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Dance Movement Therapy in the Context of Geriatric Psychiatry: A Systematic Review

Dissertation (Tesina) for the MA in DMT at the
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Abstract

This systematic review aims to identify and evaluate all available peer-reviewed studies, primary as well as secondary, that examine the effects of interventions using dance movement therapy (DMT) with individuals aged 60 years and older who have a psychiatric condition. A final compilation of 21 studies is presented: 12 primary studies and nine secondary studies (i.e. review articles). In the majority of articles the authors concluded that the corresponding intervention had been beneficial for the patients, and for their caregivers when these were involved in the sessions, but few studies identify statistically significant effects and those that are identified are minor and require significant caveats. If DMT is not to remain at the margins of therapeutic treatments with this population, it is important that dance movement therapists and researches work more closely together in order to develop a more robust evidence base.

Keywords: Dance (movement) therapy, older adults, geriatric psychiatry, mental health, systematic review.

Introduction

The global population is aging. *“Between 2015 and 2050, the proportion of the world’s population over 60 years will nearly double, from 12% to 22%+ (World Health Organization [WHO], 2015).* As older people form an ever greater proportion of the population, there is a growing imperative to investigate their wellbeing, not only because of the possible benefits in terms of the quality of life (QoL) of the individual, but also in terms of the benefits to their families, their caregivers and a reduction in the economic cost of care (Rechel, Grundy, Robine, Cylus, Mackenbach, Knai, & McKee, 2013). Integral to this is their mental health. *“Approximately 15% of adults aged 60 and over suffer from a mental disorder+ (WHO, 2015).* The most common conditions in geriatric psychiatry are dementia and depression, followed by anxiety disorders and substance abuse (Kinzl, 2013; WHO, 2015). Comorbidity in this age group is common (Schwartz, 2011). Furthermore, mental health problems are under-identified by health-care professionals, older adults themselves, and their families (WHO, 2015).

There is an increasing recognition that the arts have an important role in human wellbeing and health. Creative Art Therapy (CAT) interventions in psychiatric settings, even in the public sector, are gradually getting more common (Clift, 2012). DMT is by definition, one of these CATs and will be the focus of this systematic review. In recent years, the empirical literature on CAT interventions has also begun to expand. A clear example of it is Music Therapy, approach that is gaining increasing recognition for its benefits, in part thanks to its practice-based research, by far the most extensive from the CAT’s.

The use of DMT in adult psychiatry dates back to 1942, when Marian Chace (1896-1970), who is a seminal figure in the development of the profession of DMT, began working with adult psychiatric patients. DMT is defined by the European Association Dance Movement Therapy (EADMT) as *"the therapeutic use of movement to further the emotional, cognitive, physical, spiritual and social integration of the individual. Dance as body movement, creative expression and communication, is the core component of Dance Movement Therapy. Based on the fact that the mind, the body, the emotional state and relationships are interrelated, body movement simultaneously provides the means of assessment and the mode of intervention for dance movement therapy"* (EADMT, 2016).

DMT can be experienced in a group setting or through individual therapy sessions, with a qualified and registered therapist. DMT is practiced as individual and group therapy in a range of settings including public and private health services, residential homes, schools, community centres, social services, voluntary organisations and prisons.

Research in DMT has increased considerably in the last decade as practitioners have recognised the need for their practice to be evidence-based. Two meta-analyses (Koch, Kunz, Lykou, & Cruz, 2014; Ritter & Low, 1996) were published on the effects of DMT on QoL, body image, clinical outcomes, depression, anxiety and interpersonal outcomes. The latter was reassessed by Cruz and Sabers (1998), who affirmed DMT is more effective than previously reported. Cochrane reviews have been published focusing on the application of DMT as a therapeutic treatment for a range of conditions including, but not limited to cancer, dementia, depression and schizophrenia (Bradt, Goodill, &

Dileo, 2011; Karkou & Meekums, 2014; Meekums, Karkou, & Nelson, 2012; Ren & Xia, 2013). There are a few challenges in doing Research in DMT. On the one hand, you want to meet the gold standard of scientific-biomedical evidence, on the other hand, is important to recognize that DMT does not work in the same way as giving a pill or an injection.

There has been considerable theoretical work regarding DMT and older adults (e.g., Caplow-Lindner, Harpaz, & Samberg, 1979; Chace, 1953; Cohen & Segall, 1974; Newman-Bluestein & Hill, 2010; Petzold, 1996, Samberg, 1988a), as well as a succession of empirical studies (e.g., Hartshorn, Delage, Field, & Olds, 2002; Goldberg & Fitzpatrick, 1980; Meekums, 1996), but these have focused on older adults in general and have not been undertaken in the specific context of geriatric psychiatry. Similarly, several general studies on the use of dance with older people as a means to promote social interaction, mobility and QoL have been conducted. A good overview of this is a recently released systematic review that compiles 48 articles published between 2003 and 2014 (Lelièvre, Tuchowski, & Rolland, 2015). However, empirical studies of DMT interventions with people with mental health problems aged over 60 remain scarce.

The aim of this study is to draw together and evaluate the studies that have been carried out specifically of DMT interventions with older adults, aged over 60, who suffer from mental health problems in order to assess the current evidence base with regards to the possible benefits of DMT in geriatric psychiatry. To our knowledge, no such systematic review is publicly available to date.

Methods

Procedure

As [Aveyard and Sharp](#) identify, systematic literature reviews *aim to identify and track down all the available literature on a topic with clear explanations of the approach taken* ([2013, p. 51](#)).

The literature search for this study was carried out between February and July 2015. No date limitation was used for the literature search, but only articles fully available in English, German or French, whose titles and abstracts were translated into English, were assessed for eligibility. A search strategy was developed based on the combination of three groups of keywords in the title and/or abstract, in English and German, in order to find eligible results. The first group of keywords was related to the intervention approach: "dance therapy", "dance movement therapy", "dance movement psychotherapy", "body psychotherapy", "creative therapy"; the second group of keywords was related to the age: "old* adult/people/individual", "elderly ", "senior"; and the last group of keywords was related to mental illness: "mental health/disorder/illness", "psychiatr", "dement", "depress" (see Appendix).

A systematic literature search was performed using the electronic databases CINAHL with Full Text, MEDLINE, PsycINFO, and PSYINDEX. Additionally, general web searches using Google Scholar were conducted and hand-searched sources via snowballing were included. An Expert in the field of DMT, who is also supervisor of this dissertation (Bräuninger), was asked for expert opinion on possible missing studies. All records were handled with Zotero reference manager software. The last update of the database search was carried out on 23rd of July 2015.

Initially, the four databases combined revealed 79 results, reduced to 64 after discarding duplicated records. After carrying out the snowball strategy and duplicates were removed, a total of 172 records were obtained. Titles and abstracts of identified publications were screened and two researches (author and supervisor) independently assessed if full text articles met the inclusion criteria (see below for further explanation). Disagreements between the researches were resolved in discussion. Of these 172 records, 96 were excluded because they did not meet inclusion criteria, and 76 full-text articles were assessed for eligibility. A final compilation of 21 studies are included in the review (see Fig.1).

Inclusion and exclusion criteria

Articles reporting studies were considered for inclusion based on:

1) Whether they were peer-reviewed studies. 2) The therapy approach used was "dance movement therapy", "dance movement psychotherapy", "dance therapy", as well as "creative therapy" and "body psychotherapy" when DMT studies or intervention were included. 3) The clinical population targeted (adults from 60 years of age). 4) The existence of a mental disorder. 5) Outcomes of the intervention were described in terms of focusing on "*using body movement and dance to assist integration of emotional, cognitive, physical, social and spiritual aspects of self*" (EADMT, 2016).

Data extraction and quality assessment

The initial intention was to use Critical Appraisal Skills Programme (CASP) as a tool for systematically examining qualitative research, systematic reviews and randomized controlled trials, in order to assess its validity, results and relevance (Hill & Spittlehouse, 2003). The intention was also to use a checklist,

provided by [Cruz and Koch \(2014\)](#) to guide quantitative research reading. However, there were insufficient studies that met such criteria, making this approach untenable.

It was decided therefore to differentiate between the types of study in the review. With regards to the qualitative studies, an assessment was made of methodological integrity, understood in its most basic form as a methodology “*appropriate to the topic being studied*” with a period *prolonged sufficient engagement* “*to ensure meaningful results*” ([Cruz & Berrol, 2012, p. 149](#)). Regarding evaluation of quantitative research, a combination of CASP for randomized controlled trials and a checklist to guide research reading provided by [Cruz and Koch \(2014\)](#) were used (see quality of included articles). The selection process of the literature search is shown in Fig.1.

Results

Included studies

The final results include 21 articles that use different intervention approaches such as "dance movement therapy", "dance therapy", "dance movement therapy" in combination with "music therapy", "drama" combined with "movement therapy", and "PLIÉ" (an integrative exercise program that combines DMT along with other exercise modalities). This terminological complexity provided one of the challenges in undertaking this literature review. The complexity was compounded by the fact that in German speaking countries “body and movement therapy” includes a large range of approaches ([Bräuninger & Blumer, 2004](#); [Hölter, 1993](#)) that are not always process or resource-oriented as DMT interventions, instead they focus on physiological

and functional aspects of the person. As such, the precise nature of the intervention had to be clarified before proceeding with further analyses.

Fourteen of the 21 articles are quantitative studies, whereas six are qualitative and one uses a mixed method (see Figure 1). The studies are summarized in Tables 1 and 2. Table 1 shows primary research, totalling 12 studies, whereas Table 2 shows secondary research (i.e., review articles) totalling nine studies. Additional characteristics that were considered to be important such as author/s, year, found via, type of study, number of participants, intervention, diagnosis, results and main conclusion are included in both tables. In Table 2, the primary studies cited by the authors are specified.

The majority of studies relate to dementia, except for two that focus on depression ([Sandel, 1978](#)) and on other geriatric mental illnesses such as mood and anxiety disorders or dementia ([Bräuninger, 2014](#)). Fourteen of the 21 articles were published between 2011 and 2015.

Six of the 12 primary studies shown in Table 1, used qualitative research ([Hill, 2009](#); [Kowarzik, 2013](#); [Melhuish, Beuzeboc, & Guzmán, 2015](#); [Nyström & Lauritzen, 2005](#); [Sandel, 1978](#); [Wu, Barnes, Ackerman, Lee, Chesney, & Mehling, 2015](#)), whereas five used quantitative research ([Barnes, Mehling, Wu, Beristianos, Yaffe, Skultety, & Chesney, 2005](#); [Dayanim, 2009](#); [Hamill, Smith, & Röhricht, 2012](#); [Hokkanen, Rantala, Remes, Härkönen, Viramo, & Winblad, 2008](#); [Wilkinson, Srikumar, Shaw, & Orrell, 1998](#)) and one used a mixed method ([Bräuninger, 2014](#)).

To be more specific, five of these six primary qualitative studies used a phenomenological approach ([Hill, 2009](#); [Kowarzik, 2013](#); [Melhuish et al., 2015](#); [Nyström & Lauritzen, 2005](#); [Sandel, 1978](#)) with a number of participants varying

from one up to 24. The study from [Wu et al., \(2015\)](#), is a qualitative analysis of a controlled cross-over clinical trial. Positive effects in communication, self-expression, wellbeing and interaction, not only between themselves but also with the staff ([Kowarzik, 2013](#); [Melhuish et al., 2015](#); [Sandel, 1978](#); [Wu et al., 2015](#)) are found in these studies.

A case study carried out by [Hill \(2009\)](#) during four sessions of individual DT, integrated a music therapist. In all the qualitative studies and in the mixed method study, the research was either carried out by or involved a dance movement therapist/dance therapist. Of the five quantitative primary studies only one was carried out by qualified dance movement therapists ([Hokkanen et al., 2008](#)). One of the other studies reported that dance movement therapists were consulted to deliver the intervention ([Barnes et al., 2015](#)). Three studies did not report any direct involvement of qualified dance movement therapists in the research ([Dayanim, 2009](#); [Hamill et al., 2012](#); [Wilkinson et al., 1998](#)).

The primary quantitative studies are based on an array of different research designs and generate differing results. A 36-week cross-over pilot clinical trial completed with ten participants and nine caregivers ([Barnes et al., 2015](#)) reported no statistically significant effects. A non-randomized controlled study and before-and-after pilot study ([Dayanim, 2009](#)), and one before-and-after pilot study without control group ([Hamill et al., 2012](#)), claimed positive effects on memory recall, emotional, social and cognitive levels, however no statistically significant effects are reported. Only one randomized controlled study was carried out ([Hokkanen et al., 2008](#)). In this study the authors concluded that while changes were small, some intervention-related improvements were seen, although they did not identify statistically significant effects. A non-randomized

controlled study combining drama and movement therapy ([Wilkinson et al., 1998](#)) did not report statistically significant effects. A survey of experts opinion ([Bräuninger, 2014](#)), followed a mixed method research and was undertaken with 113 practitioners from German speaking countries (Austria, Switzerland and Germany). The researcher reports a convergence of experts opinion around the perception that DMT improves QoL, fosters participation in activities and strengthens resilience.

Table 2 shows all secondary research: six systematic reviews of the literature ([Beard, 2011](#), [Guzmán-García, Hughes, James, & Rochester, 2013](#); [Kiepe, Stöckigt, & Keil, 2012](#); [Lelièvre et al, 2015](#); [Schmitt & Frölich, 2007](#); [Strassel, Cherkin, Steuten, Sherman, & Vrijhoef, 2011](#)); two reviews ([Bräuninger, 2014](#); [Schmitt, 2011](#)); and one systematic review and meta-analysis ([Koch et al., 2014](#)). In Table 2, the primary studies cited by the authors are specified. [Beard \(2011\)](#), [Schmitt \(2011\)](#) and [Schmitt and Frölich \(2007\)](#) gathered literature related to the effects of CATs in general on dementia patients. [Strassel et al., \(2011\)](#) focused on any intervention using dance as a therapeutic tool with no special target group. [Lelièvre et al., \(2015\)](#) searched for the effect of dancing on health of older people. [Bräuninger \(2014\)](#) reviewed DMT interventions carried out with elderly, but without a focus on individuals with psychiatric conditions. [Guzmán-García et al., \(2013\)](#), focused on peer-reviewed articles relating to any dancing style carried out in care homes with people with dementia. [Kiepe et al., \(2012\)](#) concentrated on randomized controlled trials in order to evaluate the effects of DMT and ballroom dances as therapeutic interventions with patients over 14 years old who suffer from physical or mental illnesses. [Koch et al.,](#)

(2014), looked for quantitative data from DMT, creative movement or dance interventions on health-related psychological outcomes with no age restriction.

Quality of included articles

All the qualitative articles included in this review (Hill, 2009; Kowarzik, 2013; Melhuish et al., 2015; Nyström & Lauritzen, 2005; Sandel, 1978; Wu et al., 2015) made a clear statement of the aims as well as the outcomes of their studies. In all cases, qualitative research seemed to be an appropriate methodology for addressing the research goal. The recruitment strategy was not explained in detail in all the studies (Hill, 2009; Nyström & Lauritzen, 2005). Potential bias from researcher, therapist or staff involved in the DMT/DT sessions was considered by only three articles (Melhuish et al., 2015; Nyström & Lauritzen, 2005; Wu et al., 2015), however, even though procedures have not been fully described in all the cases, e.g., lack of an in-depth description of the analysis process or how the data presented were selected from the original sample to demonstrate the analysis process. Video records of at least some sessions, and its corresponding transcription were used by all studies except for Sandel (1978). Interviews with participants were not carried out at all.

The five quantitative-primary studies included in Table 1 (Barnes et al., 2015; Dayanim, 2009; Hammill et al., 2012; Hokkanen et al., 2008; Wilkinson et al., 1998) made a clear statement of the objective or the hypothesis. Population was also defined and recruitment of participants explained. Only Hokkanen et al., (2008) carried out randomization, and Barnes et al., (2015) did a group assignment and blinding instead of randomization due to the small sample. The

lack of randomization threatens internal validity. All the articles reported sample sizes as well as mean age, with the exception of [Hammill et al., \(2012\)](#). There is a range of different instruments used for measuring effects, e.g., Mini-Mental State Examination (MMSE), Quality of Life Scale in Alzheimer's (QOL-DISEASE AD), the General Health Questionnaire (GHQ-12), and the Clifton Assessment Procedures for the Elderly (CAPE). [Dayanim \(2009\)](#) does not report the use of any instrument. The expert's opinion [Bräuninger, \(2014\)](#) is the only from study in the present systematic review that used a mixed method design. This survey is a large collection of practices who are working in the domain's field in German speaking countries. Experts perceive that DMT improves QoL, fosters participation in activities and strengthens resilience. The study concludes suggesting DMT may suitable to be integrated as a standard treatment in all health service and facility for the elderly. [\(Berrol, 2000, p.38\)](#).

Regarding the secondary studies (see Table 2), all the articles addressed a clearly focused question, specifying intervention, target population and outcome. Inclusion and exclusion criteria were clearly listed in the systematic reviews and in the meta-analysis. All systematic reviews specify the databases used for their search, but only two admit having asked for expert opinions as well as conducting a hand search ([Kiepe et al., 2012](#); [Koch et al., 2014](#)). This meta-analysis ([Koch et al., 2014](#)), additionally amplified her search to unpublished as well as published studies with no language limitation. Three of the systematic reviews focused on randomized controlled trials ([Kiepe et al., 2012](#); [Koch et al., 2014](#); [Strassel et al., 2011](#)). A range of different tools, from

questionnaires to checklists on how to assess quantitative/qualitative data, used for grading papers, have been reported ([Guzmán-García et al., 2013](#); [Kiepe et al, 2012](#); [Strassel et al., 2011](#)). [Koch et al., \(2014\)](#), highlighted the lack of consensus on the best procedure and correctly explained the reasons why they did not use any appraisal tool in their meta-analysis.

Excluded studies

A total of 151 studies did not meet the inclusion criteria. The author excluded 96 of these at the first phase of assessment, based only on reading the article abstracts. The author and co-author, individually fully assessed for eligibility i.e. read and appraised the full other 55 excluded articles. The main reason for exclusion was that DMT intervention was not reported (e.g., [Abreu & Hartley, 2013](#); [Behrman & Ebmeier, 2014](#); [Duignan, Hedley, & Milverton, 2008](#); [Krampe, 2013](#); [Krampe et al, 2014](#); [Murrock & Graor, 2016](#); [Quiroga Murcia & Kreutz, 2012](#); [Valentine-Garzon, Maynard, & Selznick, 1993](#); [Vanková, Holmerová, Machacova, Volicer, Veleta, & Celko, 2014](#)). The second most common reason for exclusion was that mean age was either omitted (e.g., [Hokkanen, Rantala, Remes, Härkönen, Viramo, & Winblad, 2003](#); [Mattes, Pitak-Davis, Waronker, Goldstein, Mays, & Fink, 1986](#); [Schmitt & Frölich, 2012](#)) or was less than 60 years old (e.g., [Mala, Karkou & Meekums, 2012](#)). The other two reasons for exclusion were that no psychiatric illness was specified or applied (e.g., [Cohen & Segall, 1974](#); [Hartshorn et al., 2002](#); [Krampe et al., 2014](#); [Meekums, 1996](#); [Ritter & Low, 1996](#)), or that the articles were non-peer-reviewed (e.g., [Falke-Laser, 1989](#); [Samberg, 1988b](#)).

Fig. 1 CONSORT 2010 Flow Diagram

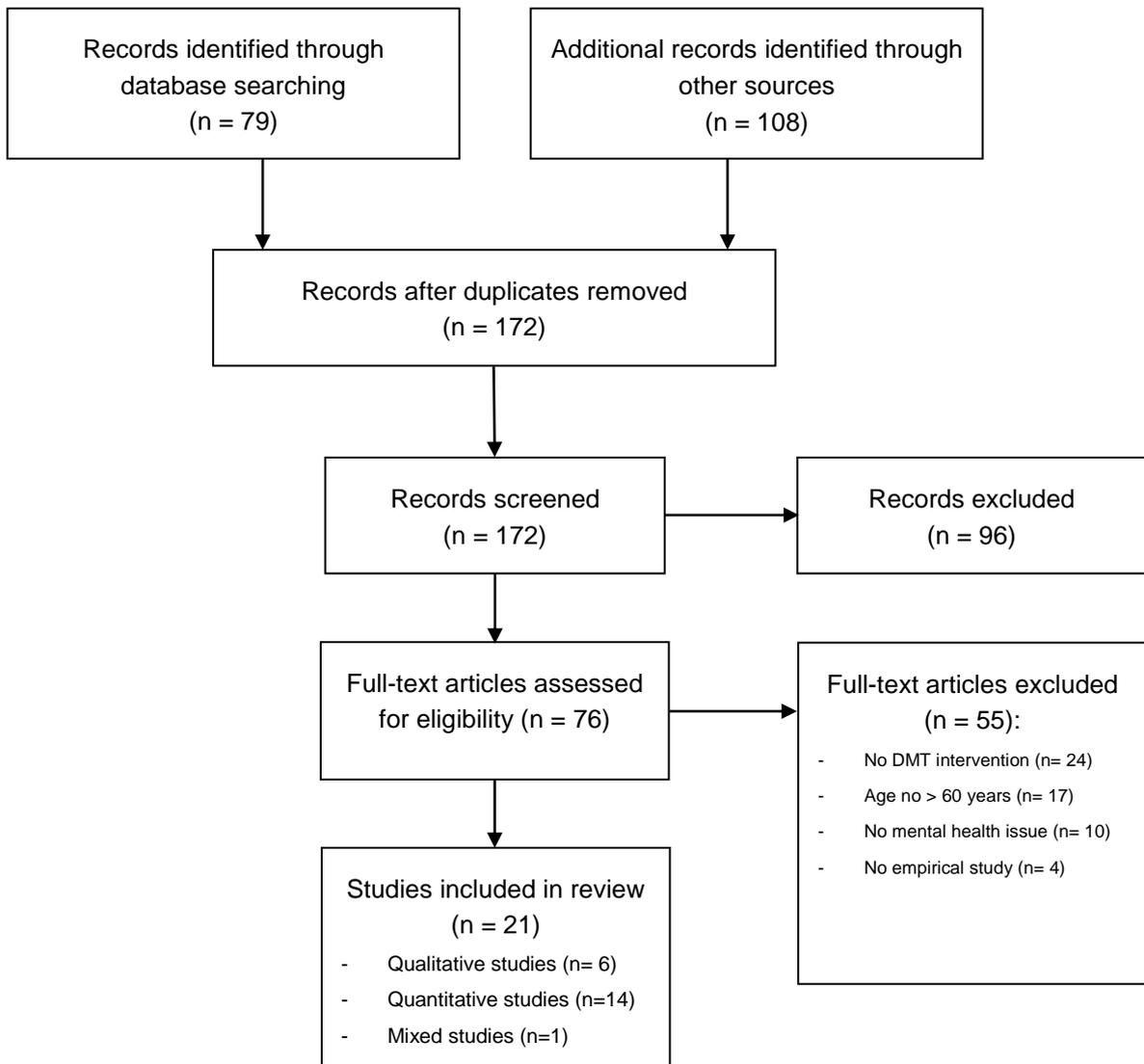


Table 1: Primary studies

Author/s	Year	Via	Type of study	N	Intervention approach	Diagnosis	Results	Main conclusion
Barnes et al.	2015	OS	Controlled cross-over clinical trial	10	PLIÉ (DMT)	Dementia	No statistically significant effects reported	Potential for improvement in QoL, physical and cognitive functions in people who suffer mild to moderate dementia. It also may reduce caregiver burden. Conclusion is not supported by the results of the study, larger RCT are needed
Bräuninger	2014	OS	Survey of experts opinion	113	DMT	Depression, Mood and Anxiety disorders, Dementia	Experts perceive that DMT improves QoL, fosters participation in activities and strengthens resilience	DMT may suitable to be integrated as a standard treatment in all health service and facility for the elderly
Dayanim	2009	OS	Non-randomized controlled study & before-and-after study	13	DMT	Dementia	Immediate acute effects on memory recall of patients with late-stage Alzheimer´s dementia (AD)	Intervention can help mentally organize patients with AD. Might increase communication between patients and their caregivers/family
Hamill et al.	2012	OS	Before-and-after pilot study without control group	11	DMT	Dementia	No statistically significant effects reported	Participants appeared to benefit emotionally, socially and cognitively. Suggestion of DMT as an intervention in community settings Conclusion is not supported by the results of the study
Hill	2009	OS	Qualitative case study (Phenomenological)	1	DT	Dementia	Improvement in self-esteem, confidence and connection to positive feelings	DMT offers a space where the fragmented self can find acceptance, holding and coherence
Hokkanen et al.	2008	OS	Randomized controlled study	29	DMT	Dementia	No effect on social competence, small improvement in cognition and self-care abilities	Suggestion of DMT as a treatment for people who suffer from dementia
Kowarzik	2013	OS	Qualitative Study (Phenomenological)	6	DMT	Dementia	Partly increase of verbal communication and expression	Suggestion of DMT may be an approach that stimulates care environment
Melhuish et al.	2015	OS	Qualitative Study (Phenomenological)	24	MT & DMT	Dementia	An increase in staff´s understanding of therapies, increasing their commitment to supporting autonomy and self-expression for the residents and a sense of closer connection	A collaborative approach between MT, DMT and residents can contribute to improving interactions and relationship between carers and residents
Nyström & Lauritzen	2005	DS	Qualitative Study (Phenomenological)	7	DT	Dementia	DT enables communication in people who suffer from dementia	The focus on interaction through embodied experiences would help to identify patient´s capacities
Sandel	1978	DS	Qualitative case study (Phenomenological)	15	DMT	Depression	Improvement in socialization and expression of feelings	Sessions appeared to be helpful for patients, but it also stimulated staff
Wilkinson et al.	1998	DS	Non-randomized control study	15	Drama & Movement Therapy	Dementia	Improvement in socialization, memory recall and more positive outlook in life. No statistically significant effects reported	Improvement in QoL by stimulating and maintaining social skills, independence, self-esteem and self-belief
Wu et al.	2015	DS	Qualitative analysis of a controlled cross-over clinical trial	11	PLIÉ (DMT)	Dementia	Functional, emotional and social changes, including greater behavioural coherence and improvement in wellbeing	Positive effects of PLIÉ (DMT), may delay cognitive decline and improve the QoL for patients and their caregivers

OS, Other sources; DS, Database search; DMT, Dance Movement Therapy; DT, Dance Therapy, MT, Music Therapy Studies highlighted in blue are qualitative research

Table2: Secondary studies

Author/s	Year	Via	Type of study	Included Studies	Intervention approach	Diagnosis	Results	Main conclusion
Beard	2011	OS	Systematic Review	Nyström & Lauritzen, 2005	DT	Dementia	Increase of communication	Need for more systematic AT studies in the field of dementia
Bräuning	2015	OS	Review & survey of experts opinion	Nyström & Lauritzen, 2005 Dayanim, 2009 Hamill et al., 2012 Guzmán-García et al., 2013	DMT	Dementia	Improvement in psychological health	Improvement in QoL, stimulation of autonomy and participation
Guzmán-García et al.	2013	DS	Systematic review	Hokkanen et al., 2008 Nyström & Lauritzen, 2005	DMT & DT	Dementia	Enhancement of mood, cognition, communication and socialising	Dance work evidence in care homes is inconclusive, however the results of this review fosters the idea that dancing interventions are far more than an entertainment activity
Kiepe et al.	2012	OS	Systematic review	Hokkanen et al., 2008	DMT	Dementia	Inconclusive results. The intervention group improved in a task of visuospatial ability and planning	The creative approach of DMT seems to improve mental and physical conditions
Koch et al.	2014	DS	Systematic Review & meta-analysis	Hokkanen et al., 2008	DMT	Dementia	DMT was supported as effective evidence-based intervention for geriatric depression and dementia	The study supports DMT as an effective and useful treatment method in clinical and prevention contexts
Lelièvre et al.	2015	OS	Systematic Review	Beard, 2011 Hamill et al., 2012 Kiepe et al., 2012 Koch et al., 2014	DMT	Dementia	Positive effects on physical, cognitive and psychosocial health	Therapeutic results should be supported by randomized controlled trials
Schmitt	2011	DS	Review	Schmitt & Frölich, 2007 Wilkinson et al., 1998	DT	Dementia	Augmentation of speech and improvement of social interaction between patients and staff. General improvement except for in depression score. No significant results reported	DMT helps to handle condition and improves interaction as well as QoL
Schmitt & Frölich	2007	OS	Systematic review	Wilkinson et al., 1998	DT	Dementia	Augmentation of speech. No statistically significant effects reported	AT are recommended to improve interaction and expressiveness in people who suffer from dementia
Strassel et al.	2011	OS	Systematic review	Schmitt & Frölich, 2007 Hokkanen et al., 2008	DT	Dementia	Inconclusive results	Despite of the poor empirical evidence, DT may potential for wide-reaching physical and psychological benefits

AT, Art Therapies; DS, Database Search; DT, Dance Therapy; DMT, Dance Movement Therapy; OS, Other sources

Discussion

The aim of this systematic review was to compile the available peer-reviewed primary and secondary studies related to DMT interventions with people aged over 60 who have any mental health issue in order to review, evaluate and synthesize the results. Twenty-one studies were identified that met the inclusion criteria: 14 quantitative studies, six qualitative and one mixed method study that combined quantitative and qualitative data. Twelve of the 21 were primary studies. Nine were secondary studies (i.e. review articles). Even though studies used different approaches (DMT, dance therapy, drama and movement therapy, music therapy and DMT, PLIÉ), their interventions included DMT.

Seven of the 21 studies recommend DMT based intervention as a therapeutic approach to improve interaction between caregivers, family members and people who suffer from dementia ([Barnes et al., 2015](#); [Guzmán-García et al., 2013](#); [Kowarzik, 2008](#); [Melhuish et al., 2015](#); [Nyström & Lauritzen, 2005](#); [Schmitt & Frölich, 2007](#); [Wu et al., 2015](#)). A systematic review and meta-analysis carried out by [Koch et al. \(2014\)](#), supports that DMT is an effective and useful treatment method in clinical and prevention contexts.

The majority of the studies reported the intervention improved QoL ([Barnes et al., 2015](#); [Bräuninger, 2014/ 2015](#); [Hamill et al., 2012](#); [Schmitt, 2011](#); [Wilkinson et al., 1998](#); [Wu et al., 2015](#)), communication ([Guzmán-García et al., 2013](#); [Kowarzik, 2008](#); [Sandel, 1978](#); [Schmitt, 2011](#); [Schmitt & Frölich, 2007](#); [Wilkinson et al., 1998](#)) and social interaction ([Guzmán-García et al., 2013](#); [Schmitt, 2011](#); [Schmitt & Frölich, 2007](#); [Wilkinson et al., 1998](#); [Wu et al., 2015](#)), as well as other observed benefits. Although several studies did not report any significant changes or did not control for multiple testing, the authors claimed

that positive general effects were shown ([Barnes et al., 2015](#); [Hamill et al., 2012](#); [Hokkanen et al., 2008](#); [Wilkinson et al., 1998](#)). Generally, there is as yet insufficient systematic empirical analysis to demonstrate a causal relationship between DMT and the claimed benefits of DMT.

Some empirical weaknesses have been noticed. 1) In several instances the research design was not explicitly stated. 2) Often, the methodology of the studies was not clearly described, for example a lack of clearly articulated coding system to support the observation; no existence of clinical notes that have been taken consistently and systematically; missed recording of the observation, which is the ultimate tool in science ([Cruz & Berrol, 2012](#)). 3) Some articles lacked a systematic discussion of their data analysis procedures. 4) All of the studies have small sample sizes (from one to 29), with the exception of the survey of experts opinion that included 113 practitioners ([Bräuninger, 2014](#)). The small samples undermine the external validity of these studies and limit the possibility that their findings can be generalized. For example, while there is no official minimum sample size for clinical studies, some authors suggest 20 as a minimum number of participants ([Cruz & Berrol, 2012, p. 59](#)). The need for further research with larger number of participants has been identified in previous analyses ([Barnes et al., 2015](#); [Dayanim, 2009](#); [Hamill et al., 2012](#); [Kiepe et al., 2012](#); [Mellhuish et al., 2015](#)). 5) There is a lack of studies undertaking follow-up analyses in the months following the intervention.

This review also highlights a number of broader limitations with the emergent literature in this area. The first of these is the relative scarcity of empirical studies of DMT interventions with this population. One third of the 21 included studies compiled the results of the other two thirds (12 primary studies, nine

secondary studies, i.e. review articles). Not only available research in the domain of DMT is limited in quantity, but also in quality, although it should be said that studies show a trend towards the adoption of increasingly robust and clearly articulated methodologies; perhaps a result of the growing recognition of a need for therapeutic work to be evidence-based.

A second limitation concerns an overwhelming focus in the literature to date on older adults with dementia. Even though there are several psychiatric conditions related to the elderly (Schwiertz, 2011, p. 526), all reviewed studies relate to participants who suffer from dementia, except for Sandel (1978) who focused on patients who were severely depressed, and Bräuninger (2014), who also included in her survey other mental illnesses related to older people, such as mood and anxiety disorders along with depression and dementia. It might be argued that more attention should be given to depression in older adults due to the vital changes that usually are intrinsic to this last stage in life, such as retirement, loss of loved ones, deterioration of cognitive and physical faculties, etc. Furthermore, history of depression is a risk factor for dementia in later life (Almeida, Hankey, Yeap, Golledge, & Fickler, 2016).

Third, the interventions themselves and the supposed effects of DMT are often loosely defined e.g. 'social interaction', 'mobility' due to a lack of methodological transparency and makes it difficult to clarify and test the specific claims that are being made on behalf of DMT. As Koch et al., (2014) suggest, 'social interaction' and 'mobility' are terms that are often used to describe the effects of DMT, but they are not clearly defined and are often used interchangeably. This lack of clarity makes it difficult to interpret the results of these studies and to compare them with other research. Koch et al., (2014) suggest that the use of these terms is problematic and that more specific and measurable outcomes should be used to evaluate the effectiveness of DMT.

Fourth, Bräuninger (2014) was the only study identified that used a mixed methods approach. The development of further mixed methods studies in this

field, which integrate quantitative and qualitative analysis, would be likely to enrich the literature (Bräuninger, 2014; Mellhuish et al., 2012; Strassel et al., 2011).

Conclusion

There exists an extensive body of theoretical work on DMT, which has grown since this approach started in the 1940ies, and in recent years the empirical literature has also begun to expand. There remain however a number of gaps in and limitations to this literature. As this review makes clear, one of these gaps is with regard to the effects of DMT on older adults with psychiatric conditions, where empirical research is scarce, and where the studies themselves are often characterised by a number of methodological limitations. If DMT is not to remain at the margins of therapeutic treatments with older adults who suffer from a psychiatric condition, it is important that dance movement therapists and researches work closely together in order to develop a more robust evidence base.

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Appendix

Search strategy

A) Intervention approach: *S4= S1 OR S2 OR S3*

*S1: TI "movement therapy" NOT constraint-induced movement therapy
" eye movement therapy "*

S2: TI dance therap OR AB dance therap* OR
AB " * body psychotherapy " OR TI " creative th*

S3: TI Tanztherap OR AB Tanztherap* OR TI Tanz- und Bewegungstherap*
OR AB Tanz- und Bewegungstherap* OR TI Integrative Bewegungstherap* OR
AB Integrative Bewegungstherap* OR TI Konzentrative Bewegungstherap* OR
AB Konzentrative Bewegungstherap* OR TI Körperpsychotherap* OR AB
Körperpsychotherap* OR TI Körperorientierte Psychotherap* OR AB
Körperorientierte Psychotherap**

B) Age: *S7= S5 OR S6*

S5: TI " old adult* " OR AB " old* adult* " OR T
OR TI " old* individual* " OR AB " old* indiv
" old* person* " OR TI elderly OR AB elderly*

S6: TI geriatr OR AB geriatr* OR TI geronto* OR AB geron
Menschen" OR AB " alte* Menschen" OR TI " im
" im höheren Lebensalter " OR AB " im höheren*

C) Mental illness: *S16= S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR
S14 OR S15*

S8: TI "mental health" OR AB "mental health"
"mental disorder*" OR TI "mental illness"
psychiatr* OR AB psychiatr* OR TI dement* OR AB dement* OR TI depress*
OR AB depress*

S9: TI addiction OR AB addiction OR TI dependen* OR AB dependen* OR TI
"substance abuse" OR AB "substance abuse"
AB "posttraumatic stress" OR TI anxiety OR
bipolar

S10: TI unipolar OR AB unipolar OR TI "affective
disorder*" OR TI psychotic OR AB psychotic
OR TI schizo* OR AB schizo* OR TI mania OR AB mania

S11: TI "cognitive disorder*" OR AB "-cognitive
compulsive" OR AB "obsessive"
somatoform* OR TI psychosomatic OR AB psy
disorder*" OR AB "personality disorder*" OR
"behavioral disorder"

S12: TI "psychische Vefassung" OR AB "psychi
"psychische Störung" OR AB "psychische S
Erkrankung" OR AB "psychische Erkrankung"
psychiatrisch* OR TI demenz* OR AB demenz* OR TI depress* OR AB
depress*

S13: TI Sucht OR AB Sucht OR TI Substanzstörung* OR AB Substanzstörung*
OR TI Abhängigkeit* OR AB Abhängigkeit* OR TI Belastungsstörung* OR AB
Belastungsstörung OR TI Angststörung* OR AB
Erkrankung* OR AB "Erkrankung"

S14: TI " k o g n i t i v e S t ö r u n g O R A B " k o g n i t i v e
S t ö r u n g * " O R A B " A f f e k t i v e S t ö r u n g * " O R T
psychotisch* OR AB psychotisch* OR TI Psychose OR AB Psychose OR TI
schizophren* OR AB schizophren*

S15: TI " k o g n i t i v e B e e i n t r ä c h t i g u n g * " O R A B "
Zwangsstörung* OR AB Zwangsstörung* OR TI somatoform* OR AB
somatoform* OR TI psychosomatisch* OR AB psychosomatisch* OR TI
Persönlichkeitsstörung* O R A B P e r s ö n l i c h k e i t s s t ö r u n g * O R T I
Verhaltensstörung* OR AB Verhaltensstörung

Final search: A combination of S4+S7+S16=S17 (79(64) results).