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Dance movement therapy for dementia (Protocol)

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[Intervention Protocol]

Dance movement therapy for dementia

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ABSTRACT

This is the protocol for a review and there is no abstract. The objectives are as follows:

1. To assess the effects of DMT on behavioural, social, cognitive and emotional problems of people with dementia in comparison to no treatment (waiting list), standard care or any other treatment.

2. To compare different forms of DMT (e.g. Laban-based DMT, Chacian DMT or Authentic Movement).

BACKGROUND

Description of the condition

Dementia is a collective name for a number of different progressive degenerative brain syndromes that have effects on memory, thinking, behaviour, emotions and social functioning.
People living with dementia may have symptoms such as:
- memory loss;
- not being able to find the right words or understand what people are saying;
- having difficulties in performing what used to be routine tasks;
- mood swings and personality changes.

These symptoms limit their ability to communicate with others, may reduce social engagement and, in turn, can lead to apathy, or aggressiveness (Chen 2000), or depression (Lyketsos 2004). Facing

cognitive, emotional and social challenges may increase the risk of challenging behaviours related to dementia (Shaji 2009).
According to Alzheimer's Disease International (ADI 2010), Alzheimers disease is the most common of these syndromes and is followed by vascular dementia, Lewy body dementia and frontotemporal dementia. The same source argues that the different types of dementia affect approximately 35.6 million people worldwide. Furthermore, it is estimated that, as a result of the population growing older, by 2030 there will be 65.7 million people suffering from dementia worldwide, and by 2050 there will be 115.4 million. Although recent studies suggest that populations that were born later in the 20th century have a lower risk of developing dementia than those born earlier (Matthews 2013), dementia remains a major issue for aging populations with immediate and major impact upon families, services and societies as a whole. Historically, treatment interventions focused on reducing cognitive deterioration through pharmacological interventions. However, current thinking highlights the value of treatment options that address the person as a whole, including their physical, emo-

tional, social and cognitive processes (Kitwood 1997). Furthermore, there is a growing literature that argues for the value of the arts and embodied practices for this population, as being capable of bypassing impairments, connecting with people at a pre-cognitive level, reducing the risk of dementia and slowing down the progressive nature of the disease (Sandel 1987; Palo-Bengtsson 2002; Verghese 2003; Burns 2008; Hayes 2011; Vink 2011). Dance movement therapy (DMT) is one of these interventions that may be a useful intervention for people suffering with dementia.

Description of the intervention

DMT is a form of psychotherapy, one of the arts therapies and a treatment option for people with dementia as reported by Hill 1999, Coaten 2001, Coaten 2002, Violets-Gibson 2002, Kowarzik 2004, Hill 2006 and Hayes 2011.

DMT is also known as dance therapy, movement therapy, dance movement psychotherapy, movement psychotherapy, dance/movement therapy or dance-movement therapy. One of the official definitions available for the discipline describes it in the following terms:

"Dance Movement (Psycho) therapy is the psychotherapeutic use of movement and dance through which a person can engage creatively in a process to further their emotional, cognitive, physical and social integration. It is founded on the principle that movement reflects an individual's patterns of thinking and feeling. Through acknowledging and supporting clients' movements, the therapist encourages development and integration of new adaptive movement patterns together with the emotional experiences that accompany such changes" (Association for Dance Movement Psychotherapy UK ADMP UK 2012, p 1).

DMT is regarded as a useful and appropriate intervention for patients with a range of conditions, diagnosis and presenting problems, and especially those for whom words can be difficult, those with a cognitive impairment, or who just find it difficult to express and explore their emotions through words. This type of therapy can take place in a number of different settings including health services, schools, social services, voluntary organisations and prisons. Sessions can last from 30 to 90 minutes and often take place weekly at an agreed place and time. Interventions may last from a few weeks to several months, depending on client needs, and can be delivered as one-to-one, pair- or group-therapy.

The practice of DMT in the 21st century stems in part from pioneering work that took place in the USA during the middle and latter part of the last century. For example, Marian Chace (Chaiklin 1986; Levy 1992), an American dancer, developed DMT methods that are still widely used today. These methods include the use of the circle and active mirroring in DMT sessions; both of these methods encourage the development of non-verbal therapeutic relationships. However, pioneers in other countries also developed approaches that initially were independent of American influences (Payne 1992; Meekums 2008).

Karkou 2006 identifies three main models in the field, namely:

1. approaches that rely primarily upon dance/movement engagement and aim to explore specific movement themes and qualities. Examples of these are often, though not exclusively, informed by Rudolf Laban, an early proponent of therapeutic applications of dance movement (Laban 1975);

2. approaches that prioritise the non-verbal interaction between client(s) and therapist. A good example of this is the interactive model developed by the American DMT pioneer Marion Chace, as described by Chaiklin 1986, in which mirroring is a key technique, i.e. an active reflection of the movement qualities of the client by the therapist (and at times other group members);

3. approaches that focus on movement improvisation associated with internal work, in the presence of the therapists. An example of this type of approach comes from Authentic Movement, a way of working developed by the American choreographer Mary Whitehouse in which the therapist stays still and observes, using the self as an empathic witness (Whitehouse 1979).

In these approaches to DMT, the therapist may be active (moving with participants, as in the Chacian approach), or adopt a more observational stance (as in Authentic Movement). Meekums 2008 suggests that the feature that marks out contemporary DMT practice is the emphasis on it as a form of psychotherapy. For many therapists, theories relating to psychoanalytic and psychodynamic principles are used to guide practice (Karkou 2006). For example, Authentic Movement is associated with Jungian psychology (Whitehouse 1979), while the interactive model of Marion Chace is closely connected with humanistic thinking. For others, developmental, behavioural or eclectic and integrative models are valued (Karkou 2006). For example, in her work with mothers and young children Meekums used a behavioural approach combined with attachment theory (Meekums 1991). More recently, Meekums suggested an integrative framework based on the symbolic power of the 'movement metaphor', which transcends such theoretical divisions (Meekums 2002).

In all cases, the therapist is concerned with developing an embodied empathic relationship. Within this relationship, the therapist's body may be seen as holding projections from individual clients, or from the group as a whole. These projections can be worked through verbally, or non-verbally, or both; more or less verbal reflection may take place, depending on the level of cognitive functioning of the participants.

How the intervention might work

DMT may have positive effects for people with dementias that include delaying cognitive deterioration, improving mood and increasing social interaction for a number of reasons such as: 1) the use of movement as exercise and as dance, 2) the use of music, 3) the therapeutic relationship, and 4) DMT-specific features.

The use of movement

Since DMT uses the body and encourages movement amongst participants, it is expected that there will be some physiological changes associated with exercise. These are well documented in the generic literature on the physiology of exercise, and include positive effects on cognitive function (Colcombe 2003).

The dance literature related to this review reveals that some dance forms, such as tango, may have the effect of over-riding problems in the brain associated with balance and gait in Parkinson's Disease (Hackney 2007; Hackney 2010). Tango has many of the elements also found in a DMT session, including: ' . . . frequent movement initiation and cessation, a range of speeds, rhythmic variation . . . ' (Hackney 2010; p 682).

The use of music

Although not essential, it is common for dance movement therapists to use music when working with people with dementias. Studies included in the Cochrane Review by Vink 2011 indicate that music therapy, a discipline closely alligned to DMT, may have some moderate positive effects in reducing behavioural symptoms associated with dementia, stimulating language skills and enhancing social/emotional functioning. However, in a similar way to other systematic reviews that have evaluated emerging treatment options, the authors of the review concluded that the methodological rigour and reporting of findings of these studies was too poor to draw useful conclusions about the value of this intervention.

The therapeutic relationship

As a form of psychotherapy, the therapeutic relationship can be seen as a key agent for change (Norcross 2011; Macaskie 2012). For example, in verbal psychotherapy - and with regard to inter-subjective therapeutic relationships in particular - Macaskie 2012 concludes that the relationship is an embodied one, drawing on implicit relational knowing, implicit body memory and embodied participatory sense-making. Within DMT, embodied relational knowing, body memory and embodied sense-making are highly developed. Furthermore, empathy - a core component of the therapeutic relationship - is extensively utilised in DMT in the form of a sophisticated understanding and use of kinaesthetic empathy (Meekums 2012a). The development of a therapeutic relationship is a key aspect of the work and one of the main differences between DMT and dance practice.

DMT-specific features

While DMT participants do engage in movement initiation and cessation, rhythmic variation and a range of speeds, they are encouraged to engage in movement that is primarily creative rather than learning steps to music. Additional benefits, therefore, might reasonably be expected beyond those associated with exercise or dance classes.

Karkou 2006 argues that therapeutic change may be related to some of the unique features of DMT specifically: embodiment, creativity and improvisation, movement-based imagination, the use of symbolic movement and the use of movement as a metaphor. The embodied nature of DMT makes it potentially relevant to those clients for whom body image or body memory may be a particular issue requiring exploration and working through, for example for people who are overweight and have emotional eating patterns (Vaverniece 2012). In the case of dementia, engaging body memories may assist the goals of reminiscence therapy (Woods 2009). Metaphors inherent in symbolic movement offer a way to understand communication (Meekums 2002), and may be important for communication by people with dementia (Young 2011). Creativity and improvised movement work enable participants to develop new ways of being in the world in themselves and in interactions with others, and to delay cognitive deterioration (Karkou 2006). The value of activating imagination through movement has been extensively discussed by Dosamanstes-Alperson as early as 1981 (Dosamantes-Alperson 1981). Furthermore, Meekums 2002 and Karkou 2006 argue that symbols and metaphors can increase emotional distance from distressing memories and feelings, while they can allow for safe explorations that may change cognitions and feelings.

One of the central aspects of DMT for which there is an evidence base relates to the use of non-verbal communication, and kinaesthetic empathy in particular (Brooks 1989; Berrol 2006; Meekums 2012a), which is an important aspect of the therapeutic relationship discussed above. 'Movement mirroring' is a technique extensively used by dance movement therapists as a way of engaging patients and achieving non-verbal empathy. Within DMT literature empathic engagement through mirroring is often seen as linked with the activation of mirror neurones in the brain (Rizzolatti 1996; Meekums 2002; Berrol 2006; Gazzola 2006), which fire as a kind of body memory when an individual observes another person engaged in either purposeful movement or emotional expression that is within the repertoire of the observer. However, the significance of mirror neurones within therapeutic kinaesthetic empathy is unclear; emotional engagement through a deliberate attempt to imagine oneself into another's experience appears to be an important additional requirement (Meekums 2012a). Moreover, mirror neurone activity is associated with watching movements; different processes may be involved in actively mirroring movements, and so while some aspects of kinaesthetic empathy may involve mirror neurone activity, the processes involved in conveying empathy are likely to be different.

Further investigation is needed on this topic as well as on clarifying whether both specific and non-specific factors may be responsible for any therapeutic change associated with DMT for clients with dementia.

Why it is important to do this review

DMT is widely practised around the world in both statutory and non-statutory sectors. In Britain for example, the profession is regulated by the Association for Dance Movement Psychotherapy UK (ADMP UK). In Europe, the Association for Dance Movement Therapy was founded recently, while in the USA dance/movement therapists receive national Certification from the Dance/ Movement Therapy Certification Board, an independent affiliate of the American Dance Therapy Association. Evidence is currently growing that this intervention is effective with a range of client groups. The current review will add to other completed Cochrane reviews of studies in DMT that have reviewed research evidence on the effects of DMT on schizophrenia, cancer care and depression (Bradt 2011; Meekums 2012b; Ren 2013).

Furthermore, there is a growing need to offer appropriate services to people with dementias who are faced with multiple issues beyond traditional pharmacological treatment. Given that medication focuses primarily on reducing cognitive deterioration, and that there is a growing number of dementias with multiple symptoms and difficulties, the search for effective interventions that claim to address the person as a whole is becoming particularly urgent. DMT claims to treat the person as a whole, tapping not only into cognitive areas of functioning but also emotional, social and physical aspects. The current review, therefore, will add to the literature of non-pharmacological treatment options for dementia.

O B J E C T I V E S

1. To assess the effects of DMT on behavioural, social, cognitive and emotional problems of people with dementia in comparison to no treatment (waiting list), standard care or any other treatment.

2. To compare different forms of DMT (e.g. Laban-based DMT, Chacian DMT or Authentic Movement).

M E T H O D S

Criteria for considering studies for this review

Types of studies

Our review will include published or unpublished randomised controlled trials (RCTs) in any language. We will also consider cross-over designs and cluster-RCTs.

Types of participants

The review will include studies of people who, according to the DSM-IV, ICD-10 or other comparable diagnostic criteria, have been formally diagnosed as having any type of dementia of any type of severity. Women and men in all age groups and in all settings (e.g. statutory and voluntary organisations, in-patient or out-patient) will be considered for inclusion in the review.

We will identify the inclusion criteria that determined the selection of participants for each trial. When this information is not available in the source material, we will contact the trial authors to determine how they screened participants, and how many people declined to participate.

Types of interventions

Experimental interventions

We will consider interventions delivered by a DMT practitioner who: has received formal training; is a dance movement therapist in training; or is otherwise recognised as a dance movement therapist in the country in which the study was conducted.

We will include both group, individual and family/couple DMT with any number and duration of sessions.

Sessions must include active involvement in dance/movement in the presence of a dance movement therapist, or dance/movement interaction with a dance movement therapist with or without other group members, or both. Dance/movement can be improvisatory or structured. Sessions will have clear therapeutic intent and a clear description of the intervention will be reported or available on request. All approaches to DMT will be considered.

The presence or absence of verbal interaction and reflection will be considered as a factor to be examined in subgroup analysis. In all cases however, creative movement work may be the main means of working through cognitive, behavioural, emotional or social issues faced by the participants.

Comparators

1. No treatment or standard care.
2. Psychological therapies: e.g. counselling, verbal psychotherapies including psychodynamic psychotherapy, interpersonal therapy or cognitive behavioural therapy.
3. Pharmacological interventions: medications such as cholinesterase inhibitors (CgEIs) or memantine.
4. Other interventions: e.g. exercise, dance or music.
5. Different types of DMT: different types of DMT, as defined above.

Types of outcome measures

Primary outcomes

Changes in challenging behaviours (e.g. wandering, agitation, general restlessness), cognitive functioning, levels of depression and quality of life; examples of tools for assessing each outcome are listed below. We will accept all behavioural and psychological tools reported by the authors of the identified primary studies in the same way that Vink did for the Vink 2011 review of music therapy for dementia.

1. Challenging behaviours:
    i) quantitative observational tools specifically designed for an individual study to measure frequency of occurrence of wandering, agitation and general restlessness;
    ii) standardised tests such as: Cohen-Mansfield Agitation Inventory Clifton (CMAI; Cohen-Mansfield 1989) scoring from 29 to 203; the higher the total score the more frequent the agitated behaviours.

2. Cognitive functioning:
    i) the Mini-Mental State Exam (MMSE) (Folstein 1975); scoring from 0 to 30 with lower scores indicating poorer cognitive function;
    ii) Alzheimers Disease Assessment Scale (ADAS-cog; Rosen 1984); scores on the cognitive subscale range from 0 to 70 with higher scores indicating poorer cognitive function.

3. Depression:
    i) Cornell Scale for Depression in Dementia (Alexopoulos 1988); scoring from 0 to 38 with higher scores indicating more severe depression.

4. Quality of life:
    i) Quality of Life-Alzheimer's Disease (QOL-AD, Logsdson 1999): scoring from 13 to 52; higher scores suggest better quality of life.

If other similar outcome measures are found in the included studies, they will be considered.

Secondary outcomes

Mobility and balance, fatigue, anxiety, social and occupational functioning, economic outcomes (cost-effectiveness of treatment), treatment or research discontinuation/dropout (as measures of acceptability). Adverse events will also be considered, including falls and injuries associated with the intervention. Outcomes will be included as used within the primary studies.

Search methods for identification of studies

Electronic searches

We will search ALOIS (www.medicine.ox.ac.uk/alois) - the Cochrane Dementia and Cognitive Improvement Group's Specialized Register. The search terms used will be: "dance*" or "authen-

tic movement" or "movement therap*" or "movement psychot*" or "body psychot*".

ALOIS is maintained by the Trials Search Co-ordinator of the Cochrane Dementia Group and contains dementia and cognitive improvement studies identified from:

1. monthly searches of a number of major healthcare databases: MEDLINE, EMBASE, CINAHL, PsycINFO and LILACS;

2. monthly searches of a number of trial registers: meta Register of Controlled Trials; Umin Japan Trial Register; WHO portal (which covers ClinicalTrials.gov; ISRCTN; Chinese Clinical trials Register; German Clinical trials register; Iranian Registry of Clinical trials and the Netherlands National Trials Register, plus others);

3. quarterly search of *The Cochrane Library's* Central register of Controlled trials (CENTRAL);

4. monthly searches of a number of grey literature sources: ISI Web of knowledge Conference Proceedings; Index to Theses; Australasian Digital Theses.

To view a list of all sources searched for ALOIS see About ALOIS on the ALOIS website.

Additional separate searches will be run in many of the above sources to ensure that the most up-to-date results are retrieved. The search strategy that will be used for the retrieval of reports of trials from MEDLINE (via the Ovid SP platform) can be seen in Appendix 1.

Searching other resources

We will also do the following in order to identify published, unpublished and on-going trials that may not appear in the electronic searches listed above.

1. We will search the bibliographies of relevant studies and reviews.

2. We will contact professional associations and educational programmes in DMT from around the world using a standard request form to inform us of Masters-degree, PhD or independent work that is published or unpublished, completed or ongoing that might meet the inclusion criteria.

3. We will contact DMT researchers, theoreticians and practitioners who specialise in this area of work, whom we will regard as experts in the field.

Data collection and analysis

Selection of studies

In the first instance, the two authors (VK and BM) will screen titles and abstracts for inclusion of studies that meet the inclusion criteria as discussed in Criteria for considering studies for this review and further specified in Data extraction and management.

The two review authors will act independently and will assess different studies' eligibility using the first part of the proforma that can be found in Appendix 1.

All potentially relevant titles and abstracts will be recorded and assessed to decide whether they should be included, excluded or whether additional information is required regarding:

1. general information
2. inclusion criteria
    i) study design
    ii) participants
    iii) interventions
    iv) outcomes

A final decision will be made only after additional information has been sought, where required. If there are disagreements, the two authors will meet to discuss them and, if required, will seek a third opinion from the Cochrane Dementia and Cognitive Improvement Group. A record will be kept of all studies, charting the decisions made, and the stage at which these decisions were made (i.e. title and abstract, on further inquiry from the authors, or on reading the full paper), together with the reason for this decision.

Data extraction and management

Full reports will be obtained of all included studies. A proforma specifically designed for this purpose will be used to extract relevant data from all included studies (see Appendix 2). The two review authors will extract data independently using this data extraction proforma. Again, any disagreements will be resolved by discussion; where this does not result in agreement, a third opinion will be sought from the Cochrane Dementia and Cognitive Improvement Group.

The following details will be extracted (as presented in Appendix 2):

1. study characteristics;
2. interventions;
3. outcome measures used in the study;
4. study results;
5. additional notes.

Assessment of risk of bias in included studies

In order to identify any risk of bias in the included studies, we will use the Cochrane Risk of Bias tool as presented in Appendix 2 (Higgins 2011). With the aid of this tool, we will make a judgement of 'low risk', 'high risk' or 'unclear risk' of bias for each trial of the following areas:

1. selection bias:
    i) random sequence generation
    ii) allocation concealment
2. blinding of participants and personnel;
3. blinding of outcome assessment;
4. incomplete outcome data;

5. selective reporting;
6. other sources of bias.

Measures of treatment effect

When changes in challenging behaviours (e.g. wandering, agitation, general restlessness), cognitive functioning, depression and quality of life are measured using rating scales presented as dichotomous data, we will summarise data using risk ratios (RR). For continuous outcomes, such as scores from a scale, we will use mean differences (MD).

When different scales are used to measure the same outcome, the standardised mean difference will be calculated in Review Manager (RevMan 2012) to summarise outcomes across scales.

In all cases endpoint data will be regarded as a superior method over change scores. This is preferred since data can be skewed in favour of the treatment or the control group where randomisation is inadequate. It is possible that change scores could appear as different when in fact the two end points (control and treatment group) are similar (see, for example, Meekums 2012b).

Unit of analysis issues

We are not expecting to find large scale studies taking place in this area, but depending on the type of studies available we will make the following choices:

1. in the case of cross-over trials, we will use only the first active treatment period;
2. in studies with multiple arms we will include only the arm with DMT and the control;
3. in the case of two DMT arms with one single control group, we will consult the Cochrane Handbook (Higgins 2011, chapter 16.5.4).

If there is a cluster randomisation, depending on the data available, analysis will follow the Cochrane Handbook (Higgins 2011, chapters 16.3.3 to 16.3.7).

Dealing with missing data

If there are missing data in terms of end of treatment scores, we will attempt either to obtain the missing data or find out why data are missing through contacting trialists. Data that remain unavailable will be treated as 'missing at random' (Higgins 2011, 16.1.2), and, if it is end of treatment scores that are missing we will assume that participants either dropped out of the intervention, died or became too ill to continue. The percentage drop-out will be calculated, and cautiously interpreted as a measure of acceptability.

If standard deviations (SD) are missing, we will consider the values of other reported measures such as P values, t values, confidence intervals and standard errors. If a sufficient number of studies become available, we will try to impute a SD. We will however, make a note of this, and we will perform a sensitivity analysis, as imputed measures may bias towards lack of effect.

For continuous data that remain missing, we plan to report completers' data only. For binary data, we will assume that drop-outs had 'no change' and we will analyse using intention to treat analysis.

In general terms, we will report all missing data in the risk of bias tables (Appendix 2).

Assessment of heterogeneity

Initially, sources of clinical heterogeneity will be examined; studies will be pooled only where review authors judge that there is sufficient clinical homogeneity. In order to assist our judgement regarding potential sources of clinical heterogeneity, we will summarise studies in terms of participants, settings, method of delivery (that is, group or individual, number of sessions), type of DMT, and reported outcomes.

We will assess heterogeneity in the results of the trials by inspection of graphical presentations and by the I^2 and Chi^2 statistics (Higgins 2011).

We will pool studies with I^2 values of up to 80% heterogeneity, which may be an acceptable level of heterogeneity for psychological assessments. We will then perform a sensitivity analysis to establish the effects of including studies of lower quality (see Sensitivity analysis).

Assessment of reporting biases

Where there are more than ten studies that address the same outcome, we will use a funnel plot analysis to examine for publication bias.

Data synthesis

Data from all trials included in the review will be entered into Review Manager software (RevMan 2012). Depending on the outcome of the test for homogeneity, we will be able to assess whether we need to accommodate for heterogeneity by using a random-effects model to calculate differences between treatment and control groups and pooled estimates.

A meta-analysis will be performed on extracted data, if:

1. there is more than one study with an estimated treatment effect;

2. the included studies appear to differ minimally in characteristics and can be investigated for heterogeneity through subgroup analyses;

3. studies use the same outcome measures;

4. each study has available data (Higgins 2011; Meekums 2012b).

Finally, as it is expected that studies will use different time points for measurement, an initial main analysis will be based on the final time point. Following this, sub-group analysis will also be considered as follows: short follow-up (up to 14 weeks); moderate follow-up (15 to 27 weeks) and long follow-up (28 weeks and over). In cases where the type of intervention, the populations studied or the outcome measures used are very different from one study to another, only narrative descriptions of the findings will be included in the review.

Subgroup analysis and investigation of heterogeneity

If possible, we will perform subgroup analyses as follows:

1. mode of delivery including group or individual;

2. actively moving or not actively moving therapist;

3. presence or absence of verbal interaction;

4. length of treatment including number of sessions (fewer than 12 sessions versus 12 or more sessions);

5. intensity of intervention, to include frequency (weekly or less frequent, bi-weekly or more frequent) and duration of sessions (one hour or less, more than one hour);

6. type of dementia;

7. severity of dementia (mild, moderate or severe as defined by the trialist);

8. participant characteristics including gender (men, women or other) and age (under 65 years old; 65 years old and over);

9. setting (statutory and non-statutory).

Sensitivity analysis

If it is relevant, the following types of sensitivity analysis will be performed relating to:

1. different types of risk of bias, for example high versus low risk studies;

2. imputed measures vs available case analysis.

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* *Indicates the major publication for the study*

A P P E N D I C E S

Appendix 1. MEDLINE search strategy

1. danc*.ti,ab.
2. DTM.ti,ab.
3. "authentic movement*".ti,ab.
4. "movement therap*".ti,ab.
5. "movement psychot*".ti,ab.
6. "body psychot*".ti,ab.
7. "body psychot*".ti,ab.
8. or/1-7
9. Dance Therapy/
10. 8 or 9
11. exp Dementia/
12. Delirium/
13. Wernicke Encephalopathy/
14. Delirium, Dementia, Amnestic, Cognitive Disorders/
15. dement*.mp.
16. alzheimer*.mp.
17. (lewy* adj2 bod*).mp.
18. deliri*.mp.
19. (chronic adj2 cerebrovascular).mp.
20. ("organic brain disease" or "organic brain syndrome").mp.
21. ("normal pressure hydrocephalus" and "shunt*").mp.
22. "benign senescent forgetfulness".mp.
23. (cerebr* adj2 deteriorat*).mp.
24. (cerebral* adj2 insufficient*).mp.
25. (pick* adj2 disease).mp.
26. (creutzfeldt or jcd or cjd).mp.
27. huntington*.mp.
28. binswanger*.mp.
29. korsako*.mp.
30. or/11-29
31. 10 and 30

Appendix 2. Sample of data extraction form

Information/data extracted for all relevant studies

General information

- 'Data extractor'/author ID
- Date of extraction
- Study ID
- Title, author/s, publication details of study
- Source if unpublished
- Language of publication

Eligibility criteria

Does the study meet the inclusion criteria, and how?
- Study design (parallel, controlled trial, randomised controlled trial, systematic allocation)
- Participants (diagnosis of dementia)
- Interventions (type of dance movement therapy)
- Outcomes (changes in cognitive, behavioural, emotional or social scales)

Inclusion? Exclusion? More information needed?

Data extraction for included studies

Study characteristics

- Study setting (e.g. country, urban/rural, hospital/clinic/school/charity/community/prison etc
- Participant demographics (e.g. age, gender, socio-economic status, co-morbidity)
- Inclusion/exclusion criteria used in the study

Outcome measures used in the study

- Primary outcome measures that provide scores for changes in:
  - Challenging behaviours
  - Cognitive functioning
  - Depression
  - Quality of life

- Secondary outcome measures that provide scores for:
  - mobility and balance
  - Fatigue
  - Anxiety
  - Social and occupational functioning
  - Economic outcomes
  - Treatment or research discontinuation/dropout
  - Adverse events including falls and injuries associated with the intervention

Study results

- Source (table, graph, text)
- Participants, number of events, percentages, chi-squares, risk ratios, for dichotomous outcomes, mean differences or standardised mean differences for continuous outcomes, missing participants
    - Queries regarding data or methods (to be referred to the author for further information)

Additional notes

- Record of details regarding correspondence with author/s for additional information or clarification of queries
- Ethics of stated conflict of interest
- Details of other studies cited in the references
- Duplicate publications
- Translation required

Risk of bias assessment tool (Higgins 2011)

Domain	Support for judgement	Review authors' judgement
Selection bias		
Random sequence generation	Describe the method used to generate the allocation sequence in sufficient detail to allow an assessment of whether it should produce comparable groups	Selection bias (biased allocation to interventions) due to inadequate generation of a randomised sequence
Allocation concealment	Describe the method used to conceal the allocation sequence in sufficient detail to determine whether intervention allocations could have been foreseen in advance of, or during, enrolment	Selection bias (biased allocation to interventions) due to inadequate concealment of allocations prior to assignment
Performance bias		
Blinding of participants and personnel: assessments should be made for each main outcome (or class of outcomes)	Describe all measures used, if any, to blind study participants and personnel from knowledge of which intervention a participant received. Provide any information relating to whether the intended blinding was effective	Performance bias due to knowledge of the allocated interventions by participants and personnel during the study
Detection bias		
Blinding of outcome assessment: assessments should be made for each main outcome (or class of outcomes)	Describe all measures used, if any, to blind outcome assessors from knowledge of which intervention a participant received. Provide any information relating to whether the intended blinding was effective	Detection bias due to knowledge of the allocated interventions by outcome assessors

(Continued)

Attrition bias		
Incomplete outcome data: assessments should be made for each main outcome (or class of outcomes)	Describe the completeness of outcome data for each main outcome, including attrition and exclusions from the analysis. State whether attrition and exclusions were reported, the numbers in each intervention group (compared with total randomised participants), reasons for attrition/exclusions where reported, and any re-inclusions in analyses performed by the review authors	Attrition bias due to amount, nature or handling of incomplete outcome data
Reporting bias		
Selective reporting	State how the possibility of selective outcome reporting was examined by the review authors, and what was found	Reporting bias due to selective outcome reporting
Other bias		
Other sources of bias	State any important concerns about bias not addressed in the other domains in the tool If particular questions/entries were pre-specified in the review's protocol, responses should be provided for each question/entry	Bias due to problems not covered elsewhere in the table

Checklist into which the tool outlined above will be translated

1. Selection bias

a. Random sequence generation

Was the trial reported as randomised? YES/NO/UNCLEAR

Was the method of randomisation appropriate? YES/NO/UNCLEAR

YES: randomisation will be rated as appropriate if every participant had an equal chance to be selected for either intervention and if the investigator was unable to predict to which treatment the participant would be assigned. Examples of appropriate randomisation methods include use of: random number table; computer random-number generator; coin tossing; shuffling cards or envelopes; throwing dice; drawing lots; minimisation.

NO: inappropriate methods include: use of date of birth; sequence generated by a rule e.g. date of admission; patient preference; clinician's judgement; availability of the intervention.

UNCLEAR: insufficient information provided on which to base judgement.

b. Allocation concealment

Was allocation concealment adequate? YES/NO/UNCLEAR

YES: allocation concealment will be rated as adequate when the following methods are used: central allocation (e.g. telephone, web- or pharmacy-based randomisation); serially-numbered, opaque, sealed envelopes; other descriptions with convincing concealment.

NO: allocation concealment will be rated as inadequate when the following methods are used: open random allocation schedule, i.e. a list of random numbers; envelopes without safeguards, i.e. unsealed, non-opaque or not sequentially-numbered; alternation or rotation; date of birth; case record number; any other explicitly unconcealed procedure.

UNCLEAR: authors did not report adequately on method of concealment.

2. Blinding of participants and personnel

Was participant and personnel blinding adequate? YES/NO/UNCLEAR

YES: adequate blinding will involve blinding of participants and personnel to the allocated interventions during the study.

NO: inadequate blinding is implied in studies in which blinding of participants and personnel has not taken place. Please note that for DMT studies, it is highly likely that it will not be possible to blind participants or those providing the DMT interventions. Therefore, it is likely that for this domain DMT studies will be assessed as having inadequate blinding and thus being at a high risk of bias.

UNCLEAR: unclear blinding is implied when insufficient information is reported to determine who was blinded, or whether blinding occurred at all.

3. Blinding of outcome assessment

Was discussion of blinding of outcome assessment adequate? YES/NO/UNCLEAR

YES: adequate blinding achieved when outcome assessors are unaware of the intervention allocated.

NO: inadequate blinding means that outcome assessors are aware of the intervention allocated.

UNCLEAR: a judgement of unclear will be used if a study does not address this point.

4. Incomplete outcome data

Were incomplete outcome data adequately considered? YES/NO/UNCLEAR

YES: incomplete outcome data will have been adequately considered when: there are no missing outcome data; reasons for missing data are unlikely to be related to the true outcome; missing outcome data are balanced across comparison groups, with similar reasons; plausible effect size (difference in means or standardised difference in means) among missing outcomes is insufficient to have clinically relevant impact on observed effect size; missing data are imputed using appropriate methods.

NO: incomplete outcome data will have been inadequately considered when: reasons for missing outcome data are likely to be related to the true outcome, with either imbalance of numbers or reasons for missing data across groups; plausible effect size among missing outcomes is sufficient to induce clinically relevant bias in observed effect size; 'as treated' analysis performed with substantial departure of the intervention received from that assigned at randomisation; potentially inappropriate application of simple imputation.

UNCLEAR: insufficient reporting of attrition or exclusions to permit judgement, e.g. number randomised not stated or no reasons provided for missing data; or the study did not address this outcome.

For continuous data, an intention to treat (ITT) analysis will be calculated if not presented by the authors of the study.

5. Selective reporting

Was the reporting bias acceptable? YES/NO/UNCLEAR

YES: reporting bias will be assessed as acceptable if: the study protocol is available and all pre-specified outcomes of interest in the review have been reported in the pre-specified way; or the protocol is not available but it is clear that the published reports include all expected outcomes.

NO: reporting bias will be assessed as unacceptable if: not all of the pre-specified primary outcomes are reported; one or more of these is reported using measurements or analytic methods or subsets of data that were not pre-specified; one or more of the primary outcomes were not pre-specified (unless clearly justified, e.g. an unexpected adverse effect); one or more outcomes of interest is reported incompletely and so cannot be entered into meta-analysis; failure to report results for a key outcome that would be expected from such a study (including adverse outcomes).

UNCLEAR: insufficient information provided to make a judgement.

6. Other sources of bias

Were other sources of bias eliminated: YES/NO/UNCLEAR

Examples of other risk of bias include: those related to study design; claimed to be fraudulent.

Examples of unclear risk of bias include: insufficient rationale or evidence that an identified problem would introduce bias.

The above criteria will be used to give each article an overall quality rating of A to C, as follows:

A: low risk of bias - all criteria met.

B: moderate risk of bias - one or more of the criteria only partly met.

C: high risk of bias - one or more criteria not met.

Studies will not be excluded on the basis of a low quality score.

DECLARATIONS OF INTEREST

Both authors are dance movement psychotherapists registered with the Association for Dance Movement Psychotherapy UK and active researchers in the field with relevant research activities

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Internal sources

- University of Leeds and Queen Margaret University, Other.

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External sources

- No sources of support supplied