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# What research evidence is there that dance movement therapy improves the health and wellbeing of older adults with dementia? A systematic review and descriptive narrative summary

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## Highlights

- The existing evidence base for dance movement therapy is limited to mainly qualitative studies of varying methodological quality.
- Theoretically, studies draw on a person-centred approach as well as elements of psychodynamic thinking.
- Therapeutic components include spontaneity and improvisation, dramatic scenarios, rhythmic synchrony and symbolism.
- Across the studies there is a lack of detail regarding type and stage of dementia.
- There is a lack of community-based studies.
- There is an absence of arts-based information collected as research data.

## Abstract

In England, the National Institute for Health and Care Excellence (NICE) guidelines for supporting people with dementia recommend the therapeutic use of dancing and/or music as a treatment for non-cognitive symptoms, but make no direct reference to dance movement therapy or music therapy. Also, previous Cochrane Reviews in these areas have been criticized for being limited to randomized controlled trials focusing on outcomes. In order to maximize findings and explore the clinical process, this systematic review aimed to examine a broad range of research evidence (including quantitative, qualitative and arts based studies) for the benefits to health and wellbeing for adults aged 65 and older with dementia. Searches were conducted on multiple databases using predefined keywords. Two reviewers screened the texts retrieved using inclusion and exclusion criteria. The selection and process was determined by the PRISMA statement and the quality of included studies was appraised using

a grading system. Results from the dance movement therapy literature are presented here in the form of a descriptive narrative summary. Findings show the existing evidence base consists of five mainly qualitative observational studies of varying methodological quality. Theoretically the included studies draw upon a person-centred approach, as well as elements of psychodynamic thinking. Therapeutic components across studies include spontaneity and improvisation, dramatic scenarios, rhythmic synchrony and symbolism. There is a focus on the importance of *significant moments* where the individual with dementia functions in a more integrated way, creating connections between thoughts, feelings and physical sensations.

**Keywords:** Dance; movement; psychotherapy; dementia; systematic review

## Introduction

Dementia is a syndrome - a group of related symptoms - in which there is deterioration in memory, thinking and behavior and the ability to perform everyday activities (World Health Organization, 2017). The increasing numbers of people with dementia worldwide presents an ideal time for the production of evidence of how therapies that concentrate on embodied communication can potentially reduce symptoms of dementia and facilitate wellbeing. The arts therapies (art, dance movement, drama and music therapy) are established psychological treatments that include working with non-verbal expression to support and develop communication, improve mood and treat negative symptoms (Central and North West London NHS, 2017). In England, the latest guidelines from the National Institute for Health and Care Excellence (NICE, 2016) recommend the therapeutic use of music and/or dancing as a treatment for the non-cognitive symptoms of dementia, such as agitation but make no direct reference to music therapy or dance movement therapy. A recent Cochrane review of dance movement therapy and dementia (Karkou & Meekums, 2017) found no studies of sufficient methodological quality to meet the strict Cochrane inclusion criteria. The most recent Cochrane review of music therapy (van der Steen et al., 2017) performed a meta-analysis on a range of outcomes. The review concluded that providing people with dementia with at least five sessions of a music-based therapeutic intervention probably reduces depressive symptoms but has little or no effect on agitation, emotional wellbeing or quality of life, overall behavioural problems and cognition. However, due to the low methodological quality of the evidence there remains uncertainty regarding effectiveness. In summary, the empirical evidence base for the arts therapies in dementia care remains thin due to lack of high quality randomized controlled trials.

Furthermore, the existing evidence base has been criticized for focusing on the reduction of symptoms, and a lack of information regarding context and experiences, types and stages of dementia, and how the therapy was delivered (Beard, 2012; McDermott et al., 2013). A recent research study has also shown that consensus and transparency about the clinical process is still being established across the arts therapies (Havsteen-Franklin et al., 2016). As relatively young disciplines<sup>1</sup> there is a need to know more about the therapeutic components involved in working with older people with dementia. Also, the need to bring the arts to the centre of research studies has been discussed in wider arts therapies literature (McNiff, 1998; Hervey, 2000). There is therefore, a need to look at evidence in which emphasis is placed on the clinical process and the creativity inherent in the work.

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<sup>1</sup> in the UK, art and music therapy were established in the 1940s, while dance movement therapy much more recently; the UK Association for Dance Movement Therapy, currently renamed as the Association of Dance Movement Psychotherapy UK, was founded in the 1980s.

Although the review has chosen to focus on two particular arts therapies, namely dance movement therapy and music therapy, in this paper results from dance movement therapy (DMT)<sup>2</sup> only are presented. In particular, the following question is addressed:

What is the research evidence relating to the contribution of DMT towards improving health and wellbeing for adults aged 65 and older with dementia?

The aims of the review addressed here are:

- a. To investigate a broader range of research evidence for DMT including quantitative, qualitative and arts-based studies.
- b. To identify the theoretical perspectives and clinical methodology employed in the studies.
- c. To focus on positive therapeutic outcomes of health and wellbeing (and consider the lived experiences of people with dementia participating in these studies).

## Methods

The rationale for this particular systematic review was to incorporate a broader range of evidence to fully evaluate the arts therapies as a potential treatment for older adults with dementia and to include qualitative and arts based findings previously not collated in evidence reviews. Too often the conclusions of systematic reviews, and systematic reviews that follow the restrictive inclusion criteria of Cochrane Reviews (Higgins & Green, 2011), state that there is not enough research evidence or not enough good quality research evidence. By including other forms of evidence from different types of research, this review aimed to maximize research findings and combine outcome and process to gain a more in depth understanding of these creative therapies. In this respect, this review is similar to a 'meta-synthesis' discussed in the context of arts therapies by Edwards and Kaimal (2016). However, unlike meta-synthesis, this review did not aim to identify and summarize findings from qualitative studies only. Instead, it aimed to bring together quantitative, qualitative and arts based evidence. On the whole, Cochrane Review (Higgins & Green, 2011) conventions and processes were adopted, and the review followed the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA statement) guidelines (Moher et al., 2010). However, as there was limited scope for a meta-analysis because of the lack of quantitative studies identified the results are presented in a descriptive narrative summary. A descriptive narrative summary can tell readers important things about the study populations, design and conduct of studies, and facilitate the examination of patterns across studies. They may also provide important information about the applicability of evidence, suggest the likely effects of any major biases, and allow consideration of explanations for possible differences of findings across studies (Liberati et al., 2009).

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<sup>2</sup> The term dance movement therapy (DMT) will be used here to reflect the international perspective of the included studies. However, the discipline is also known as dance/movement therapy, dance-movement therapy, dance therapy, movement psychotherapy and dance movement psychotherapy. The later term is how the discipline is known as in the UK, where the authors of this paper are based.

A protocol was written and registered with PROSPERO (Lyons et al., 2015). A modified version of the PICOS framework (Booth, 2008) using primarily three elements (participant population, intervention and study design) helped determine the criteria used to include and exclude studies. The types of study that we aimed to include were empirical research studies or descriptive studies including quantitative, qualitative, mixed method and arts based. We excluded all non-empirical research studies (e.g. secondary sources, opinion-based). All systematic reviews were also excluded but screened for relevant studies. For the participant population, studies were included that were conducted for adults aged 65 and older with a diagnosis of any type of dementia. Studies with mixed populations where most of the population had a diagnosis of dementia were also included. Studies with participants with no reported age, or those with a mean age of less than 65 were excluded. All types of setting were considered including both community and continuing care settings. The inclusion criteria for the intervention (therapy) was: the therapeutic use of dance movement to promote patients' health and well-being, delivered by a registered dance movement therapist (where training is available). The study also required a systematic therapy process (for example, assessment, individual goal setting, treatment and evaluation).

### *Literature Search*

Electronic healthcare databases MEDLINE, PSYCINFO, CINAHL, EMBASE, AMED were searched with no date restrictions up to 22 May 2017. Additional searches were conducted of PROSPERO, the Cochrane Database of Systematic Reviews, reference lists of identified papers and hand searches of relevant books, journals and previous systematic reviews. There was no limit on publication date for eligibility of studies but they were limited to the English language (no DMT studies that met the inclusion criteria were located in other languages). Appropriate search terms were identified from previous similar reviews and in consultation with the research team and a university library information scientist was sought for advice on best possible tactics in the use of wildcard symbols and truncations. The following key words were used:

#### Search terms:

##### Step 1:

Dement\* OR Alzheimer's OR Fronto-temporal OR Lewy bodies OR vascular OR Creutzfeldt-Jakob

AND

older OR elder\* OR geriatric OR 65+ OR ag\*

##### Step 2:

danc\* OR dance movement therap\* OR movement therap\* OR dance therap\* OR movement psychotherap\* OR therapeutic dance OR authentic movement OR primitive expression

##### Step 3:

RCT OR randomised controlled trial OR randomized controlled trail OR case-control\* OR cohort stud\* OR case stud\* OR artistic inquiry OR artistic enquiry OR ethnograph\* OR observation\* OR participant observation\* OR survey\* OR interview\* OR patient experience OR client experience OR practice-led research OR practice led research OR evidence based OR empirical OR meta-analys\* OR systematic review\* OR narrative synthes\* OR integrative review OR quantitative OR qualitative OR mixed method\* OR art\* based research OR art\*-based

### *Study Selection*

Identifying included studies for review consists of four stages: identification, screening, eligibility and inclusion (Moher et al., 2010). In the first instance, relevant studies were identified removing 'noise' (i.e. irrelevant studies) and duplicates. At the second stage all studies were screened at a title/abstract level. Studies were excluded if they did not meet the inclusion criteria of 1) study design 2) population 3) intervention. The third stage consisted of reading the full text in order to establish eligibility for inclusion of potentially relevant studies; the same criteria were used. Where full texts could not be obtained through online journals inter library loans were requested, or where possible the authors were contacted.

### *Data extraction process*

The data were extracted by the primary researcher using a data bespoke extraction form designed in consultation with the research team. The following data was extracted from both quantitative and qualitative studies: source of study, authors (date), country, design, focus of study, setting and context, sampling strategy and sample size, participants, mean age, gender, type and level of dementia, frequency and duration of therapy, theoretical perspective, clinical methodology, main outcome measures, main data collection methods, other methods of data collection, time of data collection, statistical analysis/analysis of data and findings.

### *Quality assessment*

To assess the quality of the quantitative studies we used the Risk of Bias Tool (Higgins & Green, 2011) which looks at potential threats to validity including: selection bias (random sequence generation, allocation concealment); performance bias (blinding of participants and personnel); detection bias (blinding of outcome assessment); attrition bias (incomplete outcome data); reporting bias (selective reporting). To assess the quality of the included qualitative studies an ABCD grading system was adopted as used in Cooke et al. (2010). This grading system builds on the work of Lincoln & Guba (1985), who put forward alternative constructs to validity and reliability, namely credibility, dependability, confirmability and transferability.

## **Results**

### *Search and inclusion results*

The combined search for DMT and music therapy generated 1260 hits, of which 739 were removed as irrelevant or duplicate citations. 521 studies were then taken forward for more detailed abstract review. The screening was undertaken by the primary researcher (SL) and checked independently by a second reviewer (the second author of this paper - VK). Of these 521 studies, 333 were excluded on the grounds of study design (161), population (53) or intervention (119). Following evaluation and discussion of the remaining 188 potential studies, a further 162 studies were excluded on the grounds of study design (15) population (14) and intervention (129) – see Figure 1 PRISMA flow diagram. This left five DMT studies to consider as part of this systematic review.

*Study characteristics*

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### *Participants, setting and study design*

In total 34 participants were involved across the five DMT studies that survived the review scrutiny (see Table 1). The Wilkinson et al. (1998) controlled study (N=16) had the largest sample with nine in the experimental group and seven in the control group. Outcome measures included the Mini Mental State Examination (Folstein, Folstein & McHugh, 1975), the Alzheimer's Disease Assessment Scale-Cognitive Subscale test and the Cornell Scale for Depression in Dementia (Alexopoulos et al., 1988). In this study, researchers reported that participants with dementia were selected from the day hospital if they "had a reasonable level of communication abilities and mild to moderate cognitive impairment" (p.196). Nystrom and Lauritzen (2005) reported convenience sampling in recruiting seven persons from a nursing home for their qualitative study. In Coaten's (2009) quasi-experimental mixed methods study, participants were chosen from a hospital ward on a session by session basis; there were four patients and five staff in the recorded session (the context of the study was a staff training and development program on a dementia care ward). Hill's (2006) phenomenological study was an individual case study that also took place on a hospital ward. Kowarzik's (2006) observational evaluation was conducted in a residential care home and clients "were selected on the basis of criteria" agreed with the dance movement therapist, for example, the clients needed to feel comfortable in a group situation and have some mobility (p.22). Overall, there was lack of clarity regarding the type of dementia of the study participants. Hill (2006) comments that in her study the words Alzheimer's disease and dementia are "used interchangeably" (p.166). The other studies failed to report the type of dementia diagnosis. The level of dementia ranged across stages and was reported to be varying (Nystrom & Lauritzen, 2005; Kowarzik, 2006) mild to moderate (Wilkinson et al., 1998), moderate (Hill, 2006) and moderate to severe (Coaten, 2009).

### *Type, frequency and duration of therapy*

As Table 2 shows, the majority of the studies took place in a group setting (4) and there was one case study concerning an individual (Hill, 2006). In two studies (Coaten, 2009 and Kowarzik, 2006) staff training was an important element. Three studies reported the frequency of sessions was once a week (Wilkinson et al., 1998; Nystrom & Lauritzen, 2005; Kowarzik, 2006). The longest study lasted for twelve sessions (Wilkinson et al., 1998 and Kowarzik, 2006). The data collection, transcription and analysis in Coaten's (2009) study uses only one session filmed on the hospital ward (session 3 of 5). Hill (2006) is less clear in her reporting of session frequency and duration. It is reported that there were four sessions but the duration of the sessions and subsequent video viewings are not accurately described.



### *Theoretical perspective*

As illustrated in Table 2, it is noticeable that the majority of the studies included in this review were informed by a person centred framework as well as elements of psychodynamic thinking. Hill (2006) clearly situates DMT as providing an important role in maintaining personhood, citing the work of Thomas Kitwood (1997). In the background to her case study she describes an overall humanistic and holistic approach, valuing the presence and use of relationship to promote wellbeing and growth in others. Coaten's (2009) study also had a person-centred ethos, tailored to each participant and focused on maintaining their personhood through supporting individual capacities. The Links Movement and Communication programme evaluated by Kowarzik (2006) was tailored to stimulate the client's retained skills, even though cognitive function may be impaired, and integrate the physical, psychological and spiritual aspects of the self. The therapist's theoretical perspective was also reportedly further informed by neuroscience and supporting the expression of a "changing self" that may experience loss and activating the body's capability to recover memory lodged in the musculature of the body (Kowarzik, 2006, p.19).

Wilkinson et al. (1998) cited the Sesame method, a symbolic approach that presents opportunities for more organized self-expression through the use of metaphor that is informed by Jungian thinking. It places emphasis on the creative and expressive use of the imagination within the safety and containment of art forms, and "does not seek to work directly or literally with personal material" (p.196). The approach is therefore, considered non-confrontational and non-invasive. Nystrom and Lauritzen (2005) use symbolism to interpret body movements as communication. They describe a psychodynamic approach theoretically based "in an object-relation tradition in which human beings are understood to have a fundamental urge for communication" (p.299). The DMT context is described as being located somewhere between "fantasy and reality" (p.312) and the authors make links to psychodynamic theory such as the intermediate area (Winnicott, 1971) where symbolization can occur.

### *Therapeutic components and clinical methodology*

The included studies made reference to the value of unstructured time and dramatic scenarios (Wilkinson et al., 1998), improvisation (Hill, 2006) spontaneity of expression (Coaten, 2009), rhythmic synchrony and symbolization (Nystrom & Lauritzen, 2005) and the use of touch (Kowarzik, 2006) as some of the key therapeutic components. Marian Chace (a founder and pioneer of DMT) was mentioned in a number of the group studies. Techniques employed by Chace such as mirroring (involving active interaction on the therapist's part, and being in touch or attuning to the experience of others in an emotional and embodied way) were mentioned in a number of studies; as was her use of a circle format to create a safe holding environment (Coaten, 2009; Kowarzik, 2006; Nystrom & Lauritzen, 2005). In addition, Coaten (2009) reports that his sessions had three principle elements: an opening or warm up focusing on body awareness (stretching, shaking, tapping, twisting) followed by a development on a chosen theme or subject, leading to wind down or closure. The movements used were relevant and familiar and ones that would have been used in everyday life (such as shaking hands). Memory recall was vital to the process and simulated through the use of a variety of stimuli: sensory, visual, auditory and kinaesthetic to help give the person back a sense of self identity. Kowarzik (2006) reports that the use of props encouraged engagement and communication and the use of touch was also important as a way of connecting with clients and to enhance bodily awareness.

Nystrom and Lauritzen (2005) describes the importance of synchrony and symbolization in facilitating non-verbal communication. Synchrony refers to three aspects of body movement: space, rhythm and effort, whereas symbolization refers to the way the

experiences of the individual, such as thoughts and emotions are “mediated and transformed into body movements and bodily expressions” (p.300). Wilkinson et al. (1998) also work with metaphor through the opportunity for character work or a general theme. These were long sessions (1 hour 45 minutes) providing space for improvised drama and movement scenarios. A session plan is provided which includes: introduction/welcome group; focus; warm up; bridge (character or theme); main event (character or theme); grounding (de-role). There is limited description of the clinical methodology involved in the Hill (2006) study. It was reported as being improvised, the dance movement therapist working solely with what occurred in the moment. The sessions were also facilitated by a music therapist who offered improvised musical responses to the dance movement interaction.

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*Note.* MMSE = Mini Mental State Examination; ADAS-cog = Alzheimer's Disease Assessment Scale – cognitive subscale; CSDD = Cornell Scale for Depression in Dementia; DCM = Dementia Care Mapping

### *Methods of data collection*

Across the studies, there was a focus on the processes taking place, and video was the most popular form of data collection, used in four out of the five studies. Nystrom and Lauritzen (2005) focused on the modes of expression occurring within the context of a DMT group where the emphasis was on the participants' capacity to communicate. They collected video data to explore how verbal and non-verbal modes of communication were used by participants. Coaten's (2009) study aimed to identify the effects of DMT on people with moderate to severe dementia and their care staff in a hospital ward and to investigate the processes taking place; in particular, the study examined the connection between embodied practice and scores on wellbeing. He defines embodied practice as engaging with a person through the lived experience of their own body in relationship to self and others. His data collection involved video recording a one-hour session combined with Dementia Care Mapping to provide quantitative data over time. Hill (2006) used a phenomenological study to focus on the lived experience of DMT and whether the experience was meaningful for the person with dementia. Hill (2006) reports that she approached material "through a cyclical process of description, reflection, progressive focusing and writing" (p.167) and the data was collected through multiple perspectives using multiple modes of data collection. Video was used both to record the sessions and to facilitate the later viewing session that took place with client and therapist.

The focus of the Wilkinson et al. (1998) study was to investigate whether a drama and movement therapy group had any measurable impact on scores of cognition and depression, and to document positive experiences. The researchers made quantitative assessments on a selection of rating scales covering cognition, mood and activities of daily living, using a range of instruments including the Mini Mental State Examination (Folstein, Folstein & McHugh, 1975) and the Cornell Scale for Depression in Dementia (Alexopoulos et al., 1988). The study also gathered qualitative data in the form of descriptive observations concerning participant experiences within and outside of the group. Kowarzik (2006) evaluates the benefits derived from participation in a movement and communication activities group for people with dementia and their residential care workers. To do so, she designed her own observation tool and video recorded three different sessions to look closer at the interactions taking place.

### *Data analysis*

A number of different approaches were employed to analyze video data. Nystrom and Lauritzen (2005) video-taped each of their ten sessions and analyzed the data in two steps. First to capture participants' interaction with each other and with the therapist, all initiatives to interaction and responses to these initiatives, verbal as well as non-verbal, were identified. In the second step, the longer sequences of interaction that were identified were analyzed with a focus on how verbal and non-verbal means of communication were used together to express or symbolize experiences, thoughts or feelings. The analysis revealed different ways this was done, here described as types of expressive mode (the article describes 3 types of expressive mode - speech dialogue, song-and-music dialogue and movement fantasy). Hill (2006) reportedly video-taped all sessions. After a few hours after the session the client and the author watched a video of the session and this in turn was videotaped in order to capture any verbal or non-verbal feedback. Hill (2006) reported two main methods of analysis. She used Laban Movement Analysis (a tool that provides terminology to describe and code movement) and applied Giorgi's (1985) form of phenomenological analysis to the verbal transcripts (that is the patient's perspective in their own words).

Coaten (2009) video recorded one session and combined this data with quantitative scores using dementia care mapping (DCM). He analyzed video through phenomenological perspective enabling recognition of non-verbal embodied behaviours including movement patterns, gestures and postures as well as audible dialogue and music. The video of the session was transcribed to identify themes. The themes were then analyzed in two different ways: first in relation to being able to identify embodied practices from the patient and care staff perspective; second in relation to aspects of the session that could be generalized in the form of overarching meta-themes. The quantitative analysis involved comparing the aggregated wellbeing scores of participants on a group and individual level.

Kowarzik (2006) completed an observational framework and video recorded three sessions (the first, the sixth and twelfth) over a twelve-week period. She recorded observations of the group as a whole, the group dynamics and expressions of individual clients (for example, a vignette about a resident named Bert is provided in the text). The observational tool employed recorded the level of the client's engagement in activities, mobility, participation in songs, non-verbal and verbal communication, body posture and expression of moods. The video analysis of the three observed sessions allowed for cross-referencing between the researcher's observations made during the sessions and those of the movement analyst independently viewing the video material. Wilkinson et al. (1998) analyzed pre and post-test assessment scores using the Mann Whitney U test. Qualitative observations in the form of descriptive field notes were made although no observational protocol was reported as being used to record and analyze information.

### *Key findings*

In the one controlled study (Wilkinson et al., 1998), no significant treatment effects were found between the two groups on all assessment measures. However, qualitative group observations included rich moments of contact with members displaying strong coordination and concentration skills, and individual observations included empowering experiences (for participant Betty) and rediscovering identity (for participant Elsie). Kowarzik's (2006) observations also suggest that DMT provided a context in which to assess a participant's physical and emotional expressions and verbal as well as non-verbal communication skills.

Coaten's (2009) video analysis yielded 33 linked themes (e.g. physical mobility and exercise, rhythmic movement, use of dancing) leading to 5 further meta-themes that show how embodied practice can make a difference to the range and quality of communication and relationship with persons with dementia and care staff (Coaten, 2009). In addition, Dementia Care Mapping provided quantitative scores to indicate a positive change on raising and supporting observed wellbeing (1.4 pre-test to 1.9 post) sustained for 25 minutes following the end of the session.

Nystrom and Lauritzen (2005) findings suggest three expressive modes were used to facilitate communication within a DMT group. First of all, speech dialogues (where participant Erik compensates for lack of words with gestures and body movements); secondly, song and music (to stimulate participant's memories of song fragments particularly when the singing is accompanied by body movements and how singing and music seem to function as reminders of feelings and the uniting function of rhythm); and finally, movement fantasy, free body movement to communicate feelings and thoughts. In the movement fantasy the dramaturgical role of the therapist seems to be important to structure and keep the communication going and to avoid a more chaotic pattern of communication. Wilkinson et al. (1998) findings also suggest the importance of improvised drama and movement scenarios to help organize self-expression.

Hill's (2006) findings identified significant moments characterized by "heightened sensibility, expressiveness, aliveness, integration of body, mind and feeling and aesthetic quality" (p.169). The case study provides the individual client's own words to help give a wider perspective on the experience as a whole. Watching the video offered a way for Hill and her client to reflect on the movement experience, which helped affirm the self in the moment, facilitating a "process of growth and self-worth" (Hill, 2006, p.170). It would seem that through the DMT process and the opportunity to reflect on it together, Hill's client grew in self-esteem and confidence, connecting with the past and brought those positive feelings into the present. Hill's (2006) argument is that by focusing on the lived experience of her client she was able to maintain her sense of personhood and identity. Kowarzik (2006) findings also suggest that DMT contributes to creating an environment where the personhood of an individual is respected.

#### *Quality of included studies*

In the hierarchy of evidence (Sackett, 2000), randomized controlled trials are considered the top level of evidence, followed by controlled trials at an intermediate level, followed by case studies at a lower level. There were no randomized controlled trials included in this review. The Wilkinson et al. (1998) study was categorized as intermediate level of evidence, being the only controlled study and the only one that utilized statistical testing. However, still, the study was judged to be of high risk of bias because selection for the experimental group was based on the practitioner's perception of those most likely to benefit (the control group were more cognitively impaired and functionally dependent than the drama therapy group). The remaining studies were categorized as being low level evidence. Coaten's (2009) quantitative findings were judged to be high risk of selection bias because of the lack of randomization to a control group. In regards to the trustworthiness (credibility, transferability, dependability and confirmability) of the qualitative findings we adopted an ABCD grading system as used in Cooke et al. (2010). Using this grading system the overall quality of the studies varied from A (no, or few flaws) to D (significant flaws that are very likely to affect the credibility, transferability, dependability and/or confirmability of the study).

#### **Discussion**

An aim of this review was to maximize research findings by intending to incorporate a broad range of evidence including quantitative, qualitative and arts-based methodologies and methods. At present this review highlights that the evidence base for DMT for dementia consists of mainly qualitative studies of varying methodological quality. Within the studies there is a focus on the clinical process and efforts are being made, particularly through the use of video, to identify the key elements of practice that contribute to the health and wellbeing of older adults with dementia. Many of the studies report significant moments where the person with dementia seemed to respond in a more integrated way, creating connections between thoughts, feelings and physical sensations. This is best demonstrated in the mixed method study by Coaten (2009). This study was judged as being of the highest quality; establishing credibility through triangulation of data sources including dementia care mapping, staff interviews and combined with researchers own analysis of meaning. The context of the research on the hospital ward was described and raw data (video transcripts and wellbeing scores) were provided. As a mixed method study the research scored highly for the noteworthiness of the problem and fit of the question to the mixed method design. The field work was part of the researcher's PhD thesis and the researcher drew on his own heightened sense of subjectivity to deepen understanding of the late stage dementia experience.

The Hill (2006) study also scored highly on credibility as it involved an experienced practitioner focusing on what is meaningful for the person through member checking (missing

from much of the literature). However, there was a lack of detail regarding methods, the movement material chosen and the use of Laban movement analysis. A music therapist was also involved in the study but their role was not clearly expanded upon. Nystrom and Lauritzen (2005) scored highly for their detailed description of the DMT context, use of video analysis, and providing examples of transcripts. However, much of the data (video) was lost when transcribing to text information.

Unlike the above studies that concerned practitioners researching their own practice, Kowarzik (2006) was an independent researcher evaluating the work of an experienced practitioner. The study also reported peer debriefing of the video with an independent analyst to make sense of the movement material. However, the study was marked down as no details are provided of the movement analyst's contribution. Also, the observational tool used had not been tested in the wider environment and more in depth research would be needed to validate the tool. Although a controlled study, the Wilkinson et al. (1998) study was judged the least credible as there was a lack of clarity on who is making the qualitative observations and descriptions were only made from the experimental group. This study was also judged high risk of bias as there was no randomization procedure and selection to the experimental group was based on including those considered most to benefit. Future controlled studies need to match the groups more carefully utilizing a clear randomization procedure, which involves definition of criteria for potential suitability.

#### *Limitations of the review*

The review shows there is lack of consensus over outcome measurements and the absence of randomized controlled trials means that the present analysis cannot provide any information on the effectiveness of DMT. The review is limited to mainly qualitative observations and, across the studies, there was lack of clarity regarding type and level of dementia. There was also an absence of self-reports from participants about their experience of DMT, the one exception being Hill (2006).

In future, accurate reporting and the mixing of research methods where different forms of data are collected could help gain a unique insight into the lived experience of different types of dementias. For example, the inclusion criteria for our systematic review involved arts based research; however, no such studies were found. As Hervey (2000) describes, perhaps the way dance movement therapists most regularly collect data is by embodying selected qualities of client movement. Given the creative nature of the discipline and possible difficulties participants may have remembering and sharing their experiences verbally, including an arts-based strategy could provide additional insights into participants' experiences. Many dance movement therapists are trained to use this embodied information toward greater understanding of the client's experience and therapeutic issues. Also, the majority of studies took place in hospital or nursing home setting. Given that most people with dementia live at home, there was an absence of community-based studies supporting people at the early to moderate stages of dementia.

#### *Conclusion*

The present review provides valuable insights into the theoretical framework and therapeutic components for dance movement therapists working with older adults with dementias. DMT draws on person-centred care as a theoretical framework as well as elements of psychodynamic theory. Therapeutic components across studies include spontaneity and improvisation, dramatic scenarios, rhythmic synchrony and symbolism. Findings of this review indicate that DMT was well tolerated by participants who, qualitative observations suggest, find the intervention an enjoyable, empowering experience that helps create

connections between thoughts, feelings and physical sensations. Across the studies there is a lack of detail regarding type and level of dementia. There is also a lack of community-based studies and an absence of arts-based information. Future studies that address these limitations are urgently needed following methodologies that stand up to scrutiny and generate both rich data relating to process and people's experience as well as reliable and valid evidence that respond to questions of effectiveness.

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## PRISMA 2009 Flow Diagram

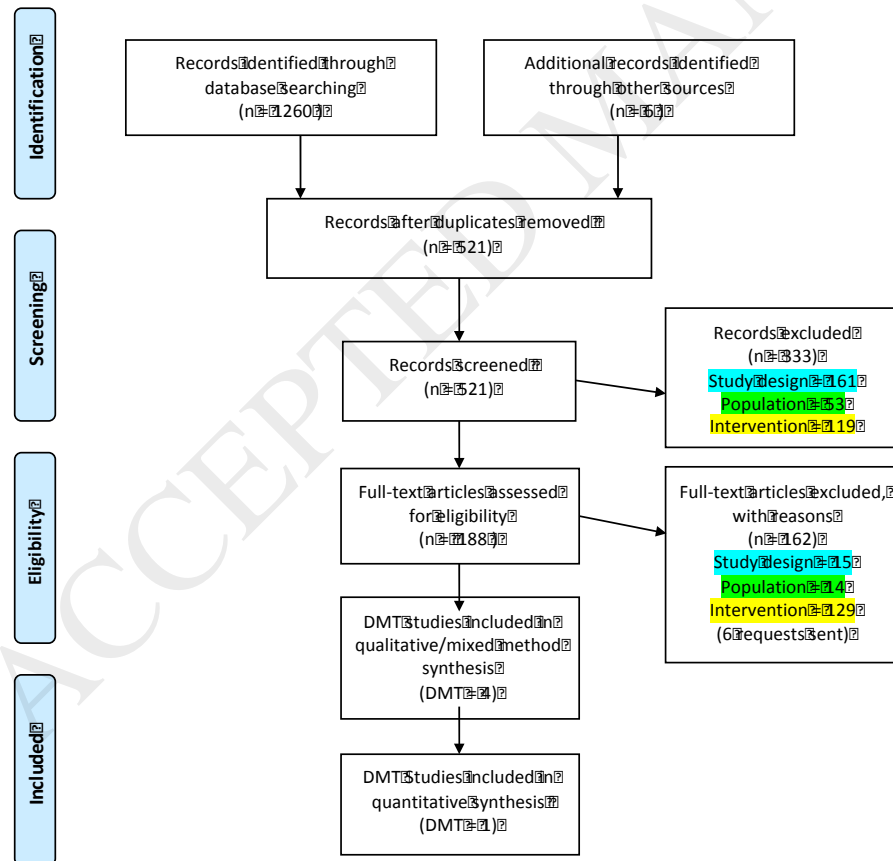


Figure 1. PRISMA Flow Diagram of Screening Process

**Table 1:** Characteristics of included studies

<b>Author</b>	<b>Participants (Sample size; type and level of dementia)</b>	<b>Setting</b>	<b>Study design</b>
<b>Wilkinson et al. (1998)</b>	N=16; mild to moderate dementia	Day hospital in UK	Controlled study with mixed data (control group engaged in general group activities)
<b>Coaten (2009)</b>	N=4; moderate to severe dementia	Hospital ward in UK	Quasi experimental with mixed data
<b>Nystrom &amp; Lauritzen (2005)</b>	N = 7; dementia (varying levels)	Swedish nursing home	Qualitative observational study
<b>Hill (2006)</b>	N=1; moderate dementia (Alzheimer's disease)	Assessment ward in psychogeriatric hospital in Australia	Case study (phenomenological)
<b>Kowarzik (2006)</b>	N=6; dementia (varying levels)	Residential care home in UK	Observational evaluation

**Table 2:** Type, frequency and duration of therapy, theoretical framework and clinical methodology

<b>Included studies</b>	<b>Type, frequency and duration of therapy</b>	<b>Theoretical perspective</b>	<b>Clinical methodology</b>

<b>Wilkinson et al. (1998)</b>	12 group sessions (weekly); session duration: 1 hr 45 min	Sesame method based on Jungian psychotherapy	Structured format but with opportunities for valuable unstructured time; a symbolic approach presenting opportunities for more organised self-expression through the use of metaphor; adaptable to specific needs of each client; working through music and movement to develop and change
<b>Coaten (2009)</b>	Data used from one group session only; session duration not reported	Humanistic/existential; creative, person centred care	Session had three principle elements: an opening warm up followed by a development on a chosen theme, leading to a wind-down or closure; working to celebrate individual potential of participants as expressed through movement/dance
<b>Nystrom &amp; Lauritzen (2005)</b>	10 group sessions (weekly); session duration not reported	Psychodynamic approach based in object-relation tradition	Unstructured and improvised; circle formation, mirroring, free dance movements, speech and singing in different combinations
<b>Hill (2006)</b>	4 individual sessions; session frequency and duration not reported	Person centred	Unstructured/improvised; working solely with what occurred in the moment and a music therapist responding to the dance/movement interaction
<b>Kowarzik (2006)</b>	12 group sessions (weekly); session duration not reported	Person centred, informed by neuroscience.	Theme/activity based; set sequence to provide familiarity although a person centred approach ensured that individual needs were attended to. The use of props to encourage engagement and communication; use of touch as a way of connecting with clients and to enhance bodily awareness

**Table 3:** Methods of data collection and times, data analysis and findings

Author	Method of data collection and times	Data analysis	Findings
<b>Wilkinson et al. (1998)</b>	Range of quantitative outcome measures including MMSE; ADAS-cog; CSDD taken week prior to therapy and at the end of 12 weeks; observational field notes also recorded of the experimental group	QUAN: The Mann Whitney U test  QUAL: Thematic analysis of observations	QUAN: No significant differences between the two groups either at initial or follow up assessments. Mean scores are presented on a range of scales including: ADAS-cog 21.1 (initial) 25.7 (follow up); MMSE 19.8 (initial) 17.6 (follow up); CSDD 2.9 (initial) 3.6 (follow up)  QUAL: Positive effects of groups and improvements in daily life
<b>Coaten (2009)</b>	Session video recorded; a trained observer in DCM made detailed observations at 5 minute intervals	QUAL: thematic video analysis by author.  QUAN: Comparison of aggregated scores from DCM	QUAL: Analysis of the video transcript yielded 33 linked themes leading to 5 further meta-themes. QUAN: Dementia Care Mapping aggregated scores indicated positive change on raising and supporting observed well-being (1.4 pre to 1.9 post and sustained for 25 minutes following end of session)
<b>Nystrom &amp; Lauritzen (2005)</b>	Each session was video recorded	QUAL: Video was transcribed by authors to provide examples of verbal and non-verbal communication	QUAL: The interpretations from the video observations infer that people with dementia use body movements to communicate thoughts and feelings symbolically
<b>Hill (2006)</b>	The sessions were video recorded. A few hours after	QUAL: 1) analysis of the movement material in	QUAL: Findings suggest client moved from an inability to recognise herself on the video to a position of recognising herself and re-

	the session client and therapist/researcher watched a video of the session, and this in turn was videotaped in order to capture any verbal or non-verbal feedback.	session 2) verbal transcripts (the person's perspective through her words)	integrating the positive qualities that she saw; for example, the client commented "I'm glad I'm strong" (p.170).
<b>Kowarzik (2006)</b>	3 sessions were observed (1,6,12) by the researcher using an observational framework designed for the study. Video recordings of these 3 sessions allowed more detailed analysis	QUAL: Video analysis and independent cross referencing with a movement analyst	QUAL: The Links Movement and Communication group provided clients with an environment where they could rediscover their skills of moving, singing and communicating with others: "The space enabled clients to express themselves and sometimes their feelings for others" (p.28).

**Table 4:** Grading for trustworthiness of studies adopted from Cooke et al. (2010)

<b>Coaten (2009) – qualitative findings</b>	A/B (The study credibility, transferability, dependability and confirmability is high)
<b>Hill (2006)</b>	B (Some flaws, unlikely to affect the credibility, transferability, dependability and/or confirmability of the study)

<b>Nystrom and Lauritzen (2005)</b>	B (Some flaws, unlikely to affect the credibility, transferability, dependability and/or confirmability of the study)
<b>Kowarzik (2006)</b>	C (Some flaws that may affect the credibility, transferability, dependability and/or confirmability of the study)
<b>Wilkinson et al. (1998) – qualitative findings</b>	C/D (Significant flaws that are very likely to affect the credibility, transferability, dependability and/or confirmability)