Attachment 1

5 Supplementary material

5.1 Decision process for unclear studies regarding intervention inclusion/exclusion

Study	Pro	Contra	Final decision
Barnes et al. [69]	Dance movement therapy is part of the planned intervention.	It is one of four other approaches, hence not the focus on dance.	Included As DMT carried the same weight in the intervention design as the other included approaches, hence it qualifies as being one of the main Interventions.
Cheung et al. [80]	Description of intervention seems very similar to therapeutic dance interventions.	The text calls the intervention 'music with movement' and does not mention dance.	Included As the intervention description is very similar to the other included studies.
Chita et al. [45]	States 'Dance Movement Therapy' in the title	In the text does not mention DMT but speaks of aerobic exercise and music therapy.	Excluded As the description of the intervention was closer to physiotherapy then dance.
Dayanim [70]	The description of the intervention has similarities with DMT, using weight an effort. The author is a DMT.	The author herself does not write of dance but calls the intervention 'specialized movement program' .	Included As the intervention description resembles DMT/Dance interventions.
Wu et al. [68]	Dance movement therapy is part of the planned intervention.	It is one of four other approaches, hence not the focus on dance.	Included As DMT carried the same weight in the intervention design as the other included approaches, hence it qualifies as being one of the main Interventions.

5.2 Critical appraisal notes

DISCUSSION OF CRITICAL APPRAISAL CRITERIA QUALITATIVE RESEARCH

Black font: cited from Lockwood C, Munn Z, Porritt K. Qualitative research synthesis: methodological guidance for systematic reviewers utilizing meta-aggregation. Int J Evid Based Healthc. 2015;13(3):179-87. DOI: 10.1097/XEB.0000000000000062

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1. Congruity between the stated philosophical perspective and the research methodology

Does the report clearly state the philosophical or theoretical premises on which the study is based? Does the report clearly state the methodological approach adopted on which the study is based? Is there congruence between the two? For example:

A report may state that the study adopted a critical perspective and participatory action research methodology was followed. Here there is congruence between a critical view (focusing on knowledge arising out of critique, action and reflection) and action research (an approach that focuses on firstly working with groups to reflect on issues or practices, then considering how they could be different; then acting to create a change; and finally identifying new knowledge arising out of the action taken). However, a report may state that the study adopted an interpretive perspective and used survey methodology. Here there is incongruence between an interpretive view (focusing on knowledge arising out of studying what phenomena mean to individuals or groups) and surveys (an approach that focuses on asking standard questions to a defined study population); a report may state that the study was qualitative or used qualitative methodology (such statements do not demonstrate rigour in design) or make no statement on philosophical orientation or methodology.

a. Philosophical/Theoretical perspective and research methodology needs to be clearly stated. Otherwise, Unclear.
b. Is there a theory/philosophical part that accompanies the development of methodology?

Philosophical perspective examples: post-positivism, constructivism, critical theory, feminism, queer theory.

Forms of research methodology: ethnography, narrative method, phenomenological method, grounded theory method, action research, historical research, content analysis [90].

2. Congruity between the research methodology and the research question or objectives

Is the study methodology appropriate for addressing the research question? For example: A report may state that the research question was to seek understandings of the meaning of pain in a group of people with rheumatoid arthritis and that a phenomenological approach was taken. Here, there is congruity between this question and the methodology. A report may state that the research question was to establish the effects of counselling on the severity of pain experience and that an ethnographic approach was pursued. A question that tries to establish cause-and effect cannot be addressed by using an ethnographic approach (as ethnography sets out to develop understandings of cultural practices) and thus, this would be incongruent.

a. Does the method used fit to their question/aim – research methodology does not need to be clearly stated. If methodology is not mentioned, then assessed on basis of methods.
b. 'Qualitative' as research methodology if methods clearly stated.

3. Congruity between the research methodology and the methods used to collect data

Are the data collection methods appropriate to the methodology? For example:

A report may state that the study pursued a phenomenological approach and data was collected through phenomenological interviews. There is congruence between the methodology and data collection; a report may state that the study pursued a phenomenological approach and data was collected through a postal questionnaire. There is incongruence between the methodology and data collection here as phenomenology seeks to elicit rich descriptions of the experience of a phenomena that cannot be achieved through seeking written responses to standardized questions.

a. Research methodology needs to be clearly stated otherwise unclear.
b. Missing data – unclear.

4. Congruity between the research methodology and the representation and analysis of data

Are the data analyzed and represented in ways that are congruent with the stated methodological position? For example:

A report may state that the study pursued a phenomenological approach to explore people's experience of grief by asking participants to describe their experiences of grief. If the text generated from asking these questions is searched to establish the meaning of grief to participants, and the meanings of all participants are included in the report findings, then this represents congruity; the same report may, however, focus only on those meanings that were common to all participants and discard single reported meanings. This would not be appropriate in phenomenological work.

a. Does the method fit with the representation – e.g., observation – narrative description or tally?
b. If research methodology is not clearly stated, then methods used applied if representation/analysis of data is congruent.

5. There is congruence between the research methodology and the interpretation of results

Are the results interpreted in ways that are appropriate to the methodology? For example:

A report may state that the study pursued a phenomenological approach to explore people's experience of facial disfigurement and the results are used to inform practitioners about accommodating individual differences in care. There is congruence between the methodology and this approach to interpretation; a report may state that the study pursued a phenomenological approach to explore people's experience of facial disfigurement and the results are used to generate practice checklists for assessment. There is incongruence between the methodology and this approach to interpretation as phenomenology seeks to understand the meaning of a phenomenon for the study participants and cannot be interpreted to suggest that this can be generalized to total populations to a degree where standardized assessments will have relevance across a population.

a. If research methodology is not defined, then method used to assess this question. Does the way they present the results match with their method? E.g., suggesting that DMT facilitated engagement and should be offered taking certain aspects into account OR saying that DMT is effective for everyone when they did a single case study.

6. Locating the researcher culturally or theoretically

Are the beliefs and values, and their potential influence on the study declared? For example:

The researcher plays a substantial role in the qualitative research process and it is important, in appraising evidence that is generated in this way, to know the researcher's cultural and theoretical orientation. A high quality report will include a statement that clarifies this.

a. Cultural or theoretical background of researcher needs to be explicitly stated

7. Influence of the researcher on the research, and vice-versa, is addressed

Is the potential for the researcher to influence the study and for the potential of the research process itself to influence the researcher and her/his interpretations acknowledged and addressed? For example:

Is the relationship between the researcher and the study participants addressed? Does the researcher critically examine her/his own role and potential influence during data collection? Is it reported how the researcher responded to events that arose during the study?

a. Is it thematized in what relationship they stand? E.g., the researcher is from outside, the therapist is known to the participants? Is there something stated about that relationship?

8. Representation of participants and their voices

Generally, reports should provide illustrations from the data to show the basis of their conclusions and to ensure that participants are represented in the report.

a. Is the data demonstrated so that there is a section that shows results before conclusions are being drawn?

9. Ethical approval by an appropriate body

A statement on the ethical approval process followed should be in the report.

a. If nothing is mentioned, then – unclear. If an authority is mentioned, then 'unsure' as it is not clear whether ethics are incorporated. If consent has been asked, then 'yes'.
b. If the procedure seems unethical – then no.

10. Relationship of conclusions to analysis, or interpretation of the data

This criterion concerns the relationship between the findings reported and the views or words of study participants. In appraising a paper, appraisers seek to satisfy themselves that the conclusions drawn by the research are based on the data collected; data being the text generated through observation, interviews or other processes.

Does the data presented match with the conclusions? Extreme example: data states participants were very stressed and unhappy – and the conclusion is that more DMT should be offered. If there is no data – this is unclear.

EXPLANATION FOR THE CRITICAL APPRAISAL TOOL FOR QUASI-EXPERIMENTAL STUDIES

Black font: cited from Tufanaru C, Munn Z, Aromataris E, Campbell J, Hopp L. Chapter 3: Systematic reviews of effectiveness. In: Aromataris E, Munn Z, editors. JBI Manual for Evidence Synthesis. JBI; 2020.
DOI: 10.46658/JBIRM-17-03
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Critical Appraisal Tool for Quasi-Experimental Studies (Experimental Studies without random allocation)

Answers: Yes, No, Unclear or Not/Applicable

1. Is it clear in the study what is the 'cause' and what is the 'effect' (i.e. there is no confusion about which variable comes first)?
Ambiguity with regards to the temporal relationship of variables constitutes a threat to the internal validity of a study exploring causal relationships. The 'cause' (the independent variable, that is, the treatment or intervention of interest) should occur in time before the explored 'effect' (the dependent variable, which is the effect or outcome of interest). Check if it is clear which variable is manipulated as a potential cause. Check if it is clear which variable is measured as the effect of the potential cause. Is it clear that the 'cause' was manipulated before the occurrence of the 'effect'?

2. Were the participants included in any comparisons similar?
The differences between participants included in compared groups constitute a threat to the internal validity of a study exploring causal relationships. If there are differences between participants included in compared groups there is a risk of selection bias. If there are differences between participants included in the compared groups maybe the 'effect' cannot be attributed to the potential 'cause', as maybe it is plausible that the 'effect' may be explained by the differences between participants, that is, by selection bias. Check the characteristics reported for participants. Are the participants from the compared groups similar with regards to the characteristics that may explain the effect even in the absence of the 'cause', for example, age, severity of the disease, stage of the disease, co-existing conditions and so on? *[NOTE: In one single group pre-test/post-test studies where the patients are the same (the same one group) in any pre-post comparisons, the answer to this question should be 'yes.']*

3. Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest?

a. If not addressed, then unsure.

In order to attribute the 'effect' to the 'cause' (the exposure or intervention of interest), assuming that there is no selection bias, there should be no other difference between the groups in terms of treatments or care received, other than the manipulated 'cause' (the intervention of interest). If there are other exposures or treatments occurring in the same time with the 'cause', other than the intervention of interest, then potentially the 'effect' cannot be attributed to the intervention of interest, as it is plausible that the 'effect' may be explained by other exposures or treatments, other than the intervention of interest, occurring in the same time with the intervention of interest. Check the reported exposures or interventions received by the compared groups. Are there other exposures or treatments occurring in the same time with the intervention of interest? Is it plausible that the 'effect' may be explained by other exposures or treatments occurring in the same time with the intervention of interest?

4. Was there a control group?

a) Cross-over experimental design with alternating experimental and control as yes.

Control groups offer the conditions to explore what would have happened with groups exposed to other different treatments, other than to the potential 'cause' (the intervention of interest). The comparison of the treated group (the group exposed to the examined 'cause', that is, the group receiving the intervention of interest) with such other groups strengthens the examination of the causal plausibility. The validity of causal inferences is strengthened in studies with at least one independent control group compared to studies without an independent control group. Check if there are independent, separate groups, used as control groups in the study. *[Note: The control group should be an independent, separate control group, not the pre-test group in a single group pre-test post-test design.]*

5. Were there multiple measurements of the outcome both pre and post the intervention/exposure?

a. Yes – if pre- and post-test took place of various measurements.
b. No if pre and posttest but only of one measurement.
c. No if no pretest.
d. Various QoL or 'Mood and Behaviour Items' – then yes
e. Yes, if other measures taken in other method: e.g., mixed-method design

In order to show that there is a change in the outcome (the 'effect') as a result of the intervention/treatment (the 'cause') it is necessary to compare the results of measurement before and after the intervention/treatment. If there is no measurement before the treatment and only measurement after the treatment is available it is not known if there is a change after the treatment compared to before the treatment. If multiple measurements are collected before the intervention/treatment is implemented then it is possible to explore the plausibility of alternative explanations other than the proposed 'cause' (the intervention of interest) for the observed 'effect', such as the naturally occurring changes in the absence of the 'cause', and changes of high (or low) scores towards less extreme values even in the absence of the 'cause' (sometimes called regression to the mean). If multiple measurements are collected after the intervention/treatment is implemented it is possible to explore the changes of the 'effect' in time in each group and to compare these changes across the groups. Check if measurements were collected before the intervention of interest was implemented. Were there multiple pre-test measurements? Check if measurements were collected after the intervention of interest was implemented. Were there multiple post-test measurements?

6. Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed?

a. If follow up complete – yes

b. If follow up missing: data is stated but not analysed? Yes – as could still be analysed.

If there are differences with regards to the loss to follow up between the compared groups these differences represent a threat to the internal validity of a study exploring causal effects as these differences may provide a plausible alternative explanation for the observed 'effect' even in the absence of the 'cause' (the treatment or exposure of interest). Check if there were differences with regards to the loss to follow up between the compared groups. If follow up was incomplete (that is, there is incomplete information on all participants), examine the reported details about the strategies used in order to address incomplete follow up, such as descriptions of loss to follow up (absolute numbers; proportions; reasons for loss to follow up; patterns of loss to follow up) and impact analyses (the analyses of the impact of loss to follow up on results). Was there a description of the incomplete follow up (number of participants and the specific reasons for loss to follow up)? If there are differences between groups with regards to the loss to follow up, was there an analysis of patterns of loss to follow up? If there are differences between the groups with regards to the loss to follow up, was there an analysis of the impact of the loss to follow up on the results?

7. Were the outcomes of participants included in any comparisons measured in the same way?

a. Measured with same tools but unsure about time/procedure: yes as more realistic with this participant group.

If the outcome (the 'effect') is not measured in the same way in the compared groups there is a threat to the internal validity of a study exploring a causal relationship as the differences in outcome measurements may be confused with an effect of the treatment or intervention of interest (the 'cause'). Check if the outcomes were measured in the same way. Same instrument or scale used? Same measurement timing? Same measurement procedures and instructions?

8. Were outcomes measured in a reliable way?

a. If there is no information about rater training/numbers? – then unsure

b. If profession stated but not training then unsure.

Unreliability of outcome measurements is one threat that weakens the validity of inferences about the statistical relationship between the 'cause' and the 'effect' estimated in a study exploring causal effects. Unreliability of outcome measurements is one of different plausible explanations for errors of statistical inference with regards to the existence and the magnitude of the effect determined by the treatment
('cause'). Check the details about the reliability of measurement such as the number of raters, training of raters, the intra-rater reliability, and the inter-raters reliability within the study (not to external sources). This question is about the reliability of the measurement performed in the study, it is not about the validity of the measurement instruments/scales used in the study. *[Note: Two other important threats that weaken the validity of inferences about the statistical relationship between the 'cause' and the 'effect' are low statistical power and the violation of the assumptions of statistical tests. These other threats are not explored within Question 8, these are explored within Question 9.]*

9. Was appropriate statistical analysis used?

Inappropriate statistical analysis may cause errors of statistical inference with regards to the existence and the magnitude of the effect determined by the treatment ('cause'). Low statistical power and the violation of the assumptions of statistical tests are two important threats that weakens the validity of inferences about the statistical relationship between the 'cause' and the 'effect'. Check the following aspects: if the assumptions of statistical tests were respected; if appropriate statistical power analysis was performed; if appropriate effect sizes were used; if appropriate statistical procedures or methods were used given the number and type of dependent and independent variables, the number of study groups, the nature of the relationship between the groups (independent or dependent groups), and the objectives of statistical analysis (association between variables; prediction; survival analysis etc.).

EXPLANATION FOR THE CRITICAL APPRAISAL TOOL FOR RCTS WITH INDIVIDUAL PARTICIPANTS IN PARALLEL GROUPS

Black font: cited from Tufanaru C, Munn Z, Aromataris E, Campbell J, Hopp L. Chapter 3: Systematic reviews of effectiveness. In: Aromataris E, Munn Z, editors. JBI Manual for Evidence Synthesis. JBI; 2020.
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Answers: Yes, No, Unclear or Not/Applicable

Critical Appraisal Tool for RCTs (individual participants in parallel groups)

1. **Was true randomization used for assignment of participants to treatment groups?**

   The differences between participants included in compared groups constitutes a threat to the internal validity of a study exploring causal relationships. If participants are not allocated to treatment and control groups by random assignment there is a risk that the allocation is influenced by the known characteristics of the participants and these differences between the groups may distort the comparability of the groups. A true random assignment of participants to the groups means that a procedure is used that allocates the participants to groups purely based on chance, not influenced by the known characteristics of the participants. Check the details about the randomization procedure used for allocation of the participants to study groups. Was a true chance (random) procedure used? For example, was a list of random numbers used? Was a computer-generated list of random numbers used?

2. **Was allocation to groups concealed?**

   If those allocating participants to the compared groups are aware of which group is next in the allocation process, that is, treatment or control, there is a risk that they may deliberately and purposefully intervene in the allocation of patients by preferentially allocating patients to the treatment group or to the control group and therefore this may distort the implementation of allocation process indicated by the randomization and therefore the results of the study may be distorted. **Concealment of allocation (allocation concealment) refers to procedures that prevent those allocating patients from knowing before allocation which treatment or control is next in the allocation process.** Check the details about the procedure used for allocation concealment. Was an appropriate allocation concealment procedure used? For example, was central randomization used? Were sequentially numbered, opaque and sealed envelopes used? Were coded drug packs used?

   a. Needs to be specifically mentioned.

3. **Were treatment groups similar at the baseline?**

   The differences between participants included in compared groups constitute a threat to the internal validity of a study exploring causal relationships. If there are differences between participants included in compared groups there is a risk of selection bias. If there are differences between participants included in the compared groups maybe the ‘effect’ cannot

   be attributed to the potential ‘cause’ (the examined intervention or treatment), as maybe it is plausible that the ‘effect’ may be explained by the differences between participants, that is, by selection bias. Check the characteristics reported for participants. Are the participants from the compared groups similar with regards to the characteristics that may explain the effect even in the absence of the ‘cause’, for example, age, severity of the disease, stage of the disease, co-existing conditions and so on? Check the proportions of participants with specific relevant characteristics in the compared groups. Check the means of relevant measurements in the compared groups (pain scores; anxiety scores; etc.). *[Note: Do NOT only consider the P-value for the statistical testing of the differences between groups with regards to the baseline characteristics.]*

4. **Were participants blind to treatment assignment?**

   If participants are aware of their allocation to the treatment group or to the control group there is the risk that they may behave differently and respond or react differently to the intervention of interest or to the control intervention respectively compared to the situations when they are not aware of treatment allocation and therefore the results of the study may be distorted. Blinding of participants is used in order to minimize this risk. Blinding of the participants refers to procedures that prevent participants from knowing which group they

are allocated. If blinding of participants is used, participants are not aware if they are in the group receiving the treatment of interest or if they are in any other group receiving the control interventions. Check the details reported in the article about the blinding of participants with regards to treatment assignment. Was an appropriate blinding procedure used? For example, were identical capsules or syringes used? Were identical devices used? Be aware of different terms used, blinding is sometimes also called masking.

a. Not applicable if maintaining ethical disclosure.

5. Were those delivering treatment blind to treatment assignment?

If those delivering treatment are aware of participants' allocation to the treatment group or to the control group there is the risk that they may behave differently with the participants from the treatment group and the participants from the control group, or that they may treat them differently, compared to the situations when they are not aware of treatment allocation and this may influence the implementation of the compared treatments and the results of the study may be distorted. Blinding of those delivering treatment is used in order to minimize this risk. Blinding of those delivering treatment refers to procedures that prevent those delivering treatment from knowing which group they are treating, that is those delivering treatment are not aware if they are treating the group receiving the treatment of interest or if they are treating any other group receiving the control interventions. Check the details reported in the article about the blinding of those delivering treatment with regards to treatment assignment. Is there any information in the article about those delivering the treatment? Were those delivering the treatment unaware of the assignments of participants to the compared groups?

a. Difficult but possible.

6. Were outcomes assessors blind to treatment assignment?

If those assessing the outcomes are aware of participants' allocation to the treatment group or to the control group there is the risk that they may behave differently with the participants from the treatment group and the participants from the control group compared to the situations when they are not aware of treatment allocation and therefore there is the risk that the measurement of the outcomes may be distorted and the results of the study may be distorted. Blinding of outcomes assessors is used in order to minimize this risk. Check the details reported in the article about the blinding of outcomes assessors with regards to treatment assignment. Is there any information in the article about outcomes assessors? Were those assessing the treatment's effects on outcomes unaware of the assignments of participants to the compared groups?

a. If not mentioned – unclear.

7. Were treatment groups treated identically other than the intervention of interest?

In order to attribute the 'effect' to the 'cause' (the treatment or intervention of interest), assuming that there is no selection bias, there should be no other difference between the groups in terms of treatment or care received, other than the manipulated 'cause' (the treatment or intervention controlled by the researchers). If there are other exposures or treatments occurring at the same time with the 'cause' (the treatment or intervention of interest), other than the 'cause', then potentially the 'effect' cannot be attributed to the examined 'cause' (the investigated treatment), as it is plausible that the 'effect' may be explained by other exposures or treatments occurring at the same time with the 'cause' (the treatment of interest). Check the reported exposures or interventions received by the compared groups. Are there other exposures or treatments occurring at the same time with the 'cause'? Is it plausible that the 'effect' may be explained by other exposures or treatments occurring at the same time with the 'cause'? Is it clear that there is no other difference between the groups in terms of treatment or care received, other than the treatment or intervention of interest?

a. See if this is taken into account? Medication, medication changes, other therapies or other physical activation? Otherwise marked as unsure.

8. Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed?

For this question, follow up refers to the time period from the moment of random allocation (random assignment or randomization) to compared groups to the end time of the trial. This critical appraisal question asks if there is complete knowledge (measurements, observations etc.) for the entire duration of the trial as

previously defined (that is, from the moment of random allocation to the end time of the trial), for all randomly allocated participants. If there is incomplete follow up, that is incomplete knowledge about all randomly allocated participants, this is known in the methodological literature as the post-assignment attrition. As RCTs are not perfect, there is almost always post-assignment attrition, and the focus of this question is on the appropriate exploration of post-assignment attrition (description of loss to follow up, description of the reasons for loss to follow up, the estimation of the impact of loss to follow up on the effects etc.). If there are differences with regards to the loss to follow up between the compared groups in an RCT, these differences represent a threat to the internal validity of a randomized experimental study exploring causal effects, as these differences may provide a plausible alternative explanation for the observed 'effect' even in the absence of the 'cause' (the treatment or intervention of interest). When appraising an RCT, check if there were differences with regards to the loss to follow up between the compared groups. If follow up was incomplete (that is, there is incomplete information on all participants), examine the reported details about the strategies used in order to address incomplete follow up, such as descriptions of loss to follow up (absolute numbers; proportions; reasons for loss to follow up) and impact analyses (the analyses of the impact of loss to follow up on results). Was there a description of the incomplete follow up (number of participants and the specific reasons for loss to follow up)? It is important to note that with regards to loss to follow up, it is not enough to know the number of participants and the proportions of participants with incomplete data; the reasons for loss to follow up are essential in the analysis of risk of bias; even if the numbers and proportions of participants with incomplete data are similar or identical in compared groups, if the patterns of reasons for loss to follow up are different (for example, side effects caused by the intervention of interest, lost contact etc.), these may impose a risk of bias if not appropriately explored and considered in the analysis. If there are differences between groups with regards to the loss to follow up (numbers/proportions and reasons), was there an analysis of patterns of loss to follow up? If there are differences between the groups with regards to the loss to follow up, was there an analysis of the impact of the loss to follow up on the results? [Note: Question 8 is NOT about intention-to-treat (ITT) analysis; question 9 is about ITT analysis.]

a. If follow up complete – yes

b. If follow up missing: data is stated but not analyzed? Yes – as could still be analyzed.

9. Were participants analyzed in the groups to which they were randomized?

This question is about the intention-to-treat (ITT) analysis. There are different statistical analysis strategies available for the analysis of data from randomized controlled trials, such as intention-to-treat analysis (known also as intent to treat; abbreviated, ITT), per-protocol analysis, and as-treated analysis. In the ITT analysis the participants are analyzed in the groups to which they were randomized, regardless of whether they actually participated or not in those groups for the entire duration of the trial, received the experimental intervention or control intervention as planned or whether they were compliant or not with the planned experimental intervention or control intervention. The ITT analysis compares the outcomes for participants from the initial groups created by the initial random allocation of participants to those groups. Check if ITT was reported; check the details of the ITT. Were participants analyzed in the groups to which they were initially randomized, regardless of whether they actually participated in those groups, and regardless of whether they actually received the planned interventions? *[Note: The ITT analysis is a type of statistical analysis recommended in the Consolidated Standards of Reporting Trials (CONSORT) statement on best practices in trials reporting, and it is considered a marker of good methodological quality of the analysis of results of a randomized trial. The ITT is estimating the effect of offering the intervention, that is, the effect of instructing the participants to use or take the intervention; the ITT it is not estimating the effect of actually receiving the intervention of interest.]*

10. Were outcomes measured in the same way for treatment groups?

If the outcome (the 'effect') is not measured in the same way in the compared groups there is a threat to the internal validity of a study exploring a causal relationship as the differences in outcome measurements may be confused with an effect of the treatment (the 'cause'). Check if the outcomes were measured in the same way. Same instrument or scale used? Same measurement timing? Same measurement procedures and instructions?

a. 'yes', if same tools used.

b. Considering the participants – same timing might be quite impossible.

10. Were outcomes measured in a reliable way?

Unreliability of outcome measurements is one threat that weakens the validity of inferences about the statistical relationship between the 'cause' and the 'effect' estimated in a study exploring causal effects. Unreliability of outcome measurements is one of the different plausible explanations for errors of statistical inference with regards to the existence and the magnitude of the effect determined by the treatment ('cause'). **Check the details about the reliability of measurement such as the number of raters, training of raters, the intra-rater reliability, and the inter-raters reliability within the study (not as reported in external sources).** This question is about the reliability of the measurement performed in the study, it is not about the validity of the measurement instruments/scales used in the study. *[Note: Two other important threats that weaken the validity of inferences about the statistical relationship between the 'cause' and the 'effect' are low statistical power and the violation of the assumptions of statistical tests. These other two threats are explored within Question 12).]*

a. If something mentioned about training of raters, then 'yes' also if inter-rater reliability was not mentioned.

b. If not mentioned, then 'unsure'

12. Was appropriate statistical analysis used?

Inappropriate statistical analysis may cause errors of statistical inference with regards to the existence and the magnitude of the effect determined by the treatment ('cause'). Low statistical power and the violation of the assumptions of statistical tests are two important threats that weaken the validity of inferences about the statistical relationship between the 'cause' and the 'effect'. Check the following aspects: if the assumptions of statistical tests were respected; if appropriate statistical power analysis was performed; if appropriate effect sizes were used; if appropriate statistical procedures or methods were used given the number and type of dependent and independent variables, the number of study groups, the nature of the relationship between the groups (independent or dependent groups), and the objectives of statistical analysis (association between variables; prediction; survival analysis etc.).

13. Was the trial design appropriate for the topic, and any deviations from the standard RCT design accounted for in the conduct and analysis?

Certain RCT designs, such as the crossover RCT, should only be conducted when appropriate. Alternative designs may also present additional risks of bias if not accounted for in the design and analysis.

Crossover trials should only be conducted in people with a chronic, stable condition, where the intervention produces a short term effect (i.e. relief in symptoms). Crossover trials should ensure there is an appropriate period of washout between treatments.

Cluster RCTs randomize groups of individuals, forming 'clusters.' When we are assessing outcomes on an individual level in cluster trials, there are unit-of-analysis issues, as individuals within a cluster are correlated. This should be taken into account by the study authors when conducting analysis, and ideally authors will report the intra-cluster correlation coefficient.

Stepped-wedge RCTs may be appropriate when it is expected the intervention will do more good than harm, or due to logistical, practical or financial considerations in the roll out of a new treatment/intervention. Data analysis in these trials should be conducted appropriately, taking into account the effects of time.

5.3 Outcomes matched to ICF sub-category

ICF components	code	#	Outcomes listed with matching ICF component
Body Functions and Structures (anatomical structure of physiological function such as those required for cognition, motor function, pain or emotion)	**b1.**	49	**Mental Functions:** Body awareness, Movement memory, Aphasia/Agnosia, Verbal symptoms (2), Verbal fluency, Memory recall (3), Visuospatial planning, Cognitive functioning (7), Engagement (3*), Attention, Insights into personhood (*), Behaviour (3), Participant Behaviour, Mood and Behaviour, Enjoyment (2), Creativity (*), Mood (3), Expression of moods (2), Irritability, Loneliness, Depression (4), Agitation, Guilt feelings (*), Emotional response, Stress, Confidence, Self-esteem, Appetite, Caregiving stress
	b2.	4	**Sensory Functions and Pain:** Balance/ gait (3), Balance confidence
	b3.		Voice and Speech Functions
	b4.		Functions of the cardiovascular, haematological, immunological and respiratory systems
	b5.		Functions of the Digestive, metabolic and endocrine system
	b6.		Genitourinary and reproductive Functions
	b7.	**3**	**Neuromusculoskeletal and movement related functions:** Improvement in range of motion, Strength, Body Posture
	b8.		Functions of the Skin and related Structures
	s1.		Structure of the Nervous System
	s2.		The eye, ear and related structures
	s3.		Structures involved in voice and speech
	s4.		Structure of the cardiovascular, immunological and respiratory systems
	s5.		Structures related to the digestive, metabolism and endocrine systems
	s6.		Structure related to genitourinary and reproductive system
	s7.		Structure related to movement
	s8.		Skin and related structures
Activity (refers to the execution of tasks at an individual level) AND **Participation** (an individual's involvement in everyday life situation)	**d1.**	**3**	**Learning and applying knowledge:** Daily functioning (2*), Mental stimulation, Participation (*)
	d2.	**4**	**General Tasks and Demands:** Daily functioning (*), Mental stimulation, Engagement (*), Participation (*)
	d3.	**8**	**Communication:** Daily functioning (*), Communication (5), Engagement (*), Participation (*)
	d4.	**13**	**Mobility:** Body Movements, Mobility (3), Functional mobility (3), Speed, Physical performance, Participant Function (*), Functional autonomy (*), Daily functioning (*), Participation (*)
	d5.	**4**	**Self-care:** Participant Function (*), Functional autonomy (*), Daily functioning (*), Self-care
	d6.	**1**	**Domestic Life:** Daily functioning (*)
	d7.	**10**	**Interpersonal Interactions & Relationships:** Daily functioning (*), Sharing personal stories, Group reconnection (2), Participation (*), Socialising (*), Sharing of experiences (*), Affirming Identity (*), Insights into Personhood (*), Emotional connection
	d8.		Major Life Areas
	d9.	**11**	**Community, social and civic life:** Reminiscing (3), Socialising (4*), Sharing of experiences (*), Affirming Identity (*), Insights into Personhood (*), Creativity (*)
Environmental Factors (physical, social and attitudinal factors in the person's life and society which hinder or facilitate the functioning of the individual)	e1.		Products and Technology
	e2.		Natural Environment and Human made changes to the environment
	e3.	**5**	**Support and Relationships:** Care relationship (2), Reduced caregiver burden (*), Caregiver health and coping (*), Carers build relationships to clients
	e4.	**3**	**Attitudes:** Guilt feelings (*), Reduced caregiver burden (*), Caregiver health and coping (*)
	e5.	**4**	**Services, Systems and Policies:** Reduced caregiver burden (*), Caregiver health and coping (*), Carer Job satisfaction, Caregiving stress (*)
ICF extension with QoL		**17**	**Quality of Life/ Well-being** Positive response, QoL, Participant QoL, Well-being, growth & development

5.4 Data charting of individual sources of evidence

Legend: pink=case study, yellow=qualitative, light blue=quasi-experimental, dark blue=RCT, orange=mixed-method study

#	Author, date of publication & country	Participants (sample size, type and level of dementia, age, sex)	Study design	Aim/purpose of the study	Intervention frequency, duration, and type of therapy	Outcomes measured (And time of measurement)	Findings	Effect (–1, 0, 1)
1	Abreu & Hartley [82] 2013 USA Physical therapy Journal paper	N=1 Alzheimer's Dementia and multiple comorbidities Level=? Age: 86 Sex: F	Quantitative intervention pre-post text design	To quantify the effects of salsa dance therapy on function, balance, and fall risk in a sedentary patient with multiple comorbidities.	24 sessions/ 1 h x12 weeks 1st half functional training (e.g., gait training, transfer training, stair climbing...), 2nd half Salsa dancing (using bars and mirror four basic salsa steps) with home exercise program (updated each 4 weeks). By physical therapist – strength and salsa	Function, balance and falls risk 0 weeks 6 weeks 12 weeks	Improvements in range of motion, strength, balance, functional mobility, gait distance, and speed. During therapy 1 fall was reported with no significant injuries.	1
2	Barnes [60] 2020 USA Thesis	N=14 (G1) N=9 (G2) Mild to severe dementia Age: 69–91 years (80) Sex: F=10/M=4		To examine the use of DMT with a focus on sensory stimulation among individuals living with dementia to promote a higher level of engagement, connection, and reminiscence.	2x45 min sessions DMT: Chadian structure focus on engagement, connection, and reminiscence	To observe: engagement, connection, and reminiscence.	Results of intervention support the literature review. Group connection, reminiscence and participation were present within both groups. Additionally, there was a positive response to touch hand holding, self-massage, and other props utilised.	1
3	Barnes et al. [69] 2015 USA Journal article	N=10 Patients completed 36-week assessment, N=1 completed only 18 weeks. Mild to severe dementia Age (84+/–4years) Sex: F: 82% N=9 caregivers completed 36-week assessment. N=1 completed only 18 weeks.	cross-over clinical pilot study PLIE vs. Usual care (UC)	To pilot test a novel integrative group exercise programme (PLIE) which focuses on training procedural memory for basic functional movements, while increasing mindful body awareness and facilitating social connection.	EG: At least 2x/week for 45 min PLIE: combination of physical therapy, occupational therapy, yoga, dance movement therapy, tai chi, Feldenkrais and Rosen Method UC: 20 min chair-based exercises followed by art and music appreciation.	Patient: Physical performance, Cognitive function, Quality of Life Baseline 18 weeks 36 weeks Caregiver: Participant Function, Participant Behaviour, Participant QoL, Caregiver Burden Baseline 18 weeks 36 weeks	May be associated with improvements in a wide range of outcomes with clinically meaningful between-group effect sizes for physical performance (Cohen's 0.34 SDs), cognitive function (0.76 SDs), QoL (0.83 SDs), and reduced caregiver burden (0.49 SDs) when compared with usual care program.	1

4	Berg [61] 2020 Country NM Thesis	N=4 Alzheimer's dementia, vascular dementia. Sex: NM Age: 82–92 years (87)	Inductive Analysis	To examine qualitatively how DMT influences the quality of life for individuals with dementia	3x60 min within 3 weeks DMT Chacean method	Quality of Life Observation recorded after all three sessions.	DMT impacts QoL by stimulating sensory systems and encouraging participants to engage with therapist and others physically, emotionally, and cognitively.	1
5	Borges et al. [79] 2018 Brazil Journal article	EG: N=30 Age=66+/–6.83 S=NM CG: N=30 Age=67+/–7.29 S=NM	Randomised clinical study	To evaluate the postural balance, cognition and functional autonomy of older adults with dementia	3x50 min/week for 12 weeks Ballroom dancing adapted for seniors, warm-up, activation, relaxation	Cognition Functional autonomy Balance Week 0 Week 12	Improvements in functional autonomy, and mental state in comparison to CG.	1
6	Charras et al. [75] 2020 France	Alzheimer Dementia N=23 Age M=83.47 Sex: F=12/M=11	Cross-over experimental design	To test feasibility of dance intervention in day care centre and investigate impact on balance, confidence, QoL, and well-being.	50 min/week for 12 weeks Followed by 12 weeks without dance (or vice versa) Intervention developed to promote gait and balance: Included warm-up, coordination, standard dances (tango, waltz, classical), cool down	Gait and Balance, (balance) confidence, QoL, well-being.	Intervention appreciated and increased well-being. No results on gait, balance, confidence, QoL.	1 0
7	Cheung et al. [80] 2018 Hong Kong	Moderate Dementia EG=58 CG1=54 (music listening) CG2=53 (social activity) Age=NM Sex=NM	Multi-centred RCT	To examine the effects of music-with-movement intervention compared with music listening and social activity on cognitive functions of people with moderate dementia over time.	2/week for 6 weeks Music-with-movement: 5 min singing, 20 min movement, 2 min singing. Movement: batting balloons, waving ribbony, mimicking movements by interventionist.	Cognitive function, depression, anxiety, Verbal fluency, Memory recall, Attention Baseline Week 6 6 weeks post intervention	EG improvements in memory and depression. Questionable how this keeps up over time.	1 0
8	Choo et al. [76] 2019 New Zealand	Participants Mild (7) Moderate (7) Advanced (8) Dementia N=22 Age M=77.6 (11.8 SD) Sex: F=15/M=7 Staff members: N=4	Mixed methods pilot study	To explore the effects off the intuitive movement re-embodiment program on QoL.	35–50 min 1/ week for 10 weeks Intuitive Movement Reembodied Movement Patterning, Synchronising with Music, Move-and-Pause, Contrasting Movement, themed Improvisation	Quality of Life Baseline and after each intervention	Quant: Improvement in QoL, Qual: sense of humour, imagination, intuition and joy	1

9	Coaten et al. [62] 2013 England Project report	Mild to moderate Dementia N=10–14 Age=NM Sex=NM	Qualitative Project evaluation	To provide a regular dance session for a year that supports the sharing of experiences, enjoyment and creativity for people living with dementia and gauge results. To explore the potential of how dance and music impacts on overall sense of observed wellbeing.	60 min 1/week for 36 weeks DMP, warm-up, props. Mirroring, massage	sharing of experiences, enjoyment, creativity, well-being Observation throughout the sessions	Re-connecting with self, memories and feelings, sense of importance of what embodied practices had left participants with. Stimulated social interaction, enabled self-expression, building of relationship between staff and participants. , increase overall sense of well-being	1
10	Coaten [20] 2009 England DMP	Dementia (Not further specified) N=4 Age=NM Sex F=2 M=2	Ethnographic fieldwork	1: observe the effects on well/ill-being of people with dementia participating in DMP session. 2: identify embodied practices occurring during the session and their impact on both people with dementia and care staff. 3: Identify impact of DMP session on care staff.	ca. 60 min 5 sessions – 3 from author, 2 from care staff. Third session of author documented here. DMP Warm-up, theme development, closure	Well-being of participants, mobility, affirming identity, improving communications between people with dementia and their care staff, staff attitudes, confidence, and capacity in providing psychosocial activities	Improving mobility, affirming identity, supporting affective communication, observed 'well-being', extending range and quality of care relationships.	1
11	Daynanim [70] 2009 Country NM	Stage 6–7 senile Dementia Alzheimer type N=22 Age M=79 Sex: F=16/ M=6	Pre-post-test design	An initial investigation of the possible acute cognitive effects of a specialised exercise program on individuals with late-stage dementia.	20–30 min: unclear how many sessions Specialized movement Program: exploring kinesphere, grounding and organising using weight and space	Verbal abilities Pre-and post-test	Decrease in patients' aphasia and/or agnosia. Intervention can provide immediate actor effects on memory recall of patients with late-stage AD. After 20 min, participants appeared more organised in their speech abilities.	1
12	Duignang et al. [51] 2009 Australia Journal article	Moderate to severe Dementia N=6 Age=81–92 (86.5) Sex=NM	Pilot study	Evaluate effectiveness of Wu Tao dance therapy for people with dementia living in low-care facilities and to assess the impact on agitation. Include care staff and monitor carer stress in relation to working with clients.	1/week for 4 weeks Duration not mentioned. Wu Tao dance therapy	Agitation Reduced caregiver burden Pre- and post-test	Agitation scores reduced with 4 out of 6 residents, two scores increased (both residents had medication during pilot study).	1 –1

13	Gúzman et al. [71] 2016 England Journal article	Mild to moderate dementia N=7 Age=82–89 (85.5) Sex F=5 M=2	Multiple-base line single case study	To understand the effect of DANCIN on the mood and behav-iour of people with mild to moderate dementia.	30 min 2/week for 12 weeks Latin Ballroom dancing Danzón – psychomotor therapy framework	Mood and behaviour: (lack of sense of enjoyment, irritability, anxiety, depressed appearance, decreas-ed appetite, low self-esteem, self-directed motor activity, guilt feelings, emotional response) Baseline (3–6 weeks) 12 weeks (intervention) Follow up-12 weeks post intervention	Chances to decrease irritability or depression, increase self-esteem. Showed reduction in terms of social isolation.	1
14	Guzman-García et al. [63] 2013 England Journal article	Alzheimer (8), Fronto-temporal (2), Vascular (1), Mixed (1: AD and VaD), Parkinson (1) EG: N=13 Age=80.5+/–6.81 years Facilitators=9	Qualitative pilot study grounded theory qualitative study	Investigate the effect of introducing a dance-based psychomotor intervention using Danzon for people with dementia in care homes.	35 min, 2x/week for 6 weeks Dance-based psychomotor intervention using Danzon (Latin ballroom)	Assessing benefits of program for participants	Enhance positive emotional states ‘enjoyment’, general level of satis-faction – benefits: mental stimul-ation, socialising, behaviour, reminiscence, mobility	1
15	Hameed et al. [72] 2018 Singapore Journal article	Mild to moderate dementia N=10 Age M=69.0 (9.6 SD) Sex=NM	Protective cohort study, pre- and post-test	To study the effect of a creative dance movement program on physical, social, psychological, and overall well-being.	2 h 1/week for 6 weeks Everyday Waltzes creative dance movement programme	Physical, social, psychological, and overall well-being.	Except for one of 13 items all had improved pre to post intervention in patients and caregivers. Not statistically relevant.	1
16	Hamill et al. [77] 2012 England Journal article	Moderate to severe dementia N=11, of these N=7 participated actively Age of N (7) 77–86 (81.5) Sex: F=6/ M=1 Family caregivers N=7	Feasibility pilot study	To explore the effects of a circle dance group therapy on people with demen-tia, and their carers. 1. Feasibility? 2. Does it have a positive impact on social interaction/ engagement, mood, QoL, and cognition? 3. Does is have positive effect on carer’s health and and coping?	45 min/week for 10 weeks Therapeutic circle dancing, integrative intervention incorporating from developmental psychology, body-oriented theory, dance therapy and neuropsychology.	Social interaction, engagement, mood, QoL, and cognition Caregiver health and coping Pre-and post-test	Positive impact on participants general well-being and mood, including improving people’s concentration and communication with others.	1

17	Ho et al. [38] 2020 Journal article	Very mild-mild Dementia N=204 (Randomised into 3 groups) Age=79.0 (SD 8.0) Sex: F=81.9%	Single blind, 3-arm RCT: DMT, stretching and exercise, no intervention RCT	Examining the psychophysiological effects of dance movement therapy and physical exercise for older adults with dementia.	24 h/12 weeks EG: DMT CG1: stretching and exercise. CG: no intervention	Psychosocial well-being (mood, loneliness, depression), daily functioning, neurocognitive assessments (cognitive functioning, memory recall)), salivary cortisol measures Baseline (1 week prior), post intervention (3 months after baseline), follow up 6 months, and follow up 12 months.	DMT group showed significant decreases in depression, loneliness, negative mood, improved daily functioning, and diurnal cortisol slow. Daily functioning and cortisol slope remained after 1 year follow up. The exercise group of matched intensity shows no significant effects on the outcomes.	1
18	Hokkanen et al. [73] 2003 Finnland Journal article	Moderate to severe Alzheimer's N=4 Age=NM Sex=NM	Pre-and post-test pilot study	To see improvement on verbal and cognitive level or alleviate behavioural symptoms of patient.	30–45 min 1/week for 4 months – 16 DMT sessions	Verbal, cognitive and behavioural symptoms Baseline (1 week prior), 1 week during and 4 weeks following	Favourable effects on language abilities (not statistically relevant), no change cognition or behaviour.	1 0
19	Hokkanen et al. [81] 2008 Finnland Psychology/DMt Journal article	Alzheimer (14), Vascular Dementia (8) Undefined (7) N=29 EG=19 CG=10 Age EG: 79.9+/–7.7 CG: 84.5+/–3.4 Sex: 76% female N=29	Randomized controlled study	To test whether DMT can improve patients' cognitive level or behaviour.	30–35 min 1/week x9. DMT (warm-up, theme development, closure)	Cognition and behaviour (+Memory recall, self-care, visuospatial ability, and planning) Double Baseline (1 week prior, and before start of intervention) Week 5 and 8 Week 13 (post-intervention)	Improvement of visuospatial ability and planning, memory no effect. Effects on cognition and self-care abilities.	1 0
20	Koh et al. [74] 2001 Singapore Journal article	Mild to moderate dementia N=35 Age=81 (6.9 SD) Sex Female=22 Male=13	Quasi-experimental design	Examines the efficacy of the use of creative dance intervention for persons with mild to moderate dementia, living in the community.	1 h/week for 8 weeks. Creative dance Intervention	Functional mobility, Quality of Life, Well-being, Caregiving stress Pre and post Intervention	Overall improvement in all the domains. Statistically significant in QoL, and well-being	1

21	Kowarzik [64] 2006 UK Book chapter	Dementia (all but one) N=6 Age= Late seventies, early eighties (80) Sex Female=4 Male=2	Qualitative program evaluation	Providing movement and communication for clients and providing practical training sessions.	12 weeks	Engagement in activities, mobility, participation in songs, non-verbal and verbal communication, body posture and expression of moods. Baseline Week 6 Week 12	Moments of self-expression, fuller and more varied forms of expression. Care workers able to build relationships to clients which positively influenced their care work and ultimately job satisfaction.	1
22	Lyons [78] 2019 UK PhD Thesis	N=9 Diagnosis of dementia: Alzheimer: 3 Vascular: 4 Uncertain/not specified: 2 Age: over 65 years Age M: 82.25 Sex: F=6/ M=3	Mixed-method research	Examining a novel approach (MT and DMT) in a unique context (community center) asking: What is the value of a particular community-based MT and DMT group for older adults with dementia?	1 h/week for 10 weeks in total (two blocks of 5 weeks). DMT and MT	Depression and significant moments Week 0, week 5, week 10 Qual: ongoing Qual: Video recording, Arts-based reflective tool, personal reflection & clinical supervision. Quant: Cornell scale for Depression in Dementia	Significant moments: Emerging themes 'making connections' 'Acknowledging grief and loss' and 'Growth and empowerment'. Reduction of depression over course of study in 5 out of 6 measured. No follow up effect measured.	1
23	Nyström & Lauritzen [65] 2005 Sweden Journal article	Dementia N=7 Age=over 70 years (75) Sex: F=6/M=1	Inductive video analysis	To explore not the limitations but the capacity of the demented person to communicate under conditions that differ from the everyday life of the care institution.	1/week for 10 weeks DMT	Forms of communication by looking at the use of body movements, free dance movements, speech and singing	Found that communication can be rich and varied in expression. Speech dialogue, song-and-music dialogues, movement fantasy	1
24	Smith et al. [66] 2012 UK Project report	Dementia N=12 Age=NM Sex=NM	Pilot study project analysis	1. To explore and understand more about dance as a mechanism for working with people with dementia. 2. To consider the impact on QoL, social interaction and communication with each other and their carers. 3. Application of finding?	1/week for 6 weeks Taught movement, reminiscence, free movement. With overall theme: 'what does dance mean to you?'	Quality of life, social interaction (socialising) and communication with each other and carers. (Reminiscence Insight into personhood Confidence)	Familiarity and sense of belonging developed, and participants became increasingly confident with the movement. The techniques used reminiscence and embodied movement allowed insights into their personhood.	1

25	Wang [67] 2019 USA Thesis	Moderate to advanced Dementia N=4 Age=76–79 (77.5) Sex: Female=4	Comparative observation during and after intervention	To discuss the changes in living quality and emotional expression, as well as impacts on cognitive ability and physical performance. For patients with dementia through dance movement therapy and the effects on dementia caregivers.	1/week, 8 sessions 45 min. DMT circle dance (warm-up, theme development, closure)	Living quality, emotional expression, cognitive ability, physical performance, impact on caregivers) (QoL, Body movements, Emotional connection Communication Care relationship)	All smiled more often during the intervention, improvement of mood, concentration, social interaction, increased communication, moments of emotional connections. Improved relationship between staff and participants. At least half had more body movements in their daily lives.	1
26	Wu et al. [68] 2015 Journal article	Alzheimer's dementia (6), vascular dementia (3), unknown dementia (2) N=11 Age=84+/–5 Sex: F=9/M=2	Qualitative data cross-over pilot clinical trial	Qualitative analysis of PLIE program in clinic	40 min x3/week for 18 times then switch to control PLIE (preventing loss of independence though exercise) Tai-Chi, Feldenkrais, Yoga, DMT.	Functional, emotional and social changes (Body awareness Movement memory Sharing personal stories Socialising Positive response)	1. Functional: increased body awareness, movement memory and functional skill. 2. Emotional: acceptance of resting, sharing personal stories and feelings, positive attitude towards exercise. 3. Social: more coherent social interactions and making friends.	1

5.5 Results of critical appraisal (summarized in table according to study design)

Qualitative Studies Appraisal	Study ID													
Checklist Questions	[60]	[61]	[75]	[76]	[62]	[20]	[63]	[77]	[64]	[78]	[65]	[66]	[67]	[68]
Is there congruity between stated philosophical perspective and research methodology?														
Is there congruity between the research methodology and the research question or objectives?														
Is there congruity between the research methodology and the methods used to collect data?														
Is there congruity between the research methodology and the representation and analysis of data?														
Is there congruity between the research methodology and the interpretation of results?														
Is there a statement locating the researcher culturally or theoretically?														
Is the influence of the researcher on the research, and vice-versa, addressed?														
Are participants, and their voices, adequately represented?														
Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body?														
Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data?														

Legend: green=yes, yellow=maybe, red=no, grey=not applicable. Yellow study ID shows qualitative study, orange study ID =mixed-methods study, hence also represented in quasi-experimental studies appraisal

Quasi-Experimental Studies Appraisal	Study ID											
Checklist Questions	[69]	[75]	[76]	[20]	[70]	[49]	[71]	[72]	[77]	[73]	[74]	[78]
Is it clear in the study what is the 'cause' and what is the 'effect'?												
Were the participants included in any comparisons similar?												
Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest?												
Was there a control group?												
Were there multiple measurements of the outcome both pre and post the intervention/exposure?												
Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analysed?												
Were the outcomes of participants included in any comparisons measured in the same way?												
Were outcomes measured in a reliable way?												
Was appropriate statistical analysis used?												

Legend: green=yes, yellow=maybe, red=no, grey=not applicable. Blue study ID=quasi-experimental study, orange study ID =mixed-methods study, hence also represented in qualitative studies appraisal

RCT Study Appraisal	Study ID			
Checklist Questions	[79]	[80]	[38]	[81]
Was true randomisation used for assignment of participants to treatment groups?				
Was allocation to treatment groups concealed?				
Were treatment groups similar at the baseline?				
Were participants blind to treatment assignment?				
Were those delivering treatment blind to treatment assignment?				
Were outcomes assessors blind to treatment assignment?				
Were treatment groups treated identically other than the intervention of interest?				
Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analysed?				
Were participants analysed in the groups to which they were randomised?				
Were outcomes measured in the same way for treatment groups?				
Were outcomes measured in a reliable way?				
Was appropriate statistical analysis used?				
Was the trial design appropriate, and any deviations from the standard RCT design (individual randomisation, parallel groups) accounted for in the conduct and analysis of the trial?				

Legend: green=yes, yellow=maybe, red=no, grey=not applicable. Dark blue study ID=RCT study

Case Report Appraisal	Study ID
Checklist Questions	[82]
Were patient's demographic characteristics clearly described?	
Was the patient's history clearly described and presented as a timeline?	
Was the current clinical condition of the patient on presentation clearly described?	
Were diagnostic tests or assessment methods and the results clearly described?	
Was the intervention(s) or treatment procedure(s) clearly described?	
Was the post-intervention clinical condition clearly described?	
Were adverse events (harms) or unanticipated events identified and described?	
Does the case report provide takeaway lessons?	

Legend: green=yes, yellow=maybe, red=no, grey=not applicable. Pink study ID=case report

5.6 Assessment tools and time of measurement matched to frameworks

OF	ICF	Method of measurement and study ID	Time of measurement
Physical	Body Functions	Standard goniometry [82]	0, 6, 12 weeks
	Body Functions	Motor strength of lower extremity manual muscle testing and muscle tone using Modified Ashworth Scale [82]	0, 6, 12 weeks
	Body Functions	Light touch sensation of the lower extremity [82]	0, 6, 12 weeks
	Body Functions	Tinitti Assessment Tool (POMA) measures gait and balance abilities [82]	0, 6, 12 weeks
	Body Functions	Berg Balance Scale (BBS) test assesses standing and dynamic standing to predict risk of falls [82]	0, 6, 12 weeks
	Body Functions	Timed Up and Go (TUG) test: gait-based functional mobility to predict falls [82]	0, 6, 12 weeks
	Body Functions	Stabilometric and postural platforms (checking body balance in all positions) [79]	1, 12 weeks
	Body Functions	Balance AND Gait: Get Up and Go Test [75]	0, 12 weeks
	Body Functions	Stop Walking when Talking test [75]	0, 12 weeks
	Body Functions	One-leg balance test [75]	0, 12 weeks
	Body Functions	Activities-specific Balance Confidence (ABC) Scale [75]	0, 12 weeks
	Body Functions	6-metre gait speed was used to represent functional capacity [74]	0, 8 weeks
	Activity/ Participation	Functional Independence Measure to measure functional ability (includes self-care, mobility, communication, and cognition and used to measure the burden of care over time) [82], [74]	0, 8 weeks 0, 6, 12 weeks
	Activity/ Participation	6-MWT measures submaximal aerobic capacity using walking distance as prime measurement [82]	0, 6, 12 weeks
	Body Functions	CONFbal scale (to measure balance confidence of participants in their daily living activities). Greater balance confidence is related to better postural performance [74]	0, 8 weeks
	Activity/ Participation	ADCS-ADL: Participants physical function was assessed with Alzheimer's Disease Cooperative Study – Activities of Daily Living (ADCS-ADL (assesses functional ability in 23 daily activities based on informant report) [69]	0, 18, 36 weeks
	Activity/ Participation	GDLAM: Autonomy Protocol of the Latin American Group for Maturity (5 tests: walks, rising from sitting different variations, putting on/off a t-shirt, circuit) [79]	0, 12 weeks
	Activity/ Participation	Self-Care Subscale of Observation Scale for Geriatric Patients (NOSGER) [81]	–1, 0, 5, 8, +1 week
	Activity/ Participation	SLUMS test (Louis University Mental Status) to test: orientation, memory, attention, and executive functioning [82]	0, 6, 12 weeks
	Activity/ Participation	IADL: Instrumental activities of daily living scale. (Assess cooking, doing housework, taking medications) self-report and response from caregivers [38], [81]	–1, 3 weeks, +6, +12 months –1, 0, 5, 8, +1 weeks
	Activity/ Participation	10-Meter Walk Test correlates with functional ability, balance confidence, potential for rehabilitation and predicts falls or fear of falling [82]	0, 6, 12 weeks
	Activity/ Participation	Short Physical Performance Battery (SPPB) (includes chair stands, tandem balance testing, and walking speed). Three additional Items from Senior Fitness Test (SFT) were added to assess flexibility and mobility [69]	0, 18, 36 weeks

	Body Functions	NPI: Neuropsychiatric Inventory (144-point informant-based questionnaire assessing 12 behavioural domains including frequency, severity, and impact on caregiver) [73], [69]	–1, 1, +4 weeks 0, 18, 36 weeks
	Activity/ Participation	Comparative observation (during and after intervention) and communication with care staff [66]	Observation during and after intervention
	Activity/ Participation	Video tape recording, Dementia Care Mapping, care-staff questionnaire [20]	Observation of intervention
	Activity/ Participation	Observation, interviews [63]	Observation during and interviews after intervention.
	Activity/ Participation	Observation by researcher using observational framework, video recording, narrative tape recording, notes from trainee care workers, therapist observation [64]	Observation and video recording by external researcher: 0, 6, 12 weeks. Other throughout intervention time.
	Activity/ Participation	Observation, interviews after six-week intervention about positive and negative features of intervention, these were audio recorded and transcribed in accordance with grounded theory methodology, follow up confirmatory interview on derived themes [63]	After Intervention block
	Activity/ Participation	Log entries by exercise instructors (organised in four categories), Narrative reports by instructor after each class and home visits, questionnaires of care givers through phone calls, video recordings, observation of research assistants, field notes [68]	Data collected throughout Intervention block
Physical/ emotional	Body Functions	DMAS-17 contains items related to mood and behaviour relevant to study, takes 15 min. (Includes: self-directed motor activity, sleep, appetite. Psychosomatic complaints, energy, irritability, physical agitation, anxiety, depressed appearance, awareness of emotional state, emotional responsiveness, sense of enjoyment, self-esteem, guilt-feelings, hopelessness/ helplessness, suicidal ideation and speech) [71]	0, 12, +12 weeks
	Body Functions	12-Item Neuropsychiatric Inventory [38]	–1, 3 weeks, +6, +12 months
Cognitive	Body Functions	Digit Span test (DST), part of Wechsler Adult Intelligence Scale (assess short-term and working memory of respondents) [38], [80]	–1, 3 weeks, +6, +12 months 0, 6, +6 weeks
	Body Functions	Test: ask patient the colour of an object followed by the identity of the object. The follow up test does the same but includes different colours or objects [70].	pre-and post-intervention
	Body Functions	Word List saving score [81]	–1, 0, 5, 8, +1 weeks
	Body Functions	Clock Drawing Test [81]	–1, 0, 5, 8, +1 weeks
	Body Functions	ADAS-cog: Alzheimer Disease Assessment Scale-Cognitive Subscale (tests learning, naming, figure copying, orientation, recognition memory, and remembering) [69]	0, 18, 36 weeks
	Body Functions	MMSE: Mini-mental state examination (orientation to time, to place, registration of 3 words, language, constructive visual capacity) [59], [80], [77], [73], [81]	Please see study ID mentioned elsewhere for time of measurement.

	Body Functions	Trail making test (test requires visuospatial construction abilities such as visual search, attention, and mental flexibility, the scores reflect cognitive abilities in complex attention and executive function) [38]	–1, 3 weeks, +6, +12 months
	Body Functions	Fuld Object Memory Evaluation (asked to identify ten unrelated daily items from an opaque bag by touch and vision and verbally repeat its name thereafter). With several recalls (30s intervals) [38]	–1, 3 weeks, +6, +12 months
	Activity/ Participation	Observation, interviews after six-week intervention about positive and negative features of intervention, these were audio recorded and transcribed in accordance with grounded theory methodology, follow up confirmatory interview on derived themes [63]	Post Intervention block.
	Activity/ Participation	Tracked observation, journaling, reflection after groups, movement coding-sheet (drawing on Laban Movement Analysis), video recording [60]	Observation during intervention.
	Activity/ Participation	Observation, interviews after six-week intervention about positive and negative features of intervention, audio recorded and transcribed in accordance with grounded theory methodology, follow up confirmatory interview on derived themes [63]	Post Intervention block.
	Activity/ Participation	Observation diary by researcher, reflections of dance artist and care staff member, staff observation sheets and journals, interviews, and discussions with a third of participants and their caretakers [66]	Observation during and after intervention
Cognitive/ cultural	Activity/ Participation	Video tape recording, Dementia Care Mapping, care-staff questionnaire [20]	During and after intervention session.
	Activity/ Participation	Observation by researcher using observational framework, video recording, narrative tape recording, notes from trainee care workers, therapist observation [64]	Observation and video recording by external researcher: 0, 6, 12 weeks. Other throughout intervention time.
	Activity/ Participation	Video analysis and observational assessment tool [65]	Observation during intervention session.
	Activity/ Participation	Observation diary by researcher, reflections of dance artist and care staff member, staff observation sheets and journals, interviews, and discussions with a third of participants and their caretakers [66]	Observation during and after intervention
	Activity/ Participation	Comparative observation (pre and post intervention) and communication with care staff [67]	Observation during and after intervention
Emotional	Body Functions	Cohen-Mansfield Agitation Inventory (CMAI) [51]	Pre- and post-intervention block
	Body Functions	Parts of DMAS-17 [71]	0, 12, +12 weeks
	Body Functions	Geriatric Depression Scale (GDS), translated and verified Chinese version [80], [38]	0, 6, +6 –1, 3 weeks, +6, +12 months
	Body Functions	Cornell Scale for Depression in Dementia (CSDD) [78]	0, 5, 10 weeks
	Body Functions	The de Jong Fierveld Loneliness Scale. 6-Item, 3-point self-reported scale [38]	–1, 3 weeks, +6, +12 months

	Body Functions	RAID scale: the Chinese RAID (measuring over past 2 weeks, 18 Items of four domains: worry, apprehension and vigilance, motor tension and autonomic hypersensitivity) [80]	0, 6, +6 weeks
	Body Functions	Visual Analogue Mood Scale (8 Item, 11-point) (assessed positive mood (relaxed, energetic, delighted) and negative mood (worried, nervous, tired, anxious) over the past week [38]	–1, 3 weeks, +6, +12 months
	Body Functions	Monitoring progress sheets and part of QoL questionnaire [77]	After each intervention session.
	Body Functions	Observation, interviews after six-week intervention about positive and negative features of intervention, audio recorded and transcribed in accordance with grounded theory methodology, follow up confirmatory interview on derived themes [63]	Post Intervention block
	Body Functions	Video recording, diaries (care staff), questionnaire, photography, participant observation from external researcher [62]	Observation throughout the sessions
	Body Functions	Video analysis, arts-based reflective tool, personal reflection, and clinical supervision [78]	Observation throughout the sessions
	Body Functions	Comparative observation (pre and post intervention) and communication with care staff [67]	Observation during and after intervention
	Body Functions	Observation diary by researcher, reflections of dance artist and care staff member, staff observation sheets and journals, interviews, and discussions with a third of participants and their caretakers [66]	Observation during and after intervention
	Body Functions	Observation by researcher using observational framework, video recording, narrative tape recording, notes from trainee care workers, therapist observation [64]	Observation and video recording by external researcher: 0, 6, 12 weeks. Other throughout intervention time.
Physical/ emotional	Body Functions	DMAS-17 contains items related to mood and behaviour relevant to study, takes 15 min. (Includes: self-directed motor activity, sleep, appetite. Psychosomatic complaints, energy, irritability, physical agitation, anxiety, depressed appearance, awareness of emotional state, emotional responsiveness, sense of enjoyment, self-esteem, guilt-feelings, hopelessness/ helplessness, suicidal ideation, and speech) [71]	0, 12, +12 weeks
	Body Functions	12-Item Neuropsychiatric Inventory [38]	–1, 3, weeks +6, +12 months
Integration	Activity/ Participation	Log entries by exercise instructors (organised in four categories), Narrative reports by instructor after each class and home visits, questionnaires of care givers through phone calls, video recordings, observation of research assistants, field notes [68]	Data collected throughout Intervention block
	Activity/ Participation/	Tracked observation, journaling, reflection after groups, movement coding-sheet (drawing on Laban Movement Analysis), video recording [60]	Observation during intervention.
	Activity/ Participation	Observation, interviews after six-week intervention about positive and negative features of intervention, audio recorded and transcribed in accordance with grounded theory methodology, follow up confirmatory interview on derived themes [63]	Post Intervention block. (Week 6)
	Activity/ Participation	Observation diary by researcher, reflections of dance artist and care staff member, staff observation sheets and journals, interviews and discussions with a third of participants and their caretakers [66]	Observation during and after intervention
	Activity/ Participation	Video tape recording, Dementia Care Mapping, care-staff questionnaire [20]	During and after intervention session.

	Quality of Life	Participants QoL was assessed with the QOL-AS, asking similar questions to individual and caregiver [69]	0, 18, 36 weeks
	Quality of Life	Observation recorded after all three sessions, themes were developed via inductive analysis and cross referenced with the Quality-of-Life Movement Assessment for Persons with Advanced Dementia [61]	After each session.
	Quality of Life	World Health Organisation Well-Being Index Questionnaire (WHO-5). Combined with thematic analysis via field notes [76]	At baseline and after each session.
	Quality of Life	Alzheimer's Disease Quality of Life Inventory (ADQoL). Combining items: physical health, energy, ability to do chores and things for fun [72]	Pre and post Intervention block.
	QoL	Video analysis, arts-based reflective tool, personal reflection, and clinical supervision [78]	Observation throughout the sessions
	Quality of Life	Dementia Care Mapping [74], [20]	0, 8 weeks
	Quality of Life	Immediate feedback from participants scores from 1 "not well at all" to 10 "very well" [75]	After each intervention session.
	Quality of Life	Observation diary by researcher, reflections of dance artist and care staff member, staff observation sheets and journals, interviews, and discussions with a third of participants and their caretakers [66]	Observation during and after intervention
	Quality of Life	Observation and communication with care staff [67]	Observation during and after intervention
	Quality of Life	Video recording, diaries (care staff), questionnaire, photography, participant observation from external researcher [62]	Observation throughout the sessions
	Quality of Life	Video tape recording, Dementia Care Mapping, care-staff questionnaire [20]	During and after intervention session.
Social	Activity/ Participation	Observation by researcher using observational framework, video recording, narrative tape recording, notes from trainee care workers, therapist observation [64]	Observation and video recording by external researcher: 0, 6, 12 weeks. Other throughout intervention time.
	Activity/ Participation	Observation, interviews after six-week intervention about positive and negative features of intervention, audio recorded and transcribed in accordance with grounded theory methodology, follow up confirmatory interview on derived themes [63]	Post Intervention block. (Week 6)
	Activity/ Participation	Video analysis, arts-based reflective tool, personal reflection, and clinical supervision [78]	Observation throughout the sessions
	Activity/ Participation	Observation diary by researcher, reflections of dance artist and care staff member, staff observation sheets and journals, interviews, and discussions with a third of participants and their caretakers [66]	Observation during and after intervention
	Activity/ Participation	Log entries by exercise instructors (organised in four categories), Narrative reports by instructor after each class and home visits, questionnaires of care givers through phone calls, video recordings, observation of research assistants, field notes [68]	Data collected throughout Intervention block
	Activity/ Participation	Monitoring progress sheets [77]	After each intervention session.
	Activity/ Participation	Video recording, diaries (care staff), questionnaire, photography, participant observation from external researcher [62]	Observation throughout the sessions

	Environmental	Video tape recording, Dementia Care Mapping, care-staff questionnaire [20]	During and after intervention session.
	Environmental	Comparative observation (pre and post intervention) and communication with care staff [67]	Observation during and after intervention
Cultural	Activity/ Participation/ Body Functions	Video recording, diaries (care staff), questionnaire, photo-graphy, participant observation from external researcher [62]	Observation throughout the sessions
	Activity/ Participation/ Body Functions	Observation by researcher using observational framework, video recording, narrative tape recording, notes from trainee care workers, therapist observation [64]	Observation and video recording by external researcher:0, 6, 12 weeks. Other throughout intervention time.
	Activity/ Participation/ Body Functions	Tracked observation, journaling, reflection after groups, movement coding-sheet (drawing on Laban Movement Analysis), video recording [60]	Observation during intervention.
	Activity/ Participation/ Body Functions	Monitoring progress sheets [77]	After each intervention session.
	Body Functions	Part of DMAS-17 [71]	0, 12, +12 weeks
Cognitive/ cultural	Activity/ Participation	Video tape recording, Dementia Care Mapping, care-staff questionnaire [20]	During and after intervention session.
	Activity/ Participation	Observation by researcher using observational framework, video recording, narrative tape recording, notes from trainee care workers, therapist observation [64]	Observation and video recording by external researcher: Baseline, Week 6 and Week 12. Other throughout intervention time.
	Activity/ Participation	Video analysis and observational assessment tool [65]	Observation during intervention session.
	Activity/ Participation	Observation diary by researcher, reflections of dance artist and care staff member, staff observation sheets and journals, inter-views, and discussions with a third of participants and their caretakers [66]	Observation during and after intervention
	Activity/ Participation	Comparative observation (pre and post intervention) and communication with care staff [67]	Observation during and after intervention

5.7 Interventions matched to outcomes and frameworks

#	Intervention	Outcomes		Dunphy							ICF			
			ID	P	Co	E	S	C	I		B.F	A/P	E	Q
11	**DMT** Warm-up, theme development, closure. Emphasis on sensory stimulation (touch), use of props (scarves, balls), encouragement of spontaneous expression by participants, mirroring movements.	Engagement, connection, reminiscence, depression, growth and development, expression of moods, Quality of Life, sharing of experience, enjoyment, creativity, well-being, communication, daily functioning, cognitive functioning, stress, behaviour, memory recall, self-care, visuospatial ability and planning, effect on caregiver	[60]		X		X	X			X	X		
			[61]						X					X
			[62]			X	X	X	X		X	X		X
			[20]	X	X		X	X	X			X	X	X
			[38]	X	X	X					X	X		
			[73]	X	X						X			
			[81]	X	X						X	X		
			[64]	X	X	X	X	X			X	X		
			[78]			X	X		X		X	X		X
			[65]		X			X				X		
			[67]	X	X	X	X	X	X		X	X	X	X
2	**PLIÉ** Preventing Loss of Independence through Excercise (PLIE). Combination of Tai Chi, Feldenkreis, Yoga, Dance Movement Therapy)	Functional, emotional and social changes, Physical performance, Cognitive function, Quality of Life, Participant Function, Participant Behaviour, Participant QoL, effect on caregiver	[69]	X					X		X	X	X	X
			[67]	X		X	X				X	X		X
2	**Latin ballroom dancing Danzón** Based on Psychomotor Therapy framework and Danzón Latin Ballroom amain rhythm. Involves three dimensions: 1) motor, 2) emotional-affective, 3) cognitive. Complemented by touch, breathing, relaxation. Includes warm-up and cool down.	Mood and behaviour, enhance positive emotional states 'enjoyment', general level of satisfaction – benefits: mental stimulation, socialising, behaviour, reminiscence, mobility	[71]	X		X					X			
			[63]	X	X	X	X				X	X		
1	**Salsa dance therapy** 1st half functional training (e.g. gait training, transfer training, stair climbing..) 2nd half Salsa dancing. (Using bars and mirror four basic salsa steps). with home exercise program (updated each 4 weeks).	Function, balance and falls risk	[82]	X							X	X		
1	**Adapted ballroom dancing** Ballroom dancing adapted for seniors, warm-up, activation, relaxation	Cognition Functional autonomy Balance	[79]	X	X						X	X		
1	**Dance intervention** Intervention developed to promote gait and balance: Included warm-up (sensory and muscular awakening), coordination (exercised and improvisations with themes and exercised that stimulate balance), standard dance exercises alone, couple, or group (tango, waltz, classical), cool down, Feedback about the session.	Gait and Balance, confidence, QoL, well-being.	[75]	X					X		X			X
1	**Music-with-Movement** Music-with-movement: 5 min singing greeting, 20 min movement, 5 min singing closure. Movement part: batting balloons, waving ribbony, mimicking movements by interventionist. Emphasis on moving freely, music suggested by family members.	Cognitive function, depression, anxiety, Verbal fluency, Memory recall, Attention	[80]		X	X					X			

1	**Intuitive Movement Reembodied** Draws on Dalcroze Eurhythmics theory. Intvernetion consists of Movement Patterning, Synchronising with Music, Move-and-Pause, Contrasting Movement, themed Improvisation.	Quality of Life	[76]						X					X
1	**Specizalized movement program** Warm-up exploring kinesphere, using self-touch, including move-ments by participants. Props (balloons, large ball, stretchy band) to explore weight and space and stimulate interaction. Cool down to refocus on self.	Verbal abilities	[70]		X						X			
1	**Wu Tao dance therapy** Developed by former ballet dancer Michelle Locke drawing on Shiatsu. Combines gentle movement, music and meditation. Consists of five dances that balance the body by activating the meridians (energy channels).	Agitation	[51]			X					X			
1	**Everyday Waltzes' Creative dance movement program** Draws on dance therapy – No further explanation	Physical, social, psychological and overall well-being	[72]	X		X	X							X
1	**Therapeutic circle dancing** Pre-warm up, warum-up, 4–5 circle dances introduced and practiced (occasionally props such as scarves, small instruments are also used), movement mirrored, spontaneous and free expression encouraged, ending.	Social interaction, engagement, mood, QoL, and cognition Caregiver health and coping	[77]		X	X	X	X	X		X	X		X
1	**Person-entered creative dance intervention** Circle format, pre-greeting, warm-up, theme development, closure. Approach improvised and modified according to imputs/needs of participants.	Functional mobility, Quality of Life, Well-being, Caregiving stress	[74]	X					X		X	X	X	X
1	**Dancing** Dancing intervention with aim of improving communication, consists of: taught movement, reminiscence, free movement. With overall theme: 'what does dance mean to you?'	Quality of life, social interaction (socialising) and communication with each other and carers. Reminiscence, Insight into personhood, Confidence	[65]		X	X		X	X		X	X		X

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