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Supplementary table 1: Benefits of dance as physical exercise for older adults

Study	Study characteristics	Outcome
Systematic review and meta-analysis of 11 studies (1412 participants, ≥55 years). Effects on cognitive function. ¹	Mostly ballroom. Tests: Mini Mental State Examination for Global Cognitive Function, Wechsler Memory Test, Trail Making tests.	Improved global cognitive and executive functions. No conclusions on learning/memory. Need to determine optimal dose and comparison with other exercises.
Systematic review and meta-analysis of 13 studies (1605 participants, ≥60 years). Effects of dance on cognition, executive function and memory. ²	Square dancing, ballroom, contemporary dance, dance-based exercise, adapted tango.	Significant positive effects on global cognition and memory. Inconclusive results on executive functioning.
Systematic review and meta-analysis of 5 studies (842 participants) on effects of aerobic dance on cognition in adults with mild cognitive impairment. ³	Dances: salsa, rumba, waltz, cha-cha, blues, tango jitterbug, tai chi. Tests: Mini-Mental State Exam; AD subscale; Trail Making Tests A and B.	Aerobic dance improves global cognition, delayed and immediate recall ability, executive function and memory.
Meta-analysis of 41 studies (2374 participants) evaluating effects of dance movement therapy (DMT) and dance intervention (DI) on psychological health (21 DMT, 20 DI studies). ⁴	DMT: psychotherapeutic use of movement. DI: traditional folk or cultural dance, couple dances, contemporary dances. Investigating quality of life, clinical outcomes, interpersonal, cognitive and psychomotor skills.	DMT decreases depression and anxiety and increases quality of life, as well as interpersonal and cognitive skills, while DI increases psychomotor skills.
Systematic review of 16 studies on dance movement therapy (DMT) adults (≥60 years) with psychiatric problems. ⁵	Dance movement therapy. 15 studies of patients with dementia; 1 study of patients with depression.	Indications that DMT may improve social interaction, communication, cognitive functions and quality of life.
Systematic review of 7 studies (429 participants, mean age 73.17 years) on effects of dance on cognition in healthy adults. ⁶	Dances: contemporary, ballroom, tango, agilando, line and square dances. Tests: Mini-Mental State Exam, Montreal Cognitive test, tests for specific cognitive domains.	Results suggest that dance over an extended period could improve or maintain/protect cognition and perhaps reduce the risk of dementia.
Review of 10 studies on people with Parkinson's and 10 on healthy older adults to examine effects on non-motor symptoms. ⁷	Dances: salsa, ballroom, square, tango, Caribbean, Turkish, contemporary, Irish, video game based, dance for seniors.	Overall evidence supports the potential for dance to improve mood, cognition, and quality of life of people with Parkinson's and healthy older adults.

Study	Study characteristics	Outcome
Review of 44 studies examining observed neurological effects of dance interventions in elderly populations. ⁸	21 studies investigated effects on cognition; 27 on sensorimotor performance; 7 on neurobiology.	Significant improvements in cognition and sensorimotor function. Further neurobiological studies needed.
Review of 15 studies on effects of dance and dance-based exercise on depressive symptoms in older (≥60) adults. ⁹	Dances: ballroom (tango and foxtrot), Argentine tango, Korean dance programme, square dancing, tai chi, etc.	Decline in depressive symptoms/ improved mood.
Systematic review of 10 studies examining effects of dance on older people with dementia in care homes. ¹⁰	Therapeutic dance, dance movement therapy, dance therapy, social dancing, psychomotor dance-based exercise.	Indications that problematic behaviour decreased and social interaction improved. Few adverse effects observed.
Systematic review and meta-analysis of 29 trials (4239 healthy adults, ≥65 years) on effects of dance-based mind-motor activity to prevent falls and improve balance, mobility and strength. ¹¹	Dance-based mind-motor activities (i.e. coordinated mind-motor movements involving dynamic balance, music/inner rhythm, choreography and social interaction), ballroom, line dancing, tai chi, Turkish folk, Dalcroze eurhythmics.	Significant reduction in fall risk (37%) and reduced rate (31%) of falls. Significant positive associations with balance, mobility and lower body strength. Better results with greater frequency (≥3x/week) and dances requiring multitasking skills. Average adherence ≥80%.
Systematic review of 7 trials on effects of dance on balance, flexibility, gait, strength, physical performance. Adults (≥60 years) without disabling disorders. ¹²	Ballroom dance and/or dance-based exercise. Tested: balance, gait, risk of falls, strength, functionality, flexibility and quality of life.	Positive effects reported on risk of fall-related factors (balance, gait, dynamic mobility, strength and physical performance). Heterogeneity of studies confounded general conclusions on significance of improvements.
Systematic review and meta-analysis of 13 trials (1029 participants, ≥65 years) evaluating effects of dance on physical function performance. ¹³	Line dance, ballroom, Latin American, Thai dances, Greek traditional, Turkish folk dancing, flamenco, choreographed dance.	Significantly improved mobility and endurance performance. Gait was not significantly improved.
Systematic review of 18 papers on benefits of dance on the physical health of older adults (52–87 years). ¹⁴	Dance styles: 6 ballroom, 5 contemporary, 4 cultural, 1 pop and 2 jazz. Two trials had subjects with pre-existing medical issues.	Significant positive results in studies for muscle strength (82% of studies), balance (80% of studies) and cognition (80% of studies). Regardless of dance style.
Review of 50 studies on effects of dance on functional and metabolic health in adults (≥55 years) with or without health conditions. ¹⁵	Cultural, ballroom, dance therapies. Tests: balance, gait, muscle power, flexibility, risk of falls, blood pressure, cardiovascular and respiratory risks, inflammatory and oxidative markers.	Functional and/or metabolic benefits were described in most studies. Suggested: any dance style has potential to be of functional and/or metabolic benefit.
Systematic review and meta-analysis of 7 studies on effects of dance on cardiovascular risks with aging. ¹⁶	Comparing dancers to non-exercisers and other types of exercise. Tested: VO ₂ peak, weight, body mass index, lipid profile.	VO ₂ improved. No change in body weight and body mass index. Dance effects comparable to that of other exercise.

Examples of dance as exercise for the older community

The intensity of dance for the older person varies from that on par with dance for the much younger, to dance movements in the seated position, to creative dance sessions for older people in hospital settings and nursing homes.¹⁷⁻¹⁹ Globally, recreational dance is becoming increasingly more popular, not only as a form of physical activity for older people, but also for the purpose of rehabilitation. Throughout the UK, Aesop Arts and Society (<https://ae-sop.org>) runs the Dance to Health programme (<https://dancetohealth.org/>), which concentrates on the prevention of falls by improving strength and balance through integrating physiotherapy falls-prevention exercises into dance programmes. Intensity levels of programmes range from gentle classes focussing on seated dance movements, to active, dynamic dance classes. These classes have now become available online. Also in the UK, a weekly Dance for Health programme, introduced by a large hospital trust in the east of England, shows promising results for the physical well-being and mental disposition of patients in an acute hospital setting with Parkinson's disease, delirium, unstable diabetes, stroke, falls and dementia.^{18,19}

According to a report by Ausdance Victoria²⁰, at least 79 dance programmes for older adults exist in Australia, with participants ranging from active, agile older adults to people in care. Of interest is the spectrum of dance-based opportunities available for older people, which ranges from those catering for the healthy aged living in independent communities, in community centres or in-care facilities, to those with specific physical, emotional, cognitive, social and cultural needs (<https://dtaa.org.au/admin@dtaa.org.au>; <https://www.dancehealthalliance.org.au/>). Dance movement therapy, as well as variations in dance therapy, are available globally and therapeutic successes with older people have been reported with both dance movement therapy and other forms of dance therapy.^{4,5} In South Africa, the South African National Arts Therapies Association (<http://sanata.org/>) is the professional association that represents the interests of arts therapists, including dance movement therapists.

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