression was differentially mediated by participants' perceptions, such as beliefs about the benefits they gained from HIIT dance, the severity of their depressive symptoms, and their self-efficacy (Hu et al., 2023).

Social connectedness may be a particularly important mediator in the relationship between dance and depression risk. In a study of Chinese square dance, which was conducted in working-age mothers whose children had left home in China, feelings of belongingness to the square dance group were positively associated with participants' subjective well-being (Xie et al., 2021). In Swiss university students, frequent participation in dancing and ball sports was associated with decreased depressive symptoms for those experiencing elevated stress, but this relationship did not exist for those with low perceived stress. This could suggest that certain forms of exercise may be better than others at moderating the relationship between perceived stress and depressive symptoms (Gerber et al., 2014). This idea is further supported by a survey-based study of relatively physically-inactive "No Lights, No Lycra" dance participants, in which 1190 participants who took part in "freeform dancing in the dark for sixty minutes…designed as an exclusive, nonjudgmental, drug and alcohol free community setting" reported that their main reason for dancing in the dark was to have fun (Foley et al., 2019).

9 | DISCUSSION

A breadth of research has been conducted into dance and social movement, much of which has suggested that dance has potential for the treatment and prevention of depression (Appendix I). In particular, social forms of dance and movement may be a useful approach for targeting the social isolation associated with low mood and depression.

This review of the existing literature has highlighted some important emerging themes:

1. Social dance and movement interventions are tentatively promising as primary or supplementary approaches for reducing low mood and depression.
2. Across categories of dance and dance-based movement, improvements in quality of life and decreases in anxiety and stress could be mechanisms by which dance interventions have an effect on mood and depression.
3. Dance-based movement activities that include strong social components are likely to have particular value. These activities could work by increasing feelings of social connectedness and "group belongingness," which may also be relevant mechanisms by which they impact upon mood. Partner- and group-based movement should be further investigated for *social* utility, such as mitigating interpersonal perceptions and empathy, beyond changes to *individual* mental health factors, such as increased feelings of self-efficacy.
4. Providing dance and movement-based interventions with participant convenience and accessibility in mind is crucial, as is providing movement activities that appeal to the population of interest. Culturally-based movement activities hold particular promise across various key populations.
5. There is some initial evidence that dance and dance-based movement, especially socially-focused dance, may have a protective effect against depression.

9.1 | Methodological considerations

It is important to note that there is a large degree of heterogeneity in research methods used in this field to date. This heterogeny makes it difficult to compare relevant studies in a quantitative way, which is a barrier to the development of a strong evidence base for their clinical use. Going forward, studies within this field should strive to comply with best practice for developing such an evidence basis, such as the Medical Research Council (MRC) guidelines for the evaluation of complex interventions (IAMHRF, n.d.; Skivington et al., 2021), particularly using methodologically sound approaches and adopting a

consistent means of defining and evaluating these dance and social movement-based interventions.

The choice of comparison group is particularly important for the development of a solid evidence base to inform the potential clinical use of dance within the context of depression and low mood. Using a control intervention that may have an equivalent beneficial impact on mental health-related outcomes through potentially similar mechanisms of action (e.g., using solo yoga practice to control for solo dance practice) could obscure the potential benefits of both. For example, while studies in which "dance controls for dance," are useful for addressing questions about the effects of specific dance interventions, these study designs are not well suited to questions about the broader potential of dance as a psychosocial intervention within the context of depression. Where possible, researchers should include a non-movement control group, and, in the case of social styles of dance, an additional non-social control group. Researchers should also consider who should teach and administer the dance and/or movement-based sessions; what sort of training the instructors need, and any training the research team needs, to undertake this sort of research; and how interdisciplinary approaches could augment studies of this nature in the prevention and treatment of symptoms of depression.

A further methodological challenge related to social dance and movement research is selection bias. Specifically, those who volunteer for a study investigating the potential benefits of dance or social movement are likely to already enjoy dance or social movement, to believe that they will enjoy it in the context of the intervention, and to believe in its benefits and its efficacy. This potential confound needs to be balanced against the evidence that participant enjoyment of the intervention is a key moderator of the effects on mental-health related outcomes. For example, Rugh and colleagues (2022) reported that greater levels of enjoyment of solo dance were associated with the largest improvements in mood state (Rugh et al., 2022). In addition, individuals are much more likely to comply with and see improvements from exercise regimes that they find enjoyable (Jekauc, 2015). Future research should consider the appropriate target population for clinical implementation and how to identify individuals for whom a dance intervention would be acceptable and enjoyable.

The majority of the studies reviewed here used self-reported measures of mood from pre-intervention to post-intervention as outcome measures, which are vulnerable to demand characteristics. Future studies could consider the addition of more objective outcome measures to mitigate this potential confound. For example, one study of group dance sessions for older patients on hospital wards used researchers' ratings of perceived changes to participants' moods and other factors over the course of the dance sessions (Bungay et al., 2022). Other studies of social dance, especially for older patient populations, included cognitive tasks to examine changes in cognitive functioning resulting from this intervention, for example, executive function, episodic memory, and working memory (Aguiñaga & Marquez, 2017). Future studies could consider including tasks that tap into aspects of social and emotional processing, such as facial expression recognition, which are known to be sensitive to negative affective biases seen in depression and to the effects of other depression treatments (Huneke et al., 2017). The inclusion of such measures can be mechanistically informative, as well as providing objective markers that may be less affected by demand characteristics or expectation effects (Huneke et al., 2017).

A wide range of measures have been used to quantify changes in mental health-related outcomes following dance and movement interventions. While this is useful for exploring the potential effects of these interventions, it also limits direct comparison between different studies and meta-analytic synthesis. The adoption of common measures in mental health research has been proposed by the International Alliance of Mental Health Research Funders (Skivington et al., 2021). Future studies in this area should include these common measures to improve the harmonization of research findings in this field (Farber et al., 2020), as well as other outcomes that may be of direct relevance to social dance such as social connectedness. Additionally, the inclusion of measures of intervention acceptability (Sekhon et al., 2022) and participants' judgements of the impact of the intervention beyond symptom changes, such as a single "Global Rating of Change" question (Button et al., 2015), have utility for elucidating what works well and what could be improved based on the experiences of past participants.

A narrative approach was selected for the current review due to the breadth and heterogeneity of the existing body of literature. However, it is important to highlight the potential risk of bias inherent to narrative reviews versus systematic approaches. As the evidence base grows for the use of dance as a psychosocial intervention for low mood and depression, it will be important to synthesize this evidence more systematically using meta-analytic approaches.

9.2 | Future directions

Establishing a strong evidence base is essential to support healthcare professionals and patients to make informed decisions about whether to use social dance and movement activities as a preventive or curative intervention for depression and other common mental disorders. In addition, further understanding the mechanisms by which dance impacts upon depression and low mood will help to refine and target these interventions for improved outcomes. The benefits of DMT in targeted, personalized interventions delivered by trained therapists are well established. However, the potential value of community-based dance classes for scalable and accessible interventions is largely untapped. Dance classes are a popular recreational activity and exist in many community spaces; these community-based classes have the potential to reach a wider and broader range of individuals than those that might frequent healthcare settings. This is likely to be needed for preventive applications to be implemented at scale. Indeed, by connecting existing social dance and movement instructors with patients on waiting lists for mental health treatment, there is the possibility that interventions of this nature could ameliorate depressive symptoms or worsening of symptoms while patients wait for care.

Dance as a mental health intervention is compelling for a myriad of reasons, including cost-effectiveness, non-invasiveness, scalability,

acceptability and accessibility. Dance and dance-based movement interventions have the capacity to not just be useful through periods of low mood and acute depression, but indeed, to change the weave of the fabric of individuals' broader routine and identity. Dance can gift community; it can help individuals redefine their relationships with movement and exercise, as well as with their own bodies; and it can open new possibilities to how they identify as people. Even more critically, it has the potential to create lasting positive changes in individuals' relationships to themselves (e.g., their self-efficacy) and their relationships with others (e.g., their propensity to empathize).

Overall, further research should investigate social dance and movement preventatively, therapeutically, and as a supplement to other treatments once low mood and depression have occurred. Each of these pathways should be investigated independently, as all have the potential for benefits to patients, those at risk of mental health problems, and to healthcare providers and systems.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

Data sharing not applicable—no new data generated.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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APPENDIX I: USE OF DANCE & Movement Styles For Clinical Participants And Other Populations Of Interest (Beyond Those With A Primary Diagnosis Of Depression)

Dance and movement activities have also been used to investigate changes to depressive symptoms, and other related outcome measures, in populations besides those with a primary diagnosis of depression (Table 5). Below, we highlight literature found in the process of this review of the use of solo dance, partner dance, group dance, and DMT for other populations. We also highlight the use of dance and movement-based interventions for populations that have experienced trauma and displacement.

Solo Dance

Solo dance styles have been used to examine changes to mental health factors across a variety of demographics. This has included examining quality of life changes following 12 weeks of belly dance classes for women with breast cancer (Boing et al., 2018), as well as changes to anxiety and depression for women living with HIV using an aerobic dance training intervention (Ghayomzadeh et al., 2019). Several studies have examined the role of dance training for the mental health of individuals with Parkinson's disease across the United States, Brazil, Belgium, and Germany, as well as online during the pandemic (Barnstaple et al., 2022; Bouquiaux et al., 2022; Dahmen-Zimmer & Jansen, 2017; Ghanai et al., 2021).

Partner Dance

Partner dance styles have been used to examine changes to mental health factors in a multitude of studies for other populations as well. Karkou and colleagues (2021) found improvements in depressive symptoms and emotional and social functioning in women with breast cancer diagnoses following a 32-hr Latin dance program (Karkou et al., 2021). Another study utilized partnered salsa dance for individuals with serious and persistent mental illness, although researchers found "non-significant improvements" to anxiety and depression measures (Fancourt & Finn, 2019). Ng and colleagues (2020) saw improved quality of life scores for individuals with multiple sclerosis following 6 weeks of ballroom dance (Ng et al., 2020). Finally, a 10-week social dance intervention for adults with Parkinson's disease yielded reductions in mood disturbances, and specifically, anger (Lewis et al., 2016).

Group Dance

With respect to group dance for other populations of interest, relatively more studies have been conducted. Zumba was suggested to be better at alleviating depressive symptoms for female patients with fibromyalgia than aerobic exercise training and a non-movement control (Norouzi et al., 2020). Another study found significant improvements to anxiety, depression, and quality of life scores for cognitively impaired elderly people in Malaysia following a *poco-poco* (line-style) dance intervention combined with relaxation techniques compared to the relaxation-only control group (Adam et al., 2016). For both patients with breast cancer undergoing chemotherapy and peri-menopausal women in China, Chinese square dance was associated with larger decreases in depressive symptoms than those observed in control conditions (Gao et al., 2016; He et al., 2022). For live-in patients in Greece with a variety of psychiatric disorders, Margariti and colleagues (2017) observed gradual increases in happiness scores following dance-based movement sessions (Margariti et al., 2017). Finally, in a study of Greek traditional dancing lessons for patients with cancer, a significant decrease in stress and anxiety was found in the experimental condition compared to the control group (Karathanou et al., 2021).

DMT

DMT has additionally been used for the mental health of adults with schizophrenia (Gökcen et al., 2020; Koch et al., 2017) and Parkinson's disease (PD; Lee et al., 2015). For participants with schizophrenia, Koch and colleagues (2017) found improvements in empathy pre-intervention to post-intervention, and Gökcen and colleagues (2020) found significant improvements in schizophrenia patients' negative symptoms, general psychopathology, and functional remission after goal-oriented dance and movement therapy, while Lee and colleagues (2015) saw evidence for improvements in anger control for individuals with PD following a DMT intervention. Taken together, these studies have potential implications for social mechanisms by which dance-based interventions could correspond to improved well-being. Further, this theory of the social-based well-being impacts of DMT is amplified by study of DMT plus TAU versus TAU for children with autism spectrum disorder (ASD), in which children participating in DMT plus TAU showed significant improvement to social communication, and Aithal and colleagues (2021) suggested social and emotional well-being improvements of the participants (Aithal et al., 2021). DMT was also reported to significantly improve emotional well-being using nonverbal instruments for expressing emotion for adults with intellectual disabilities in the experimental condition (Barnet-Lopez et al., 2016).

Populations that have experienced trauma and displacement

Dance and movement activities have also been used in efforts to improve the mental health of populations that have experienced trauma, and in particular, individuals who have experienced violence (Ley & Barrio, 2011; Özümerzifon et al., 2022) and refugees (Ahmad et al., 2022; Mom et al., 2019; Salihu et al., 2021). Social dance and movement could be of particular benefit in populations that have experienced extreme social disruptions, whether geographical displacement and separation from communities and close social connections (e.g. refugees), or disruption of the safety of social connections (e.g., individuals who have experienced interpersonal violence). As trauma psychiatrist Bessel van der Kolk suggests in his book *The Body Keeps the Score*, training in rhythmicity and reciprocity and being able to open oneself to happy trusting engagement with others can allow for restoring of social synchrony with others and oneself (Van Der Kolk, 2015). For instance, using *capoeira angola* in traumatized adolescent refugees in Australia, Momartin and colleagues (2019) reported improvements in participants' social capacities and decreases in disruptive behavior (Momartin et al., 2019). Despite nonsignificant changes in teacher-rated peer problems in this study, the authors commented upon the visible bond that developed between students and instructors. Remarkably, in a study of an online dance program for survivors of intimate partner violence during the COVID-19 pandemic, participants experienced significantly improved affect compared with those receiving a virtual TAU control group, which included any of "crisis counseling, legal services, economic empowerment programs, and housing assistance," as well as health tips sent via email to individuals twice a week (Özümerzifon et al., 2022). Participants in this intervention also demonstrated reduced symptoms of PTSD and psychological distress, even with virtual intervention delivery, although this was true across the experimental and control conditions (Özümerzifon et al., 2022). Nonetheless, this further suggests the potential efficacy of social dance and movement as methods of helping with the social components of mental health, which could translate to downstream improvements in mood and depressive disorders.