



University of Dundee

The impact of art attendance and participation on health and wellbeing

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Evaluating Sistema Scotland

The impact of art attendance and participation on health and wellbeing: Systematic literature review (Work Package 1)

October 2014



This report has been commissioned by the Glasgow Centre for Population Health (GCPH), and the findings and views expressed herein do not necessarily represent those of the GCPH or its partners.

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Foreword

The arts are being increasingly used as a vehicle for social and economic regeneration within disadvantaged communities. This has seen greater scrutiny being paid to the ‘crossover’ impacts and benefits of the arts in a variety of fields. Since the early 1990s there has been an increasing focus on measuring the health impacts of participation and engagement in the arts.

Scandinavia has led the way, producing a number of high-quality studies which report positive associations between the arts and cultural participation and increased longevity and reduced morbidity. This evidence is compelling yet the pathways between cultural and arts engagement and improved health remain far from clear. The degree to which these positive associations rely on contextual factors and can translate to other populations outside Scandinavia is also unclear. Within Scotland there have been no such studies exploring the associations between arts and cultural engagement and health outcomes.

The lack of clarity around the pathways between arts and health is explained in part by much of the current evidence being generated from linkage of national health outcomes data to cultural surveys. Perhaps not enough investment has been made in longitudinal studies looking at individual and collective journeys and examining the impact of arts on intermediate variables affecting future health. The lack of clarity around pathways is especially true with respect to how targeted art-based social interventions can address inequalities. Attention needs to be paid to the mechanisms required to elevate aspects of individual and community life within disadvantaged areas to levels more in line with the rest of society.

This systematic literature review is the first of three commissioned by the GCPH designed to inform the GCPH-led evaluation of Sistema Scotland. This review broadly explores evidence over the past ten years concerning the health impacts of arts participation and engagement. The review serves as an overview of recent evidence in this field and importantly considers studies utilising national datasets, such as the described Scandinavian evidence, as well as evidence from specific art forms and interventions. This is important in assessing current theory and the quality of recent evidence underpinning the pathways described between the arts and health. This is important to ensure that the Sistema evaluation contributes new insights to this evidence base and is utilised in supporting the design and delivery of arts programmes as social interventions.

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The Impact Of Art Attendance And Participation On Health And Wellbeing

Systematic Literature Review (Work Package 1)

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Executive Summary

1. Introduction

Glasgow Centre for Population Health commissioned this systematic literature review. It focuses on the impact of arts participation on health and wellbeing.

1.1 Research Questions

- i. What is the impact of participation in arts on health and wellbeing?
- ii. What is the impact of arts attendance on health and wellbeing?
- iii. Which theories, if any, underpin the research on arts and health and wellbeing?
- iv. What outcome measures have been used in the studies examining the impact of arts on health and wellbeing?

2. Methodology

The approach to conducting the different types of reviews and to forming an evidence synthesis was based on key principles and methodological approaches of EPPI-Centre. It involved the following steps:

1. Scoping the review
2. Searching for studies
3. Screening studies
4. Describing and mapping
5. Quality and relevance appraisal
6. Synthesising study findings
7. Conclusions/recommendations

2.1 Data Extraction

- Of the 51 quantitative studies initially identified, data was extracted from 25 journal papers (including one article from another source)
- The 25 selected papers have drawn data from eight longitudinal studies, five randomised control trials, six pre-post test designs with a control group, five pre-post-test designs without a control group and one post-test design only.
- Out of 25 papers, six were low in quality, 11 moderate and eight presented strong methodological quality.

- Results from different types of empirical research were synthesised according to the type of artistic intervention, outcomes or findings and the preferred methodological approach.

3. Results

3.1 Impact of participating in arts on health and wellbeing

The effect of participating in musical activities on health and wellbeing

- Eight studies explored the effect of music participation on health and wellbeing for non-clinical populations.
- Three pre-post-test designs with control groups, three before and after intervention with no comparison, one post-test only design and one longitudinal study were conducted and yielded similar results.
- All eight studies provided evidence that active music making can play an important role in addressing health issues, by improving emotional, social and organisational wellbeing.

The effects of participating in dance on health and wellbeing

- Four papers investigating the impact of participating in dance on health and wellbeing were identified.
- Two studies involved randomised control trials undertaken with elderly participants from different European locations and two investigations adopted the pre-post test design with an equivalent control group.
- Findings were inconsistent, but overall suggested that creative engagement in dance increases the physical wellbeing of adolescents and elder people.
- Results suggested that dance was of particular benefit for females.

The effect of participating in creative writing on health and wellbeing

- The literature identified two randomised control trials exploring the effects of creative writing on health and wellbeing.
- The findings underscored the potential of creative writing to reduce depressive symptoms in older adults, improving emotional and social wellbeing.
- Based on both studies, creative writing can be recommended to older people, in particular females with a clinically significant level of depressive symptoms.

The effect of participating in handicrafts activities on health and wellbeing

- The literature review identified one pre-post-test design with a control group and one longitudinal study interested in analysing the importance of taking part in handicrafts for health and wellbeing.
- The studies showed that creative engagement in handicrafts had a positive effect on emotional and social wellbeing, improving quality of life of elderly people.

The effect of participating in drama on health and wellbeing

- Only one before and after intervention design focused on the positive effects of drama on health and wellbeing
- The results suggested that drama has the potential of improving social wellbeing especially within the academic setting.

3.2 Impact of arts attendance on health and wellbeing

- Six large scale longitudinal studies and one randomised control trial investigated the effect of art attendance on health and wellbeing.
- All studies continued the research into the physical and emotional benefits of art attendance as a distinct form of leisure, social and/or cultural activity.
- Three longitudinal studies explored the link between leisure and/or social engagement and depression in later life.
- Greater attendance was a significant protective factor against depression, playing an important role in mental health in later life.
- The relationship between art attendance and depression was found to be related to the severity of the baseline depressive symptoms where increased attendance levels could predict improvements in depressive symptoms.
- Three longitudinal studies and one randomised control trial presented evidence that attendance at cultural events is associated with better survival, longevity and self-rated health;

3.3 Outcome measures used in the studies examining the impact of arts on health and wellbeing

- Of the 25 studies included in the present review, four did not specifically define the measures.
- 10 studies reported a measure of depression, seven included a measure of quality of life, four studies reviewed included a measure of impairment, four papers focus on measuring anxiety and self-esteem, four papers were interested in assessing the cognitive functioning and social support was examined in three published articles.
- Depression was assessed in 10 out of 21 one studies.
- The Geriatric Depression Scale (GDS) and the Center for Epidemiologic Studies Depression Scale (CES-D) were the most commonly used instruments, selected for administration in eight studies.

3.4 Theories underpinning the research on arts and health and wellbeing

- All theories mentioned were classified as informing the research

- Eight out of 25 studies mentioned their theoretical underpinning, with intervention studies being significantly more likely to explicitly identify a theory.
- The activity theory of aging (Lemon, 1972) and the Social capital theory (Bourdieu, 1986) was used in four studies.
- Other theories were as follows: Self determination theory (Ryan and Deci, 2001), Life review and reminiscence theory (Butler, 1963), Buffer model of leisure and health (1993), Flow theory (Csikszentmihalyi, 1990).

4. Discussions

4.1 Summary of findings

- In all six areas of artistic expression reviewed here, there were some indications that art has significantly positive effects on health and wellbeing.
- Grey literature was not included and there remains a possibility that some reports or book chapters may have been overlooked.
- Seven studies looked at attendance compared to 18 that studied the impact of creative participation on health and wellbeing.
- Four studies explored the impact of arts attendance and participation within the work environment, five studies included children and young people with the remaining 16 papers focusing on elderly population.
- The strongest evidence was recorded in relation to the impact of various forms of musical expression where the large numbers of studies were found.
- A limited number of studies were informed by conceptual frameworks and longitudinal studies were rare
- The effect of art attendance and participation varied as a function of gender, age and baseline depressive symptoms.

Physical wellbeing and health

- Evidence of the preventive health benefits of dance was compelling and conclusive.
- Drumming, choirs or passive music listening also played an important role in addressing health issues.
- Art attendance lead to an increase in the levels of general daily activity which in turn had a positive effect on physical wellbeing and improved survival rates.

Emotional wellbeing and mental health

- Involvement in music initiatives was particularly important in counterbalancing mental wellbeing difficulties, decreasing the risk of low mood and anxiety.
- Dance provided the mental health benefits associated with improved self-esteem and confidence and protected against the harmful consequences of stress.
- Creative engagement in handicrafts activities had a positive effect on emotional wellbeing, and thus on the quality of life of elderly people.
- Creative writing and cultural attendance had the potential to reduce depressive symptoms and improve emotional wellbeing.

- A particularly interesting question was whether interventions require tailoring to individuals who have a premorbid history of depression.

Social wellbeing

- Assessing social wellbeing was of secondary importance for the studies included in this review.
- Participating in organised leisure activities like music, drama and creative writing lead to more opportunities to obtain social support having the potential to improve social inclusion both at school and in the community.

4.2 Summary of methodological critiques

- Only five of the quantitative studies used random allocation to intervention and control groups and only two studies mentioned an ‘intention-to-treat’ analysis.
- Overall, the methodological quality was rather low with only eight trials demonstrating high quality.
- The most common methodological flaws related to study design including; sampling, the use of control groups and randomisation, lack of response rate and intervention consistency, lack of researchers' blinding and inability to blind participants, bias introduced through self-selected samples, lack of details about number and reasons for drop out/withdrawals, no psychometric properties presented for the designed instruments and insufficient reporting of procedures of data collection and analysis.

4.3 Conclusions and implications for further research

- Researchers need to consider the inclusion of robust data and evidence, larger samples, quantifiable impacts and solid standardised procedures.
- More gender balanced research is needed.
- Additional research is required to determine if the physical, emotional and social wellbeing gains can be achieved by children and young people in a diversity of settings.
- The effect of integrating art forms other than music into non-clinical settings should be also evaluated.
- Researchers need to carefully specify their definitions of art, health and wellbeing and think critically about the theoretical and empirical issues underlying their work.
- A clear sociocultural framework that incorporates an understanding of the individual's social and cultural background in a systematic fashion is also required.

4.4. Implications for policy and practice

- In programmes aimed at maintaining and promoting health and wellbeing, art interventions should be targeted at older adults within diverse community settings with equal access opportunities.
- Among people in institutions these results suggest the importance of alternative programmes of activity to complement exercise programmes that are more easily available.
- Tailoring intervention messages accordingly is a promising approach which should therefore be evaluated
- This might not be possible without appropriate funding from the government, especially if programmes are to be run over a longer period of time.

1. Introduction

Glasgow Centre for Population Health commissioned this systematic literature review.

In the main it focuses on the impact of arts participation and attendance on health and wellbeing in non-clinical populations. With this in mind, we examined the relevant research literature between 2004 and 2014, to respond to four research questions. Review of this literature revealed that arts, health and wellbeing were not always clearly conceptualised. The same applies to the terms ‘impact’ and ‘significant impact’; there are various nuances in literature from statistically measurable to perceptual. It is important to acknowledge that as this review aims to identify the evidence of impact, it is using a particular lens, which the authors of the included literature might not have used. Arts practitioners and researchers have indeed been contesting these issues for some time.

1.1 Research Questions

- i. What is the impact of participation in arts on health and wellbeing?
- ii. What is the impact of arts attendance on health and wellbeing?
- iii. Which theories, if any, underpin the research on arts and health and wellbeing?
- iv. What outcome measures have been used in the studies examining the impact of arts on health and wellbeing?

2. Methodology

2.1. Overview

The approach to conducting the different types of reviews and to forming an evidence synthesis was based on key principles and methodological approaches that have been identified and adopted by the Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre) which is part of the Social Science Research Unit at the Institute of Education, University of London (see Appendix 1 Systematic review process).

2.2. Initial Scoping Review

We undertook an initial broad exploratory scoping review to identify the nature and context of attendance and participation in the arts and their influences on health and wellbeing, and to identify the ways in which health and wellbeing has been defined.

From the identified reviews we extracted information about the types of populations, interventions, comparisons and outcomes in the included and excluded studies. We summarised and described the findings and used the results to:

- i) construct a comprehensive search strategy specific to art and wellbeing that we then used in a structured review of appropriate databases
- ii) determine inclusion and exclusion criteria for a structured review of art and wellbeing.

We undertook an explicit scoping review of reviews, looking for narrative and systematic reviews that directly related to the research question. Cochrane library, Campbell library, Database of Abstracts of Reviews of Effects (DARE), The Education Resources Information Center (ERIC), Applied Social Sciences Index and Abstracts (ASSIA), The Cumulative Index to Nursing & Allied Health Literature (Cinahl), The American Psychological Association Database (PsychInfo) and The Medical Literature Analysis and Retrieval System Online (MedLine) were searched for appropriate titles and 16 narrative and systematic literature reviews were identified. As well as extracting data about population, setting, methodology and outcomes, we were interested in exploring the various conceptualisations of health and wellbeing, as a tool for constructing robust search architecture for the systematic review. The data showed that the literature around art, health and wellbeing are diverse, involving diverse settings and populations and a wide range of conceptualisations of health and wellbeing.

The scoping initially undertaken has informed the population, setting and methodology for the present review. It enabled us to define the classifications of art forms for construction of the searches, as well as establishing what types of populations had been examined previously and the specific designs of the studies conducted in the field. The scoping review also highlighted a variety of quantitative studies (trials and longitudinal) influencing the exclusion of other qualitative investigations or cross-sectional surveys (see Appendix 2: Scoping review).

2.3. Criteria for considering studies

To address the review questions we included studies meeting the following criteria:

Types of studies

- published in peer reviewed journals between 2004 and 2014 (book chapters, dissertations and grey literature were excluded)
- collect quantitative data through longitudinal studies or randomised controlled trials with measurement over time
- have an explicit, valid and reliable methodology
- qualitative studies and cross-sectional surveys were not included

Types of population

- non-clinical populations, including whole populations (e.g. census)

- population level data

Types of interventions

- Studies had to include participation or attendance at any of the following arts activities: art, dance, craft, design, sculpture, music, drama, theatre, visual arts, poetry, creative or expressive writing. Cultural attendance was also considered.

Types of outcome

- Outcomes had to focus on mental or physical health: including wellbeing, psychological or emotional health, quality of life, physical fitness, survival, mortality or morbidity
- Outcomes could be questionnaires examining mental health outcomes such as anxiety, depression, quality of life or wellbeing, population level census data or objective measures of fitness such as vo2max or endurance measures

2.4. Searching for studies

A search strategy was designed based on the research questions, identification of key search terms and relevant databases, informed by the scoping review. Four databases most relevant to the area were systematically searched, namely Medline, Cinahl, ASSIA and PsychInfo. The terms included subject headings and their synonyms specific to each database. In order to create a more comprehensive systematic review and include the most relevant studies, we have conducted an additional search using the key words “culture” or “cultural”. We also used information from the “help” section of each examined database, and consulted one experienced librarian to assist with construction of search architecture. All the titles identified were merged into RefWorks Web Based Bibliography Management Software (see Appendix 3: Search terms and combinations).

2.5. Data Collection

Titles were screened against the inclusion criteria developed when scoping the review. This helped to avoid hidden bias, by having clear consistent rules about which studies were used to answer the above research questions. By appraising each study against the same criteria and recording the results, the basis for the review’s conclusions were made transparent.

Study selection was accomplished through three levels of study screening. At level 1 and 2 screening of titles was undertaken followed by an in depth review of abstracts relevant to the research questions.

One reviewer screened titles and excluded obviously irrelevant titles. Two reviewers then independently screened the abstracts of publications according to inclusion criteria. Both authors were not aware of each other’s search process and results prior to the agreement analyses.

Any disagreements regarding study eligibility were resolved through discussions until consensus was reached regarding the inclusion or exclusion of each article. Full papers were then obtained for all studies accepted at level one and for any citations for which a determination could not be made from the abstract. Relevant full-text articles were assessed for inclusion and data was extracted accordingly. For level three, screening, inclusion required that the studies involved a longitudinal follow-up assessment based on art attendance and/or participation. Due to this criterion, several otherwise interesting cross-sectional publications had to be excluded. We did not include case series and cross-sectional studies as these designs are not ideal to identify determinants of health and wellbeing. Lack of over-time data also made it impossible to see how long the effects of an arts programme persist.

The twenty one selected papers have drawn data from five longitudinal studies, four randomised control trials, six pre-post test design with a control group, five pre-post-test designs without a control group and one posttest only analysis. (see Appendix 4: The search strategy flow; Appendix 5: Type of studies included in the review).

2.6. Assessing study quality

Methodological quality was assessed using the quality assessment tool for quantitative studies designed within The Effective Public Health Practice Project (Thomas et al., 2004)

(See Appendix 6: Quality assessment tool). The tool examines eight domains (selection bias, design, confounders, blinding, data collection, withdrawals and drop outs, integrity and analysis). Two reviewers made an independent overall assessment of study quality based on the above criteria, and assigned studies to categories of strong, moderate and low quality. Out of 25 papers, six were low in quality, 11 moderate and eight presented strong methodological quality (see Appendix 7: Recording table for EHPP quality assessment tool for quantitative studies; Appendix 7.1: Recording table for EHPP global quality assessment tool).

The most common methodological flaws were as follows:

- Limited to a pre-intervention and post-intervention comparison within the treated groups, with limited or no control groups available for comparison
- Sample size too small for making proper statistical inferences
- Lack of response rate
- Intervention consistency not measured
- Lack of adequately blinded studies
- Lack of details about number and reasons for drop out/withdrawals
- Intention to treat analysis performed in only 2 studies
- No psychometric properties presented for the researcher-designed instruments
- No differential analysis for specific type of arts
- No consideration of the potentially negative impact of the arts

2.7. Synthesising study findings

Extracted data included study date and location, design, participant characteristics, intervention description, variables, outcome measures, findings and theoretical considerations. We used the approach of Narrative Empirical Synthesis (EPPI-Centre 2007) to bring together the results of the mapping exercise to provide an accessible combination of results from individual studies in structured narratives summary tables. Results from different types of empirical research were synthesised according to the type of artistic intervention, outcomes or findings and the preferred methodological approach.

3. Results

The reporting of the results included a brief discussion of each study included in the review followed by a summary of the main findings, findings that need to be interpreted in the light of several methodological limitations.

3.1. Impact of participating in arts on health and wellbeing

3.1.1. The effect of participating in musical activities on health and wellbeing

Eight studies explored the effect of music participation on health and wellbeing for non-clinical populations. Four pre-post-test designs with control groups, three before and after intervention with no comparison and one longitudinal study were conducted and yielded similar results.

3.1.1.1. Playing a musical instrument

Creech et al (2004) investigated the relationship between active music making and subjective wellbeing with 500 older British people aged 43-93years old. Data were collected from three examples of community musical involvement, including a wide range of group musical activities like steel pans, guitars, ukulele, recorder, keyboards and song writing. The control groups comprised of adults with the same characteristics attending classes other than music. The CASP-12 standardised measure of quality of life and the Basic Psychological Needs Scale were completed by all participants during the second week of the project and nine months later. The intervention group reported statistically significant improvements in their emotional wellbeing (positive outlook on life, autonomy and control) and social wellness (positive social relationships, competence and a recognised sense of accomplishment).

In Japan, Toyoshima et al (2011) conducted a study looking at the physiological and psychological effects of creative art activities. 57 college students aged 19-26 were divided in four groups and participated in a 30-minute session of one of the following creative activities: piano playing, clay modelling, calligraphy or remained silent as control. The outcome measures included the endocrine secretion (salivary C levels) and psychological test scores (State-trait Anxiety Inventory). The psychological and physiological stress-reducing effects of creative engagement were demonstrated. Piano playing was significantly more effective than other activities at lowering the stress levels whereas the reduction in anxiety was similar for all three artistic forms.

One longitudinal study explored how participation in music making is related to change in physical and mental health in older women age 80-87 years old. Liddle et al. (2012) report the results from the Australian Longitudinal Study on Women's Health, considering the relationship between painting pictures and playing a musical instrument and social activity, social support, health status and health-related quality of life. A battery of instruments including a social activity measure, changes in instrumental activities of daily living, memory complain questionnaire and the Short Form Health Survey (SF 36) Quality of Life questionnaire were administered at baseline and three years follow up. The study highlights that those who stopped painting pictures or playing a musical instrument experienced significant decline in mental health related quality of life while those who started these activities experienced significant improvement in the same area.

3.1.1.2. Drumming

Drumming was shown to be beneficial in both organisational and school settings. For instance, in the USA, Maschi et al, (2012) conducted a study with the purpose of examining the influence of recreational drumming on wellbeing among social workers. A one group pre-test–post-test design was used to evaluate various outcomes among a sample of 73 social workers aged 22-51 who participated in a 10 weeks programme for recreational drumming. The intervention included recreational music-making, percussion instruments and hand-drumming techniques. The design utilized a modified version of the Session Evaluation Questionnaire and The Culturally Competent Socio-Demographic Questionnaire. The results showed that social workers that participated in the recreational drumming reported a change in their self-perceived health (decreased levels of tension, stress and burn out) and social wellbeing (empowerment and connectedness).

Similar results were obtained in Australia by Wood et al, (2013). The authors described an evaluation of a drumming programme to address mental health and social wellbeing in at risk youths. The intervention ran over a 10 week period using hand drumming as musical expression. 179 students completed the Rosenberg Self-Esteem Scale and an evaluation questionnaire whereas several teachers were asked to fill in the Social Development Programme Evaluation and additional written feedback. Both emotional (self-esteem and enjoyment) and social wellbeing (feeling supported and valued, being part of the team, learning new skills, willingness to improve social relationships and successfully achieving a group task) were improved for students taking part in the programme. Teachers also reported fewer behavioural incidents and fewer half-day absences. Observed teacher-reported benefits included confidence, sense of pride, belonging and group cohesion.

3.1.1.3. Choirs

Using a social capital approach, Hampshire and Matthijssewe (2010) examined the effects on outcomes of 92 children (aged 9-11) from substantially different socio-economical areas of participation in three choirs. As a part of a wider UK initiative, mixed age singing groups worked together with adult choirs to become singing communities. 51 children acted as control as they did not participate in any artistic activity. A researcher-designed questionnaire measuring social and emotional wellbeing was administered to all children at baseline, eight months and sixteen months. Preliminary findings revealed that children actively participating in music were more likely than the control group to engage in other extra-curricular activities and choir participation enhanced their social wellbeing. Taking part in the choirs was also a motivating factor in learning to play a musical instrument, taking drama classes, attending scouts or guides and attending church.

Another study (Vaag et al., 2014) investigated an organisational choir singing intervention that promoted positive work environment and employee wellbeing. A total of 217 employees of a Norwegian municipality were trained and advised by professional musicians in learning to play the guitar, piano and choir vocals. 94 non-participants were used as controls in the study. Participants filled in a questionnaire concerning demographics characteristics, personality, health, engagement, commitment and psychosocial work environment at baseline and three month follow up. Compared to non-participants, female employees reported higher degrees of organisational wellbeing (job control and engagement) and self-perceived health. Among men, positive changes were observed in job demands, whereas male non-participants reported a decrease in the same area.

3.1.1.4. Other mixed musical and artistic activities

Greaves and Farbus (2006) described the results of a pre-post-test design with questionnaire-based health and social outcomes assessed at three time points (baseline, 6 months and 12 months). The research formed part of the UK evaluation of the Upstream Healthy that was designed as an intervention for elderly socially isolated people with the aim of stimulating designed creative activity and active social contact. Activities provided included exploring sound and music, singing, hand bells, visual arts, creative writing and craft work activities. Short Form Health Survey (SF 12), Geriatric Depression Scale (GDS-15) and MOS Social Support Survey (MOSSS) were completed by 172 participants between 52 and 96 years old. The initial benefits seemed to be primarily in emotional wellbeing (improved mental health and reduced depression) with perceived social support and overall health gains emerging after 12 months (see Appendix 8: The effect of participating in music on health and wellbeing).

Discussion:

All eight studies added weight to the anecdotal accounts of the effectiveness of music for health and wellbeing. This review provides evidence that active music making can play an important role in addressing health issues (Toyoshima et al 2011, Vaag et al, 2014, Maschi et al, 2012), improving emotional (Creech et al 2004, Toyoshima et al 2011, Liddle et al 2012, Greaves and Farbus, 2006, Wood et al, 2013), social (Creech et al, 2004, Hampshire and Matthijsssewe, 2010, Maschi et al, 2012, Wood et al, 2013) and organisational wellbeing (Vaag et al, 2014). The effect we found seemed to be consistent between different cultural settings, units of allocation and age groups. However there was a notable predominance of females in all research samples.

The results should be interpreted with caution as one of most important methodological limitations is the lack of randomisation. Properly conducted studies will have designed a method for ensuring a random sample of the population to be studied. Further limitations included the lack of a control group, and the relatively low sample sizes at follow up where the power to detect differences was diminished (Greaves and Farbus, 2006; Maschi et al., 2012; Wood et al., 2013). A control group would have clearly strengthened the methodological rigour. Since a control group was not utilised, causal inferences were beyond the scope of the presented data.

An additional limitation is that in one study, variables of central interest were only measured at one point (after the intervention), so it is unclear if positive effects lasted over a period of time. As Vaag et al. (2014) stated, the intervention showed promising results for incorporating cultural activities in the work environment, but further investigation using a pre–post design or randomised control trial is needed

Furthermore, Creech et al. (2004) and Wood et al. (2013) omitted to present any details about the initial response rate and number and reasons for withdrawals. Vaag's et al, (2014) study does not contain any information about the expectation effect that was likely to have produced bias in the pre-test measures. On the other hand, Hampshire and Matthijssse (2010) and Toyoshima et al, (2011) introduced the likelihood of potential bias by the lack of raters blinding for outcome assessment.

The absence of any significant psychometric assessment of the used measures was also observed. The Social and Emotional Well Being questionnaire would need to be validated further in different settings, submitted for classification and pass the review process before it can be used with confidence. Similarly, no evidence was provided by Liddle et al. (2012) regarding the psychometric properties of the Social Activity Index used in the Australian Longitudinal study. The instrument should also be investigated for culture and gender fairness, and should be tested on larger samples in future research. These measures should be used with caution and treated as outcome measures under development.

3.1.2. The effect of participating in dance on health and wellbeing

Four papers investigating the impact of participating in dance on health and wellbeing were identified. Two studies involved randomised control trials undertaken respectively with elderly participants from Turkey and Greece. Firstly, Eyigor et al, (2009) carried out an investigation into the effects of group-based Turkish folkloric dance on physical performance, balance, depression and quality of life in elderly females. 40 participants attended the eight weeks folkloric dance program while control subjects did not undertake any artistic activity. The following assessments were performed on all subjects before and after the study: Assessment of physical performance, The Short Form Health Survey (SF-36) questionnaire, depression evaluation by Geriatric Depression Scale, Balance performance, and Exercise intervention. Preliminary evidence suggested that dance could produce not only physical but also mental benefits, improving people's psychological state and quality of life. Dance was a pleasurable activity for older people that enhanced physical performance, balance and mental health.

The purpose of Movrovouniotis's et al, (2010) study was to evaluate the impact of dance on older peoples' levels of mood and anxiety. 111 older members (aged 60-91) of five different Greek communities participated in a 10-weeks traditional dancing course. The control group did not participate in any programme of dancing or exercise. The Subjective Exercise Experiences Scale, the State-Trait Anxiety Inventory and Heart rate measurement were conducted before and after the intervention. The results overall indicated that participating in Greek traditional dances improved stress, anxiety and heart rate, being also effective in mood state improvement.

Quin et al., (2007) reported the results from a pre-post-test design without a control group that was part of a larger mixed-methods study. The authors aimed to explore the physiological and psychological effects of creative dance in an adolescent population of 348 British school children with ages between 11 and 14 years old. Participants engaged in progressive dance movements for 10 weeks, attending two hours sessions every week. Physiological assessments included lung capacity, flexibility and aerobic capacity. Psychological testing measured self-esteem, intrinsic motivation and attitudes towards dance. The results highlighted an increase in all areas of physical fitness for both males and females, with females reporting the most significant improvement. No significant differences were observed for the psychological measures. Although the study showed low methodological quality, it highlighted that creative dance improved the physiological wellbeing of young adolescents.

Hui et al., (2009) conducted a pre-post-test investigation of the effects of low impact aerobic dance on the physical and psychological wellbeing of Chinese older people. A sample of 111 community-dwelling volunteers (aged 60-75) undertook a 12-weeks aerobic dance class while the control group was instructed to continue with their usual

daily activities. Assessment consisted of two parts: physical function (trunk flexibility, body mass index, waist-to-hip ratio, sit-and-stand test, lower limb endurance and strength, balance) and psychological evaluation (the Short Form Health Survey: SP-36 questionnaire). This study provided evidence that a structured dance programme was effective in improving several aspects of physical health in later life. Dance had a positive effect on heart rate, cardiopulmonary performance, dynamic balance and mobility, lower limb endurance and bodily pain. The lack of difference for the psychological outcomes was in contrast to reports of improved anxiety, mood and mental health from previous studies (see Appendix 9: The effect of participating in dance on health and wellbeing).

Discussion:

It should be noted in the reviewed studies that dance was mainly conceptualised as a form of physical activity rather than a creative art form. Without underestimating its artistic potential, findings suggested that creative engagement in dance increases the physical wellbeing of adolescents and the older adults. Since all four studies had a high female to male ratio, the significant improvements in fitness levels and the high level of motivation observed in the female participants suggest that dance is of particular benefit for females. Furthermore, three studies (Eyigor et al, 2009; Hui et al, 2009; Movrovouniotis et al, 2010) were limited to a sample of old, healthy and mostly physically active individuals, making it impossible to generalise the results to other populations. Advice and encouragement to be active, reported in all the studies, were not described in any detail. Furthermore, Eyigor et al, (2009), Hui et al, (2009) and Quin et al, (2007) ignored any information about the percentage of subjects that agreed to participate in the study before they were assigned to intervention or control groups. With only one exemption (Quin et al, 2007), the varied intensity, duration and frequency of intervention were not taken into account in data analysis. Finding a method of measuring if the intervention was provided to all participants the same way is particularly important for studies that aim to investigate the relationship between aerobic activity and its effect on physical fitness. Overall, the uncertainty in terms of the degree of engagement with the intervention received means that the results need to be considered cautiously.

3.1.3. The effect of participating in creative writing on health and wellbeing

The literature identified two randomised control trials exploring the effects of creative writing on health and wellbeing.

Firstly, Chippendale and Bear-Lehman (2012) used a randomised control trial to examine the effects of engaging in the occupation-based intervention of life review through creative writing. Forty five participants age 65 or older were recruited from four senior residences in New York City and attended an eight weeks autobiographical life review writing workshop. The control group did not receive the intervention and was not contacted during that period. The Geriatric Depression Scale (GDS) was used to measure depressive symptoms at the baseline and within a week after the completion. Non-standardized questionnaires were used to collect demographics and key covariate data including age, education level, gender, ethnicity, self-rated health, current treatment of depression, independence in the activities of daily living (ADLs)

and instrumental activities of daily living (IADLs), levels of leisure participation, and social support. The results showed that participating in creative writing had a significant positive effect on emotional wellbeing (reduced depression) promoting leisure participation and social interaction among participants.

Pot et al. (2010) described the impact of a life review course in a pragmatic randomised control trial. The authors started from the assumption that creative writing influences coping with depressive symptoms. 171 participants aged 52-81 from both rural and urban areas of Netherlands were assigned to the life review-based prevention course. The 12 sessions included sensory recall exercises, creative writing activity, and verbal exchange of experiences. 88 subjects were allocated to the comparison group and watched an educational video. Data were collected 3 months and 9 months after baseline using The Center for Epidemiologic Studies Depression Scale (CESD), Hospital Anxiety and Depression Scale, Manchester Short Assessment of Quality of Life, Mastery Scale and Reminiscence Function Scale. The intervention group reported improved emotional wellbeing (reduced depression and increased control). However, creative writing was found to be more effective for women with a relatively high level of baseline depressive symptoms (see Appendix 10: The effect of participating in creative writing on health and wellbeing).

Discussion:

These findings underscore the potential of creative writing to reduce depressive symptoms in older adults, improving emotional (Chippendale & Bear-Lehman, 2012; Pot et al, 2010) and social wellbeing (Chippendale and Bear-Lehman, 2012). Based on both studies, the activity can be recommended to older people, in particular females with a clinically significant level of depressive symptoms. The reporting was of high quality, providing information on quality dimensions such as intention to treat analysis. However, findings need to be placed in the context of the other limitations. For instance, Chippendale and Bear-Lehman (2012) conducted the trial at four different senior residences, which could have resulted in a clustering effect at each site. Furthermore, the reliability and validity of the non-standardised questionnaires was not described in the article. Pot et al, (2010) reported a 15.8 % attrition rate at follow up. Although this percentage is not extremely high, the imputation of missing values may still have distorted the results. More importantly, the reporting of blinding in both studies was generally quite poor, the most serious methodological limitation being the lack of assessors' blinding.

3.1.4. The effect of participating in handicrafts activities on health and wellbeing

The literature review identified two studies interested in analysing the importance of handicrafts for health and wellbeing. García-Martín et al. (2004) examined psychological benefits arising from the participation of elderly people in handicrafts and other organised leisure activities. The study was carried out in Spain with a

sample of 78 people using the services of a day care center with ages ranging from 50 years to 82 years. Elderly people participated in fitness exercise, handicrafts, computing, and art lessons. The following instruments were administered at baseline and eight months follow up: The DUKEUNC Scale for functional Social Support, OARS Scale of Social Resources, The adapted Older Americans Resources and Services Schedule, Life Satisfaction Index, The Geriatric Depression Scale, the Locus of Desired Control Scale, Self-efficacy Scale, Quality of Life Questionnaire and a Global Health index. The results suggest that participating in handicrafts and other leisure activities had positive effects on emotional (improved control) and social wellbeing (reduced loneliness and increased social support and social self-efficacy), indirectly affecting the perceived overall health.

Lampinen et al, (2006) reported the results from an eight-year follow-up study that examined the roles of physical and leisure activity participation as predictors of mental wellbeing among older adults from Finland. The sample included 663 men and women aged 65-84 who were interviewed both in 1988 and 1996. Data were collected using Beck's Depression Scale, anxiety scale, loneliness, self-rated mental vigour and meaning in life indicators. The leisure activity index included activities like active and passive art interests and handicrafts. At baseline, higher leisure activity showed the strongest associations with better emotional wellbeing with an indirect effect in follow-up (Appendix 11: The effect of participating in handicrafts on health and wellbeing).

Discussion:

The studies showed that creative engagement in handicrafts had a positive effect on wellbeing, and thus on the quality of life of elderly people. However both studies conceptualised handicrafts as a leisure activity and provided no evidence of its individual contribution to wellness and health.

The first paper (García-Martín et al, 2004) demonstrated moderate methodological quality as it did not include any control group and ignored valuable information about the response rate and the degree of intervention exposure. It was also not clear what type of handicrafts lesson participants attended. Further investigations should concentrate on investigating the relationships between variables, consider the effects of mediating factors and interrogate the processes by which artistic activities are so beneficial for elderly people.

In the second paper, Lampinen et al. (2006) presented the results of a longitudinal study with strong methodological quality. However, although the authors demonstrated that high leisure activity is associated with and predicted mental wellbeing, no attention was paid to baseline socio-economic status and social network or to life events during the follow-up period. Furthermore, almost all dependent and independent variables were based on one-item scales, the validity and reliability of these instruments being highly questionable. No differential statistical analysis was

performed separately according to each artistic activity that participants engaged in. It was therefore hard to tell if the recorded effect was due to taking part in handicrafts or other creative forms of expression.

3.1.5. The effect of participating in drama on health and wellbeing

Only one study focused on the positive effects of drama on health and wellbeing. Joronen et al. (2012) reported the results from a controlled before-after intervention design that tested the effect of a school-based drama programme on social and emotional wellbeing for fourth and fifth graders. 190 pupils and their parents were recruited from two primary schools in Southern Finland and purposively allocated either to an intervention group or a control group. Intervention comprised of drama stories, home activities, interactional tasks between parent and the child, and parents' evenings. Assessments were obtained at baseline and right after implementation of the programme from students and teachers using the Multisource Assessment of Social Competence Scale. The results suggested that drama had the potential of improving social wellbeing at school compared to usual schooling alone. Teachers reported students' empathy with others had improved, with low levels of antisocial behaviour, whereas students described an improvement in their social relationships and less bullying victimisation (see Appendix 12: The effect of participating in drama on health and wellbeing).

Discussion:

These findings need to be interpreted with caution as the study did not include any assessments from other school staff and parents. The paper did not provide a clear methodological description or justification relevant to the design and therefore showed low methodological quality. The context of the research was not described in adequate detail to understand all relevant elements. Key elements including demographic characteristics required for making judgements of rigour were missing. Furthermore, there were inconsistencies between reported methodology, study design and results, which made it difficult to understand the study methodology and its theoretical foundations

3.2. Impact of arts and cultural attendance on health and wellbeing

Six large scale longitudinal studies and one randomised control trial investigated the effect of art attendance on health and wellbeing.

Three longitudinal studies explored the link between leisure and/or social engagement and depression in later life. Firstly, Lee et al, (2012) aimed to examine the risk factors for depression in the elderly through a national longitudinal survey of older Taiwanese adults with a mean age of 73.44 years old. Complete data were obtained in

both 2003 and 2007 for 1481 participants. Depressive symptoms were assessed using the Center for Epidemiologic Studies Depression Scale (CES-D). Independent variables included assessment of mobility limitations, a stress index, social support scale, social activity indicator and cognitive function measured by the short portable mental status questionnaire. The leisure assessment comprised of activities including attendance (listening to the music/radio) and participation (joining group activities or playing games). The main findings revealed that engagement in leisure activities was a protective factor against the development of depressive symptoms. However, the results showed that there was no relationship between listening to music and the reduction in depressive symptoms.

Glass et al, (2006) also explored the association between social engagement and depression in the USA. The Center for Epidemiologic Studies Depression Scale (CES-D) was used to measure depressive symptoms in this survey of community-dwelling adults aged 65 years and above. 2812 participants over 65 years old were interviewed at baseline, 2321 in 1985 and 1817 provided data in 1988. Several artistic activities were included within the social and leisure activity scale (going to a movie, restaurant, sporting event or participating in social or community groups). Other independent variables included demographic characteristics, a physical activity index and health status. The paper concluded that, for participants not depressed at baseline, greater social engagement was associated with a slower rate of increase in depressive symptoms with time, independent of the age, sex, education marital status, health or physical fitness.

A similar study was conducted in France by Isaac et al. (2009). The authors investigated the association between level of social activity and late-life depressive symptoms in a community based study comprising of 1849 elder people (mean age of 73.2.) in 1999 and 463 participants in 2001. The Center for Epidemiologic Studies Depression Scale (CES-D) measured depression whereas Activity of Daily Living (ADL), Instrumental activity of Daily Living (IADL), Gospel Oak Questionnaire and The Mini-Mental State Examination (MMSE) assessed the additional independent variables. The researcher designed social activity scale asked participants to rate their attendance at club or leisure association, involvement in cultural associations or frequency of visits to cinema, theatre or other artistic activities. The findings pointed out that for individuals with case-level baseline depressive symptoms, high level of engagement in social activities was the principal factor predicting improvements in depressive mood (see Appendix 13: The effect of arts attendance on health and wellbeing).

Three longitudinal studies and one randomised control trial reported leisure and/or cultural activities as domains associated with subjective wellbeing, health or survival. Hyyppa et al., (2006) described the results of a Finnish longitudinal study examining whether leisure participation is an independent predictor of survival. 2623 women and 2464 men aged 30 years or over were followed for over 20 years. Variables covered demographic and health-related data including mental health status and self-reported overall health. Information on the extent of leisure participation was elicited with questions about cultural and sports attendance (visiting theatre, cinema, concerts,

art exhibitions, sports events or similar), cultural interests (reading books, listening to recorded music) and hobby activity (drama, singing, photography, painting, collecting, or handicraft). Mortality data were derived from the Finnish National Registry for Cause of Death. The findings revealed that subjects with the highest level of leisure participation survived significantly better than the participants who were less culturally involved. The results were significant after adjusting for age, gender, obesity, tobacco, smoking, alcohol use, self-rated health and diagnosed chronic diseases.

Similarly, Väänänen et al. (2009) conducted a prospective cohort study with the aim of exploring the link between engagement in cultural activities and main causes of mortality of domestic employees. The data were drawn from an ongoing Still Working Finnish study and consisted of 1681 women and 5864 men between 18 and 65 years of age. A multi-item scale with Likert-type response formats was used to measure engagement in cultural activities at baseline. The questionnaire included items related to the arts and cultural activities, activities in associations, societal action, reading literature, and studying. Mortality data (date and cause of death) from 1 April 1986 to 31 December 2004 were obtained from the National Death Registry kept by Statistics Finland. The results showed that high engagement in cultural activities was associated with decreased all-cause mortality and deaths from cardiovascular and external causes, independent of socio-demographic factors, biological factors, work stress, and other social factors. More specifically, high engagement in solitary cultural/ intellectual activities was associated with longer overall survival and a decreased risk of cardiovascular mortality while socially shared cultural activities were associated with a lowered risk of mortality from accidents and suicides.

Bygren et al. (2009) aimed to determine whether attendance at cinemas, theatre, art galleries, live music shows, and museums was associated with cancer-related mortality. 9,011 individuals free from cancer between 24 and 74 years old were randomly selected from the Swedish Survey of Living Conditions and followed up for 12 years. The main variable of interest was attendance at cultural events (e.g. cinema, theatre, art gallery, live music, and museum). Other measures included demographic data (age, sex, and educational attainment at time of enrolment, disposable income, and residency) and determinant of self-reported health. The results showed that better health was statistically associated with more frequent cultural attendance. More specifically, rare attendees at cultural events had higher cancer-related mortality rates than frequent attendees. However, the effect was observed only among residents of urban areas.

Using the same research setting, Bygren et al. (2009) carried out a randomized controlled trial to study the possible effects on health dimensions by fine arts stimulation in an ordinary workplace environment. Members of the local government officers' union in the health services in Sweden were invited to the experiment and 101 people registered for fine arts visits once a week for 8 weeks. They have selected

films, concerts, or art exhibitions visits, or singing in a choir being then randomized into 42 cases within the intervention 42 (40 women and 2 men, aged 48.6 years on average) and 48 controls (45 women and 3 men, aged 49.3 years on average). The main test instrument was the Swedish Version of the health questionnaire short form (SF)-36. Tests of episodic memory, saliva-cortisol and immunoglobulin were also administered before and after the experimental period. Data highlighted that attending cultural events promoted perceived physical health, social functioning, and vitality. The six other factors and the Mental Health Composite Score, episodic memory, cortisol and immunoglobulin levels did not change otherwise than among controls (see Appendix 13: The effect of arts attendance on health and wellbeing).

Discussion:

All studies continued the research into the physical, emotional and social benefits of art attendance as a distinct form of leisure, social or cultural activity. Greater attendance could reduce the risk of poor mental health often related to external mortality like accidents and suicide. Indeed, people who were actively engaged in clubs, voluntary societies, hobbies or in cultural or recreational activities seemed to live longer than people with moderate leisure participation. People with no or little leisure participation had the shortest life even after controlling for possible demographic and behavioural confounders

Furthermore, greater attendance was seen to be a significant protective factor against depression. The relationship between art attendance and depression was found to be related to the severity of the baseline depressive symptoms, where increased attendance levels can predict improvements in depressive symptoms. Different results can be explained by the way in which researchers operationalised their independent variables, concepts like art, leisure, social activity and cultural engagement being used interchangeably. Various motivations, opportunities and barriers to creative engagement can also partly justify the inconsistency in findings.

Despite the strong methodological qualities, the papers presented several weaknesses. One limitation was that the measurement of leisure, social and cultural engagement was based on ad hoc indexes composed of activities that varied in the extent to which they were creative in nature. Both artistic attendance and participation were included in the same instrument. Moreover, the authors did not perform any differential statistical analysis according to each type of activity that participants engaged with. Although Väänänen et al. (2009) conducted a high quality longitudinal study and differentiated between social and solitary cultural activities, there was no clear indication of the individual effects of attending and participating in arts. Since sensitivity analysis was not conducted, we cannot be sure what single activity was driving this association between dependent and independent variables. Furthermore, the validity, reliability and long-term stability of the leisure and cultural measures

have not yet been reported. The inferences made remained questionable. More precise measures might have led to finding stronger associations and more accurate results.

3.3 Outcome measures used in the studies examining the impact of arts on health and wellbeing

The present review has emphasized that there is no consistency in the selection of outcome measures nor is there agreement on the definition or measurement of health and wellbeing.

Of the 25 studies included in the present review, four did not specifically define the measures (Hampshire and Matthijsse, 2010; Maschi et al, 2012; Quin et al, 2007; Vaag et al, 2014). In these papers, new self-developed measures were used.

When looking at all primary and secondary outcome measurements, we observed variation in the levels of function selected for outcome measurement. 10 studies reported a measure of depression, seven included a measure of quality of life, four reviewed included a measure of impairment, four focussed on measuring anxiety and self-esteem, four were interested in assessing the cognitive functioning whereas social support was examined in three studies. Mortality data were considered in two longitudinal studies.

Within the category of generic measures, several authors reported the development of health profiles such as the Short Form 36. However, depression, a common sequela in later life, was assessed in 10 out of 21 studies. The Geriatric Depression Scale (GDS) and the Center for Epidemiologic Studies Depression Scale (CES-D) were the most commonly used instruments, selected for administration in eight studies (see Appendix 14: Standardised outcome measures).

3.4. Theories underpinning the research on arts and health and wellbeing

All theories mentioned were classified as informing the research. This suggested that researchers provided very limited descriptions of how theories were operationalised in measurement, analysis, and/or the design of interventions. In most of the cases, the theoretical framework was used to express the impact that arts activities might have without being applied to study components and measures.

Seven out of 25 studies mentioned their theoretical underpinning, with intervention studies being significantly more likely to explicitly identify a theory. For instance, Creech et al, (2004) mentioned the Self-determination theory that focuses especially on volitional or self-determined behaviour and the social and cultural conditions that promote it. From this perspective, the presence or absence of environmental conditions that facilitate the satisfaction of competence, autonomy and relatedness could be a predictor of mental health and vitality in older people. Furthermore, Pot et al. (2010) drew primarily on Butler's (1963) conceptualisation of life review, rooted in an understanding of the need to come to terms with one's past experiences. The

results of García-Martín et al, (2004) study confirmed the buffer model proposed by Coleman and Iso-Ahola (1993), where creative activities serve as a protective element against the stressing life events that elderly people have to face. Lastly, Liddle et al, (2012) used the flow theory and proposed that the optimal flow or quality of experience contribute to a sense of wellbeing particularly relevant to artistic activities. Participants' accounts revealed experiences that were characterised as 'flow', including immersion in the sensual qualities of art-making and positive attitudes towards the challenges inherent in the activity (Csikszentmihalyi, 1990).

The activity theory of ageing (Lemon et al., 1972) and the Social capital theory (Bourdieu, 1986) were used more frequently within four longitudinal studies. For instance, following Bourdieu's (1986) social capital approach, Hyypä et al. (2009), and Hampshire and Matthijsse (2010) pointed out that a real social change could only be achieved when considering the structural, economic and cultural barriers to effective participation. Social capital was also conceptualised as a source of social control, a source of family-mediated benefits, and a source of resources mediated by non-family networks. Both Lee et al. (2012) and Lampinen et al. (2006) supported the activity theory of ageing (Lemon et al., 1972), which states that artistic activities reinforce the sense of subjective wellbeing and provides a conceptual basis for the link between creative engagement and depression (see Appendix 15: Theoretical underpinnings of the studies)

4. Discussion and Conclusions

4.1. Summary of findings

Several limitations to the present study need to be considered. Firstly, the review applied specific inclusion criteria. The search strategy may not have captured all of the relevant articles. The choice of database influences the coverage of potential journal papers to be included.

This review was an attempt to bolster current knowledge on the benefits of creative engagement through the synthesis of the best available research evidence. It focused on quality empirical research, including quantitative research, and not on general forms of knowledge and insight into the impact of arts on the health and wellbeing. Comparable with most systematic reviews, grey literature was not included and there remains a possibility that some reports or book chapters may have been overlooked.

Furthermore, some of these criteria, for instance the exclusion of studies not published in English was a limitation, but this was a consequence of practical considerations. Lastly, based on the evidence identified by the review, it needs to be noted that studies did not report sufficient information to calculate effect sizes. Due to the variability in the research samples, calculating effect sizes was not a straightforward process, being often overlooked by authors. However, these limitations must be

balanced against the feasibility of processing the results of an over-inclusive systematic review.

In all six areas of artistic expression reviewed here, there were some indications that art has significantly positive effects on health and wellbeing. The strongest evidence was recorded in relation to the impact of various forms of musical expression where the large numbers of studies were found. Seven studies looked at attendance compared to 18 that studied the impact of creative participation on health and wellbeing. Four studies explored the impact of arts attendance and participation within the work environment, five studies included children and young people with the remaining 16 papers focusing on elderly population.

Furthermore, several studies included only females in their samples or the sex-ratio has been favourable to females. This lessens the general applicability of the findings. Although Väänänen's et al. (2009) study included mostly as male-dominated population and Hyypä et al. (2009) found the association lacking for women, replications using more balanced samples are needed to determine the generalizability of the findings across gender. Gender-related effects warrant further studies on the quality and effects of different type of activities separately for men and women. Indeed, little is yet known regarding for whom and under what conditions art is most effective, but we provided preliminary evidence to suggest that its effectiveness may vary as a function of gender, age and baseline depressive symptoms.

Despite these weaknesses and inconsistencies, a number of key findings emerged from the studies, and these were addressed in terms of three key dimensions: physical, emotional and social wellbeing.

4.1.1. Emotional wellbeing and mental health

Increased emotional wellbeing and better mental health was the most commonly reported benefit of arts attendance and participation. Indeed, there appears to be added value gained from art attendance and participation across artistic forms like music, dance, creative writing and handicraft activities. Involvement in music initiatives was particularly important in counterbalancing mental wellbeing difficulties, decreasing the risk of low mood, anxiety and social isolation. Dance as both a social and physical activity, reaped the mental health benefits associated with improved self-esteem and confidence and protection against harmful consequences of stress. Other studies showed that creative engagement in handicrafts had a positive effect on emotional wellbeing, and thus on the quality of life of elderly people. These types of activities minimised the exposing stressors and strengthened the sense of coherence, self-confidence and self-acceptance.

An interesting discussion revolved around the question of what is the effect of arts on depression. These findings underscored the potential of creative writing and cultural attendance to reduce depressive symptoms and improve emotional wellbeing.

Two studies concluded that engagement in art exerts a clinically relevant effect on depressive symptoms particularly for those with more depressive symptoms at the outset. The findings demonstrate that when the intervention is targeted toward older people meeting criteria for elevated depressive symptoms, reliable improvement in depression occurs, at least within a research context. Another paper assumed that the initial positive impact measured by the depression scale was more significant for participant with fewer depressive symptoms at baseline. Individuals with low depressive symptoms at baseline were more likely to benefit from various artistic activities and cultural attendance.

These inconsistent findings were attributable to a number of methodological differences between studies, including participant characteristics and definitions of art and creative engagement. Despite using the same instrument to measure depression (The Center for Epidemiological Studies Depression scale), it is important to recognise that those particular challenges associated with becoming older might influence scores on wellbeing scales. In this context, a particularly interesting question is whether interventions require tailoring to individuals who have a premorbid history of depression. The advisability of screening for elevated symptoms of depression may be an efficient way to identify those who are most likely to benefit from the intervention or other specific creative activities.

4.1.2. Physical wellbeing and health

Specific forms of creative engagement were more significant than other in improving physical health, with cardio-vascular fitness levels, improved balance and lower limb endurance being the most important outcomes. Not surprisingly, dance was the activity with the most significant effect on improving health and fitness. The evidence of the preventive health benefits of dance was compelling and conclusive. Dance was an enjoyable social activity that has been shown to provide opportunities for greater levels of aerobic or resistance exercise. Creative engagement through dance increased the physical wellbeing of adolescents and older people and through its positive impacts had an indirect effect on mental health. The most extensively researched area was music. Drumming, choirs or passive music listening played an important role in addressing health issues. Music positively impacted the health of seniors, including boosting the energy levels and alleviating stress.

Three longitudinal studies and one randomised control trial presented evidence that attendance at cultural events is associated with better survival, longevity and self-rated health. Arts attendance as a distinct form of a leisure, social and cultural activity led to an increase in the levels of general daily activity which in turn has been found

to be conducive to health maintenance and with prolonged survival in population studies. These types of activities considerably increased the likelihood of overall survival, leading especially to the avoidance of accidents, violence and suicide. Furthermore, rare attendees of cultural events could have a higher probability of dying of cancer than frequent attendees. It can be therefore concluded that abundant arts attendance predicts survival, whereas scarce artistic involvement is associated with higher risk of death. However, it is hard to infer whether activities enhance survival by virtue of providing a sense of purpose, increasing physical stamina, or reducing biochemical markers of stress. A wider range of mechanisms, both physiological and psychosocial, may be involved in the association between cultural engagement and mortality than had been previously thought. Therefore, as these studies did not provide enough evidence about the remaining residual confounding factors, the results may not generalize beyond the current research projects.

4.1.3. Social wellbeing

Assessing social wellbeing was of secondary importance for the studies included in this review. The literature has shown that few papers aim at direct social change but rather at intermediate indicators of such as raising awareness of social activity and participation. The identified literature stressed the positive effects of participation in learning new skills combined with enjoyment, feelings of accomplishment, development of a sense of morality and a strong appreciation of diversity. On the other hand, being active in cultural life and enjoying the arts could possibly lead to an improvement in two important factors underlying mental health, namely vitality and social functioning. Greater arts attendance may enhance social networks and social support, which have been linked to survival in several prospective studies.

However, while the case is strong for the connection between social wellbeing and the arts, the field is still in its infancy and more research is necessary to build the necessary evidence base.

4.2. Summary of methodological critique

Before critiquing the methodology of the reviewed studies, it is worth commending the researchers for undertaking this research as this has been a generally under-researched area with a lot of anecdotal ‘evidence’ of impact.

As Juster and Stafford (cited in Klumb and Baltes, 1999) highlighted, developing a valid and reliable scheme for appraising the domains of creative engagement is one of the most challenging tasks of the researcher. Indeed, difficulties were often encountered in operationalising the complex set of artistic activities that people engage with. Careful specification of the broader conceptualisations of arts attendance and participation combined with desirable measurement properties will permit a more informative account of the relationship between arts, health and wellbeing.

Direct comparison between studies was difficult since studies varied in sample characteristics, nature of control comparison group mode of intervention, intensity and duration of intervention, outcome measures used and length of follow-up. While all the studies focused on arts, they were heterogeneous, using different research designs and drawing on different ontological and epistemological premises.

The studies encompassed diverse populations. Some focused on selected groups of young people and employees but the majority of papers limited their samples to older adults. Only seven studies looked at attendance compared to 18 that studied the impact of participation on health and wellbeing. A limited number of studies were informed by conceptual frameworks and longitudinal studies were rare. Only five of the quantitative studies used random allocation to intervention and control groups and only two studies mentioned an 'intention-to-treat' analysis. Many of the studies were observational in nature and at best were limited to a pre-intervention and post-intervention comparison within the treated groups, with limited or no control groups available for comparison. More randomized controlled trials involving consistency in terms of the measurements used would increase the likelihood that patterns of health improvement associated with art can be demonstrated.

Current understanding of the potential benefits of art was compromised by methodological limitations. Overall, the methodological quality was rather low with only eight trials demonstrating high quality. While these studies provided some rigorous and innovative evidence, the review also demonstrated challenges related to issues of study design including sampling, the use of control groups and randomisation, lack of response rate and intervention consistency, lack of researchers' blinding and impossible to blind participants, bias introduced through self-selected samples, lack of details about number and reasons for drop out/withdrawals, no psychometric properties presented for the designed instruments and insufficient reporting of procedures of data collection and analysis. Longer term outcome, mode, duration and intensity of intervention needs further investigation.

4.3. Conclusions and Implications for further research

This review included 25 references related to effect of the arts attendance and participation on health and wellbeing. It brought to the forefront three emergent themes that reflected the documented benefits in the quantitative research literature on this subject. These outcomes highlighted the value that creative arts had on physical, emotional and social wellbeing.

However, the evidence to support these claims was moderate in quality. In order to better establish the benefits of creative engagement, it is especially incumbent upon researchers to carefully specify their definitions and think critically about the theoretical and empirical issues underlying their work. As other authors have noted,

the field would benefit from a strict adherence to methodological quality, transparent reporting and use of published guideline. More specifically, we have identified several key areas of contention, in particular the inclusion of robust data and evidence, larger samples, quantifiable impacts and solid standardised procedures.

Several issues should be considered in future studies seeking to add to the insights available from the investigations reviewed here. More research is needed into men's engagement in artistic activities. Additional research is required to determine if the gains can be achieved by children and young people in a diversity of settings. The effect of integrating art forms other than music into non-clinical settings should be also evaluated.

Furthermore, the apparent ambiguities identified earlier underscore the importance of careful analysis and the interpretation of the larger political, cultural and economical contexts in which the information was presented and understood. The relationship among arts, health and wellbeing could be also linked to the socioeconomic status, a complex concept which might exert influences on health directly or through associated behaviours. Although most studies included or controlled for some demographic data related to the existing status, the need for inquiries into such factors affecting the interpretation of the results is equally strong. Researchers need a sociocultural framework that incorporates an understanding of the individual's social and cultural background in a systematic fashion. Studies should therefore include these critical variables to improve their definitions and enhance our understanding of the effects that interactive relationships among these variables may have on research findings.

4.4. Implications for Policy and Practice

Although arts practitioners may employ theories to underpin their arts practice, few of the reviewed studies made explicit reference to theories underpinning the interventions. To make mechanisms of action clear, to clarify the contribution of specific components of the interventions and to support development of reproducible arts programmes, it is vital that researchers and those providing arts interventions select appropriate underpinning theories and make these explicit.

Few studies were methodologically strong enough to enable us to draw definitive conclusions about the effectiveness of art attendance and participation. We did find some evidence to suggest that art can be effective for wellbeing although effects tended to vary according to age, gender and symptoms of depression. Given the emerging complex multifactorial social and health issues to be addressed, policy makers and government should consider the positive role that arts and leisure programmes can play in maintaining and promoting health and wellbeing in older adults and/or employees.

It seems that public policy measures that reduce barriers to engage in leisure and cultural activities would be important interventions. In particular, opportunities for arts programmes that involve social interaction appear to be effective for maintaining

long-term health and should therefore be provided. These could be incorporated into social care and leisure policies and programmes. Such programmes should be provided within diverse community settings and should provide access to a diverse range of arts and leisure opportunities, irrespective of socio-demographic status and previous exposure. Among people in institutions these results suggest the importance of alternative programmes of activity as a complement to exercise programmes that are more widely available.

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Appendix 1: The Systematic review process

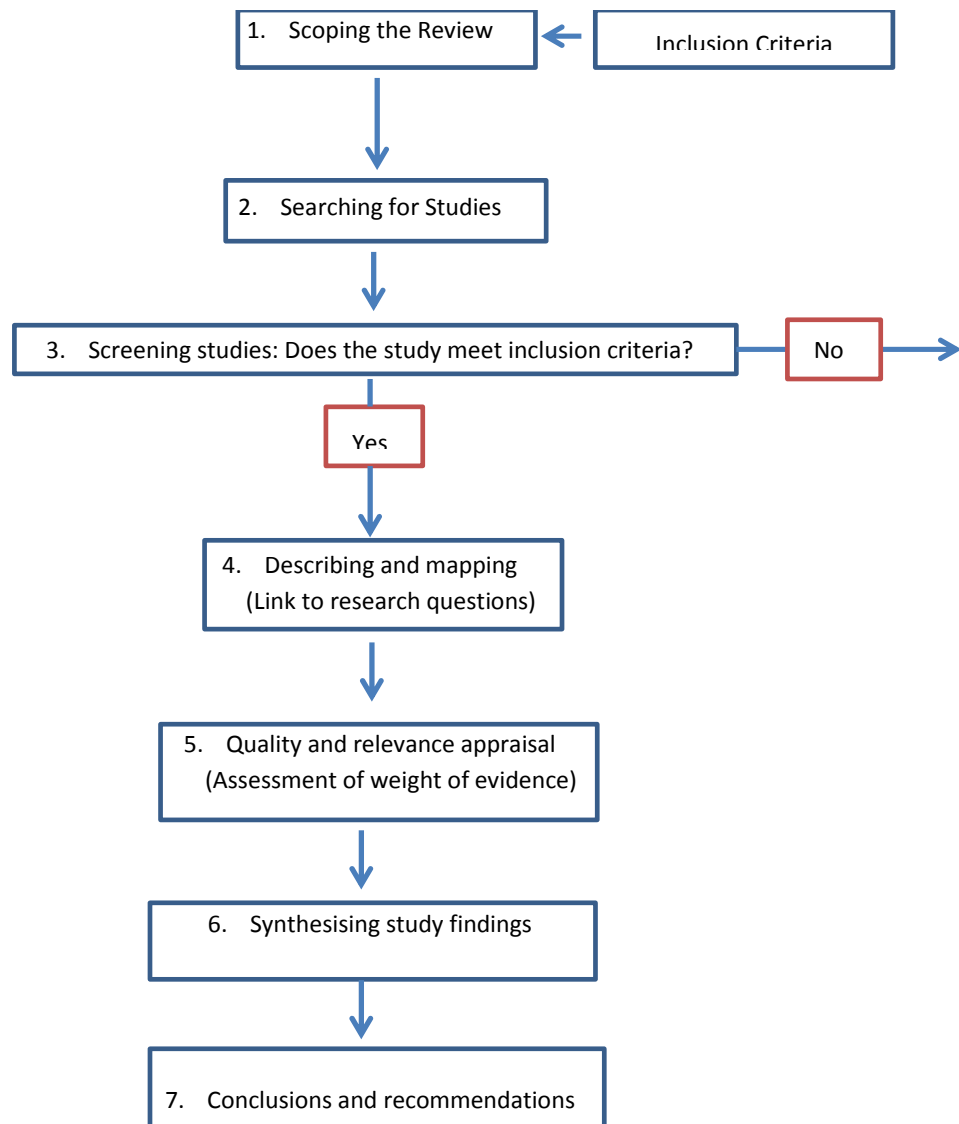


Figure 1: Flow chart illustrating systematic review process

Appendix 2: Scoping review

Authors	Type of review/ Intervention	Population	Setting	Methodology	Outcomes	Definition
<u>Angus, 2002</u>	Evaluative narrative review Various creative activities	Evaluation of 157 reports	UK	Evaluation of carefully planned and structured research	Psychological well-being (personal identity, human worth, self-direction, control and self-esteem) Social well-being (social identity, communication, autonomy, responsibility, participation in the making of political decisions) Spiritual well-being (cultural and spiritual needs and celebration)	Psychological, social and spiritual well-being Art indirectly contributes to wellbeing and health in the holistic sense

<u>Arts Council England, 2014</u>	Evaluative literature review	Young people, Adults	UK, Australia, Germany	Qualitative, Quantitative (mainly surveys),	Physical well-being (the body fat and body mass, prevention of falls, cardio vascular, strength and flexibility and balance and gait)	Subjective well-being is defined as life satisfaction
	Participating in culture	Older individuals		Mixed methods	Psychological well-being (cognitive abilities, reducing loneliness and alleviating depression and anxiety, self-esteem, identity construction)	Physical, mental and social well being
	or attending cultural places (museums, libraries)				Social well-being (social interaction and enable the pursuit of creative interests, community meaning and heritage)	
<u>Bungay and Vella-Burrows, 2013</u>	Music, drama, visual arts					
	Rapid narrative review	Children and young people between the ages of 11 and 18 in mainstream schools	UK, USA, Canada, Australia and Tanzania	Qualitative, Quantitative	Physical well-being	Physical well-being (sexual health and physical fitness)
				Mixed methods	Sexual health (increasing knowledge and educating about prevention of teenage pregnancy and HIV/AIDS)	
	Music, drama, dancing, singing, theatre, and visual arts				Obesity (improving physical fitness, information about nutrition and healthy eating)	Psychological well-being (self-esteem and confidence)
					Mental health and emotional well-being (self-esteem and confidence)	Social well-being (social inclusion, interpersonal skills and behaviour changes)
					Social well-being (re- engaged excluded young people, interpersonal skills, positive behaviour changes)	

<u>Burkhardt and Brennan, 2012</u>	Systematic review	Young people aged from 5 to 21 years	UK, USA and developed countries	Qualitative (mainly case studies)	Physical well-being (cardiovascular fitness, body fat or body mass index, bone mineral density)	Physical well-being
	Recreational dance for community and educational purposes			Quantitative (mainly controlled trials, cohort studies, cross-sectional studies with a control group for comparison)	Psychosocial well-being- self-concept (body image, physical self-worth) mood (anxiety, distress, fatigue)	Psychosocial well-being
<u>Castora-Binkley et al 2010</u>	Systematic review	Older adults in non-clinical settings	USA	Quantitative	Drama	Physiological well-being (health-influence)
	Participatory arts activities			Single-group studies with pre-post test design	Psychological well-being (anxiety, hope) Social well-being (capacity for human relationships)	Psychological well-being (emotional and cognitive growth), Social well-being (increased performance and skills)
	Drama, theatre, visual art, music, creative expression			Studies with intervention and control group (3 pre-post test design and 3 RCTs)	Creative expression Psychological well-being (decrease in depressive symptoms, improved mastery and meaning of life)	
					Visual arts	

					Psychological well-being (interest, sustained attention, pleasure, self-esteem)	
					Theatre and Piano	
					Psychological well-being-cognitive growth (perceptual speed, viso-scanning and memory abilities, word recall, prose comprehension, word generation, digit-span ability, and problem solving)	
					Dance	
					Physical well-being (effect on balance)	
					Psychological well-being(cognition and mood)	
<u>Daykin et al, 2008</u>	Systematic review	School pupils between the ages of 11 to 18 within mainstream	UK	Qualitative Quantitative (including 3RCTs)	Physical well-being (general health, learn and discuss relevant health-related topics, improved sexual knowledge and changes in attitudes, increased resistance to alcohol tobacco and illegal drugs)	Physical well-being-Knowledge, attitudes and risk behaviours

	Performing arts (mainly music, dance and drama)	education and community		Mixed methods	consumption)		Social well-being-Peer interaction, social skills and empowerment (challenge marginalisation and stereotyping enhanced social skills, confidence and self-expression)	Social well-being-Peer interaction, social skills and empowerment
<u>Galoway, 2006</u>	Cross-disciplinary narrative review The relationship between the <u>quality of life</u> , music and participation in leisure activities	Older people, Adult residents, Individuals with severe mental health problems	North America and UK	Qualitative (mainly in-depth interviews and participatory observation) Quantitative (mainly surveys, pre-post test designs intervention with no control) Mixed methods	Entertainment effect (going to cinema, theatre, concerts, museums etc.), Productive-personal growth effect (reading books, knitting, sewing, painting) Recreation – expressive effect (dancing, playing a musical instrument) Leisure activities including music can improve the well-being of special populations (older people) with a small effect on other population types		Quality of life is seen as synonym with well-being/subjective well being Well-being is defined as physical health, energy, social happiness and the overall satisfaction with life	

<u>Guetzkow, 2002</u>	Narrative review Various creative activities	Children and adults	USA	Impact studies: Qualitative, Quantitative, Mixed methods	Physical well-being (stress) Psychological well-being (happiness/ life satisfaction, self-concept and control), Social well-being (achievement of social skills, cultural capital and creativity)	Individual impact: material-health, cognitive/psychological and interpersonal Community impact: economic, cultural and social
<u>Leckey, 2011</u>	Systematic review Visual art, crafts, writing, exhibition and photography	Older people, Individuals with Alzheimer, Patients with mental health problems in community settings, health cares and specialist art settings	UK	Qualitative Quantitative (mainly surveys) Mixed methods Evaluative studies	Physical well-being (health related outcomes- blood pressure, boost the immune system, stress and body relaxation) Psychological well-being (self-esteem, anxiety, improve quality of life, personal growth-transformation of identity and increased artistic skill, cognitive-memory and orientation) Social well-being (social interactions, social inclusion)	Physical well-being Psychological I well-being Social well-being

Systematic reviews

Integrative studies

No RCTs

<u>MacDonald, 2013</u>	Narrative review	Older adults,	UK	Qualitative	Effects of music therapy on well-being-not relevant	Psychological well-being (emotions, empowerment and identity)
	Music only	Adult residents and students,		Quantitative	Effects of music education on well-being;-not relevant	Social well-being (social interaction, social inclusion, community meanings and conflict resolution)
		Disadvantaged individuals			Effects of everyday use of music on well-being-not relevant	
					Effects of music medicine on well-being-not relevant	
					Effects of community music on well-being	
					Psychological well-being (confidence and self-esteem, empowerment, identity construction)	
					Social well-being (resolve conflicts, develop empathy, social capital, bind communities, social interactions)	

<u>McCarthy et al, 2005</u>	Book-report		USA	Qualitative (mainly case studies)	Physical well-being (stress and anxiety)	Instrumental benefits:
	Various creative activities (mainly dance and theatre)	Students		Quantitative (mainly correlational studies)	Cognitive growth (development of learning skills and academic performance),	Health, cognitive, social and economic
		Young people at risk		Mixed methods	Social well-being (social interaction, community identity, social capital and empowerment)	Intrinsic benefits:
		Elderly			Economic well-being (source of employment, tax revenues, and spending for local communities)	Private value-captivation, pleasure, empathy, cognitive growth
		Community members				Public value-creation of social bonds, expression of communal meaning

<u>McLellan et al, 2012</u>	Narrative review with a sound theoretical approach	Young people of school age	UK	Various methodologies with no details given	Effects of art therapy on well-being (not relevant)	Conceptualisation of well-being (subjective well-being)
					Effects of art education on students' well-being (not relevant)	HEDONIC APPROACH subjective well-being comprises of two main components, affect (feelings, emotions and mood) and life satisfaction
					Effects of creative engagement on well-being:	EUDAIMONIC APPROACH subjective well-being comprises of personal growth, development, self-actualisation and motivation
					Psychological well-being (enjoyment, self-esteem, confidence, sense of agency, academic engagement)	SOCIAL APPROACH Social well-being comprises of social integration, social contribution, social coherence, social actualisation and social acceptance.
					Social well-being (social identity and sense of inclusion, social skills and social cohesion, civic engagement with community life)	CAPABILITY APPROACH subjective well-being comprises of life, bodily health, bodily integrity, senses, imagination and thought, emotions, practical reason, affiliation, other species, play and control over environment

<u>Mental Health Foundation, 2011</u>	Systematic review and meta-analysis	Population groups over 60 years old	UK, Canada, USA, Spain, Sweden, Australia	Impact studies	Physical wellbeing (cardiovascular, joint mobility and breathing control or increase in the levels of general daily activity)	Physical well-being
	Music, singing, drama, visual arts, dance, storytelling, festivals, mixed arts			Qualitative, Quantitative (mainly pre-post test designs) Mixed methods	Mental wellbeing (confidence and self-esteem, feelings of accomplishment, new and positive aspects to identity and life role, adapting to loss)	Mental well-being Social well-being
<u>Stuckey and Nobel, 2010</u>	Narrative review	Adults both clinical and informal practice	North America and Europe	Qualitative (mainly case studies)	Social well-being (meaningful social contact, friendship and support, address age discrimination, break down stereotypes and reduce stigmatising attitudes and behaviours)	Health is defined as a state of complete physical, mental, and social well-being. Health implies psychosocial and biological manifestations, psychological, social and
	Music engagement, visual arts, movement-based interventions			Quantitative (mainly surveys) Mixed methods (mainly surveys and case studies)	Music Physical well-being (restore the immune system) Psychological well-being (emotional balance, anxiety, mood) Movement-based Psychological well-being (self-esteem, cognition through word and listening recall, problem solving) Expressive writing	

creative
expression,
and
expressive
writing

Physical well-being(immune function, stress hormones,
blood pressure)

physiological outcomes

Psychological well-being (identify and work through
feelings, identity reconfiguration)

Social well-being (social interactions)

Van Lith et
al, 2013

Systematic
review

Adults with mental
health problems

UK
Australia
and
other
unclear
location
s

Qualitative,

Quantitative (mainly
RCTs and single
subject with no control)

Mixed methods

Clinical recovery(reduce intensity of symptoms and
distress)

Physical I well-being (health state)

Psychological recovery (self-esteem, self-discovery,
empowerment, self-expression, rebuilding of identity,
self-validation, motivation, sense of purpose and
cognition.)

Psychological well-being (emotions,
identity, and cognition)

Social recovery (interpersonal development-social skills
and relationships and social well-being-acceptance,
identity and overcoming isolation)

Social well-being (interpersonal skills,
social identity and social inclusion)

Occupational recovery (enhancing employment skills-
structuring time, setting and achieving goals, planning
ahead and attentiveness

Contextual recovery (supportive environment-security,
peace, hope, freedom and a sense of being an insider

<u>Creech, A. et al. 2013</u>	Evaluative Literature Review	Older people	UK	Qualitative Quantitative Case Study	Music impacts positively on cognitive, social and emotional wellbeing Music-making/participation highlighted as particularly salient, including songwriting and instrumental performance	Quality of life – measured through use of needs satisfaction approach: quality of life and subjective well-being assessed through the extent to which basic universal and innate psychological needs are met
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Appendix 3: Search terms and combinations

Medline Search Strategy

1. (MM "Art") OR (MM "Sculpture")
2. (MM "Dancing") OR "danc*"
3. (MM "Music") OR (MM "Singing")
4. (MM "Drama") OR (MM "Poetry as Topic")
5. (MM "Leisure Activities") OR "leisure"
6. S1 OR S2 OR S3 OR S4 OR S5
7. "well being"
8. (MM "Quality of Life")
9. (MM "Anxiety") OR (MM "Happiness") OR (MM "Loneliness")
10. (MM "Depression")
11. (MM "Physical Fitness")
12. S7 OR S8 OR S9 OR S10
13. S11 OR S12
14. S6 AND S12 AND S13

Cinahl Search Strategy

1. (MM "Drawing") OR (MM "Handicrafts") OR (MM "Art") OR (MM "Storytelling") OR (MM "Drama") OR (MM "Poetry") OR (MM "Literature") OR (MM "Music") OR (MM "Performing Arts") OR (MM "Dancing+") OR (MM "Singing") OR (MM "Leisure Activities")
2. (MM "Writing")
3. "visual art"
4. (MM "Sports Participation")
5. (MM "Psychological Wellbeing") OR (MM "Mental Health")
6. (MM "Wellness") OR (MM "Mental Status") OR (MM "Family Health") OR (MM "Adolescent Health") OR (MM "Child Health") OR (MM "Physical Fitness")
7. (MM "Depression") OR (MM "Anxiety Disorders")
8. (MM "Quality of Life")
9. S1 or 2 or 3 or 4
10. S5 or S6 or S7 or S8

PsychInfo Search Strategy

1. DE "Art"
2. DE "Creative Writing"
3. DE "Drama"
4. DE "Music"
5. DE "Recreation"
6. DE "Well Being" OR DE "Health" OR DE "Life Satisfaction" OR DE "Mental Health" OR DE "Positive Psychology" OR DE "Quality of Life"
7. DE "Physical Fitness"
8. DE "Life Expectancy"
9. (DE "Depression (Emotion)") OR (DE "Anxiety")
10. S1 OR S2 OR S3 OR S4 OR S5
11. S6 OR S7 OR S8 OR S9
12. S10 AND S11

ASSIA Search Strategy

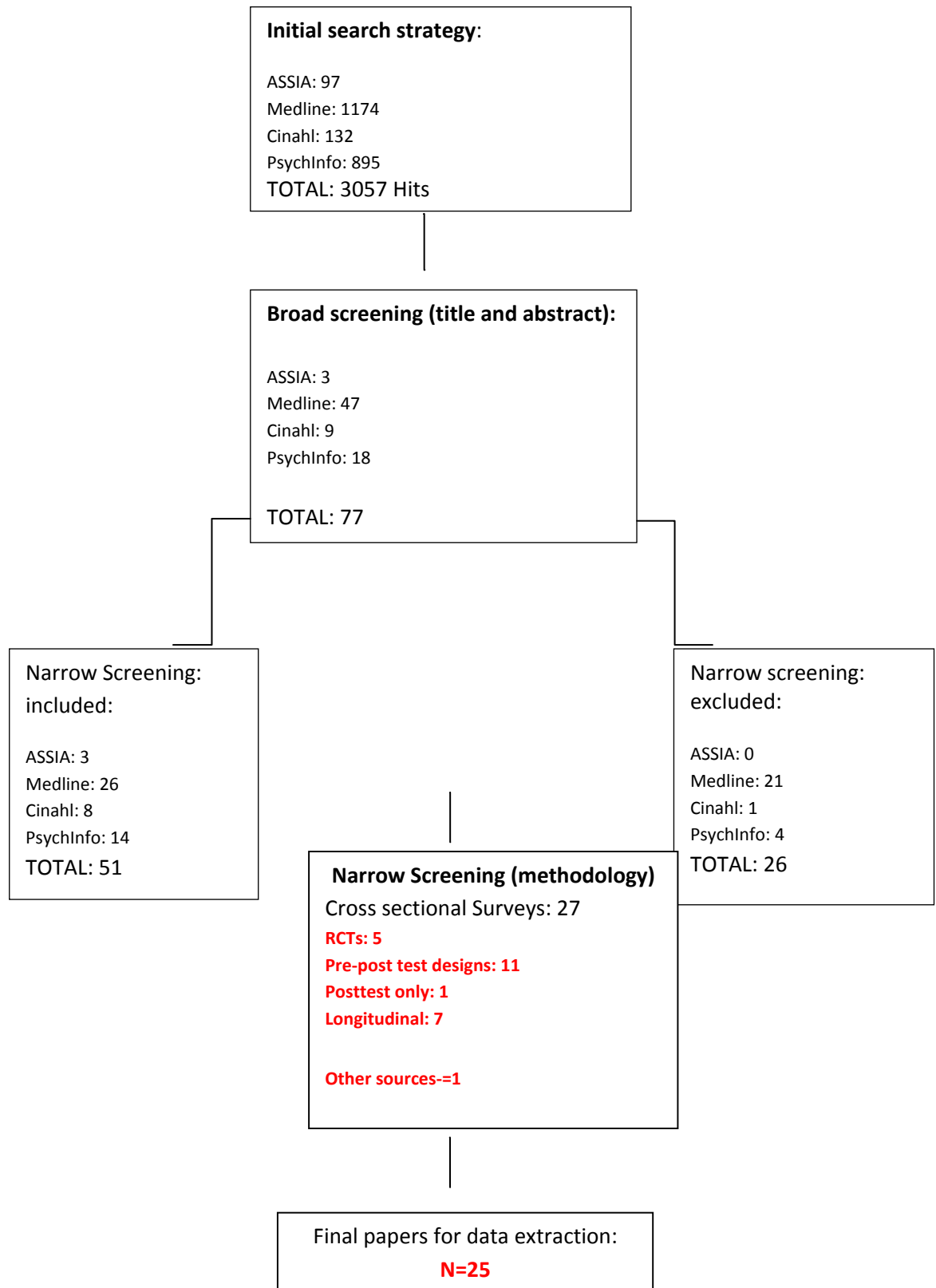
(SU.EXACT("Art") OR SU.EXACT("Arts") OR SU.EXACT("Public art") OR SU.EXACT("Performing arts") OR SU.EXACT("Music") OR SU.EXACT("Drama") OR SU.EXACT("Theatre") OR SU.EXACT("Street theatre") OR

SU.EXACT("Community theatre")) AND (SU.EXACT.EXPLODE("Economic wellbeing" OR "Emotional wellbeing" OR "Professional wellbeing" OR "Psychological wellbeing" OR "Psychosocial wellbeing" OR "Sense of coherence" OR "Social wellbeing" OR "Spiritual wellbeing" OR "Subjective wellbeing" OR "Wellbeing") OR SU.EXACT("Mental health") OR SU.EXACT("Health") OR SU.EXACT("Anxiety disorders") OR SU.EXACT("Anxiety"))(SU.EXACT("Art") OR SU.EXACT("Arts") OR SU.EXACT("Public art") OR SU.EXACT("Performing arts") OR SU.EXACT("Music") OR SU.EXACT("Drama") OR SU.EXACT("Theatre") OR SU.EXACT("Street theatre") OR SU.EXACT("Community theatre")) AND (SU.EXACT.EXPLODE("Economic wellbeing" OR "Emotional wellbeing" OR "Professional wellbeing" OR "Psychological wellbeing" OR "Psychosocial wellbeing" OR "Sense of coherence" OR "Social wellbeing" OR "Spiritual wellbeing" OR "Subjective wellbeing" OR "Wellbeing") OR SU.EXACT("Mental health") OR SU.EXACT("Health") OR SU.EXACT("Anxiety disorders") OR SU.EXACT("Anxiety"))

Additional search terms and combinations

Cultur* AND Art* AND Health OR Wellbeing OR Well-being

Appendix 4: Search strategy flow



Appendix 5: Screened databases and type of studies

<u>DATABASE</u>	<u>No of studies</u>	<u>Qualitative</u>	<u>Quantitative</u>	<u>Mixed methods</u>	<u>Longitudinal studies</u>
ASSIA	3	0	3 (surveys)	0	0
Cinahl	9	1 (Semi-structured interview)	7 (3 surveys, 4 interventions)	1 (focus groups/ written questionnaires)	0
PsychInfo	18	3 (2 semi-structured interviews, 1 ethnographic study)	9 (2 RCTs, 4 surveys, 3 interventions)	4 (1 formal surveys/semi-structured/ spontaneous interviews/participant observations, 3 focus groups/questionnaires,	2 (4 years follow up, 2 years follow up)
Medline	44	9 (4 Semi-Structured Interviews, 1 semi-structured and focus groups, 1 cross-cultural case study, 1 action research, 1 qualitative evaluation, 1 observational)	28 (3 RCTs, 19 surveys, 5 interventions, 2 quantitative evaluations)	3 (1 before-after intervention/focus groups, 1 document review/observation, questionnaire/focus groups/interviews, 1 survey/semi-structured interviews)	6(4 years follow up, 2 years follow up, 8 years follow up, 6 years follow up, 18 and 20 years follow up)
<u>Total (without duplicates)</u>	<u>77</u>	13	48	8	8

Screened full papers and type of studies

Surveys	Trials	Longitudinal	Total
27	17	7	51

Appendix 6. Quality Assessment Tool for Quantitative Studies

COMPONENT RATINGS

A) SELECTION BIAS

(Q1) Are the individuals selected to participate in the study likely to be representative of the target population?

- 1 Very likely
- 2 Somewhat likely
- 3 Not likely
- 4 Can't tell

(Q2) What percentage of selected individuals agreed to participate?

- 80–100% agreement
- 60–79% agreement
- less than 60% agreement
- Not applicable
- Can't tell



RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

B) STUDY DESIGN

Indicate the study design

- Randomized controlled trial
- Controlled clinical trial
- Cohort analytic (two group pre + post)
- Case-control
- Cohort (one group pre + post (before and after))
- Interrupted time series
- Other specify _____
- Can't tell

Was the study described as randomized? If NO, go to Component C.

No Yes

If YES, was the method of randomization described? (See dictionary)

No Yes

If YES, was the method appropriate? (See dictionary)

No Yes

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

C) **CONFOUNDERS**

(Q1) Were there important differences between groups prior to the intervention?

Yes
No
Can't tell

The following are examples of confounders:

Race
Sex
Marital status/family
Age
SES (income or class)
Education
Health status
Pre-intervention score on outcome measure

(Q2) If YES, indicate the percentage of relevant confounders that were controlled (either in the design (e.g. stratification, matching) or analysis).

80–100% (most)
60–79% (some)
Less than 60% (few or none)
Can't Tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

D) **BLINDING**

(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of participants?

Yes
No
Can't tell

(Q2) Were the study participants aware of the research question?

Yes
No
Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

E) **DATA COLLECTION METHODS**

(Q1) Were data collection tools shown to be valid?

Yes
No
Can't tell

(Q2) Were data collection tools shown to be reliable?

Yes
No
Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

F) **WITHDRAWALS AND DROP-OUTS**

(Q1) Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?

Yes
No
Can't tell

Not Applicable (e.g., one time surveys or interviews)

- (Q2) Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).
- 80–100%
 - 60–79%
 - less than 60%
 - Can't tell
 - Not Applicable (e.g., Retrospective case-control)

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

G) INTERVENTION INTEGRITY

- (Q1) What percentage of participants received the allocated intervention or exposure of interest?
- 80–100%
 - 60–79%
 - less than 60%
 - Can't tell
- (Q2) Was the consistency of the intervention measured?
- Yes
 - No
 - Can't tell
- (Q3) Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the results?
- 5 Yes
 - 6 No
 - 7 Can't tell

H) ANALYSES

- (Q1) Indicate the unit of allocation (circle one)
- community organization/institution practice/office individual
- (Q2) Indicate the unit of analysis (circle one)
- community organization/institution practice/office individual
- (Q3) Are the statistical methods appropriate for the study design?
- Yes
 - No
 - Can't tell
- (Q4) Is the analysis performed by intervention allocation status (i.e., intention to treat) rather than the actual intervention received?
- Yes
 - No
 - Can't tell

GLOBAL RATING

COMPONENT RATINGS

Please transcribe the information from the gray boxes on pages 1–4 onto this page. See dictionary for how to rate this section.

A	SELECTION BIAS	STRONG	MODERATE	WEAK
		1	2	3
B	STUDY DESIGN	STRONG	MODERATE	WEAK
		1	2	3
C	CONFOUNDERS	STRONG	MODERATE	WEAK
		1	2	3
D	BLINDING	STRONG	MODERATE	WEAK
		1	2	3
E	DATA COLLECTION METHOD	STRONG	MODERATE	WEAK
		1	2	3
F	WITHDRAWALS AND DROPOUTS	STRONG	MODERATE	WEAK
		1	2	3
				Not Applicable

GLOBAL RATING FOR THIS PAPER (circle one):

- 1 STRONG (no WEAK ratings)
- 2 MODERATE (one WEAK rating)
- 3 WEAK (two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

No Yes

If yes, indicate the reason for the discrepancy

- 1 Oversight
- 2 Differences in interpretation of criteria
- 3 Differences in interpretation of study

Final decision of both reviewers (circle one):

- 1 STRONG
- 2 MODERATE
- 3 WEAK

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

NO	<u>A.</u>		R	<u>B.</u>		R	<u>C.</u>		R	<u>D.</u>		R	<u>E.</u>		R	<u>F.</u>		R	<u>G.</u>		R	<u>H.</u>		R			
	<u>SELECTION BIAS</u>			<u>DESIGN</u>			<u>CONFOUNDERS</u>			<u>BLINDING</u>			<u>MEASURES</u>			<u>WITHDRAWALS</u>			<u>INTEGRITY</u>			<u>ANALYSIS</u>					
	A1.	A2.		B1.	B2.		C1.	C2.		D1.	D2.		E1.	E2.		F1.	F2.		G1.	G2.		G3.	H1.		H2.	H3.	H4.
1	3	1	2	1	1	1	1	4	2	2	1	2	1	1	1	1	2	1	3	2	3	2	I	I	1	2	2
2	3	1	2	1	1	1	3	4	3	1	1	3	1	1	1	1	1	1	4	2	3	3	O	I	1	2	2
3	3	5	3	5	n/a	2	1	4	3	3	1	3	1	1	1	3	4	3	1	2	3	2	I	I	1	2	2
4	2	5	2	7	n/a	2	2	n/a	1	n/a	1	N	1	1	1	3	4	3	1	2	3	2	I	I	1	2	2
5	3	2	2	3	n/a	2	3	4	3	3	1	3	1	1	1	3	4	3	4	2	3	3	I	I	1	2	3
6	2	5	1	1	1	1	2	n/a	1	n/a	1	N	1	1	1	1	1	1	1	2	3	2	I	I	1	1	1
7	2	5	2	1	1	2	2	n/a	1	1	1	1	1	1	1	1	1	1	3	2	3	2	I	I	1	2	2
8	4	5	3	7	n/a	3	3	4	3	3	1	3	3	3	3	3	4	3	1	3	3	3	I	I	1	2	3
9	1	3	2	7	n/a	2	2	n/a	1	n/a	n/a	N	1	1	1	2	3	2	1	2	3	2	I	I	1	1	1
10	4	5	3	7	n/a	3	3	4	3	3	1	3	3	3	3	3	4	3	3	3	3	3	I	I	1	2	3
11	2	5	2	1	1	1	2	n/a	1	1	1	2	1	1	1	1	1	2	3	1	3	2	I	I	1	1	2
12	4	4	3	5	n/a	2	n/a	n/a	N	n/a	n/a	N	1	1	1	3	3	3	1	2	3	2	I	I	1	2	2
13	2	1	2	5	n/a	2	n/a	n/a	N	n/a	n/a	N	2	2	2	3	3	2	1	3	3	2	I	I	1	2	2
14	2	1	2	5	n/a	2	1	4	2	3	1	3	1	1	1	1	3	2	1	2	3	2	I	I	1	2	2

15	3	5	3	5	n/a	2	n/a	n/a	N	n/a	n/a	N	1	1	2	1	1	1	1	3	3	2	I	I	1	2	2
16	3	1	1	3	n/a	2	1	4	2	3	1	2	1	1	1	3	3	3	1	3	3	2	I	I	1	1	3
17	1	1	1	7	n/a	?	n/a	n/a	N	n/a	n/a	N	1	1	1	3	1	2	n/a	n/a	3	2	I	I	1	n/a	2
18	1	3	1	7	n/a	?	n/a	n/a	N	n/a	n/a	N	1	1	1	1	3	1	n/a	n/a	3	2	I	I	1	n/a	1
19	1	1	1	7	n/a	?	n/a	n/a	N	n/a	n/a	N	1	1	1	1	3	1	n/a	n/a	3	2	I	I	1	n/a	1
20	1	1	1	7	n/a	?	n/a	n/a	N	n/a	n/a	N	1	1	1	1	2	1	n/a	n/a	3	2	I	I	1	n/a	1
21	1	1	1	7	n/a	?	n/a	n/a	N	n/a	n/a	N	1	1	1	1	2	1	n/a	n/a	3	1	I	I	1	n/a	1

22	1	1	1	7	N/A	?	1	4	1	n/a	n/a	N	1	1	1	1	2	1	n/a	n/a	3	3	I	I	1	n/a	1
23	1	1	1	1	1	?	3	4	2	n/a	n/a	N	1	1	1	1	1	1	n/a	n/a	3	3	1	I	1	n/a	2
24	3	1	2	1	1	1	1	3	2	1	1	1	1	1	1	3	4	3	1	2	3	2	I	I	1	2	2
25	1	1	1	7	n/a	?	2	n/a	1	n/a	n/a	N	1	1	1	1	2	1	n/a	2	3	2	I	I	1	n/a	1

Appendix 7: Recording table for EPHPP global quality assessment tool

STUDY	COMMENTS	GLOBAL RATING
1	Lack of response rate. Intervention consistency not measured	Moderate
2	Lack of researchers' blinding. No demographic data for the control group. Intervention consistency not measured	Low
3	Lack of researchers' blinding. No demographic data about the participants, including drop out and confounding variables. Intervention consistency not measured	Low
4	Lack of response rate and details about drop outs. Intervention consistency not measured	Moderate
5	Confusing methodology and poor description of the procedure. No demographic data about the participants. Quantitative results are mixed up with the qualitative ones with no consistency of the findings	Low
6	Intervention consistency not measured	Strong
7	Lack of response rate. Intervention consistency not measured	Moderate
8	Lack of information about methodology, procedures and analysis	Low
9	Lack of response rate and details about drop outs. Intervention consistency not measured. Intention to treat analysis performed	Moderate
10	Methodology not clear. No psychometric properties presented for the designed instruments. Intervention consistency not measured	Low
11	Lack of response rate and reasons for withdrawals. Lack of researchers' blinding. Intervention consistency not measured. However sample size calculation and intention to treat analysis performed	Moderate
12	Lack of information about methodology, procedures and analysis	Low
13	Lack of details about drop outs. Intervention consistency not measured. No psychometric properties presented for the designed instruments	Moderate

14	Intervention consistency not measured. No demographic characteristics for drop outs	Moderate
15	Lack of response rate. No clear numbers of people taking part in the research. Intervention consistency not measured. Only descriptive statistics performed	Moderate
16	Lack of response rate. Intervention consistency not measured. A mix of self-administered questionnaires, researcher lead or interviews	Moderate
17	Large-Scale longitudinal study. Lack of details about drop outs. No psychometric properties for the social activity measure. Demographic variables controlled for. Analysis performed according to different type of arts	Moderate
18	Large-Scale longitudinal study. Demographic variables controlled for. No psychometric properties for the leisure scale. Analysis performed according to different type of arts	Strong
19	Large-Scale longitudinal study. No psychometric properties for the leisure activity index. No differential analysis for type of arts	Strong
20	Large-Scale longitudinal study. Demographic variables controlled for. No psychometric properties for the leisure activity index. No differential analysis for type of arts	Strong
21	Large-Scale longitudinal study. Demographic variables controlled for. No psychometric properties for the leisure activity index. No differential analysis for type of arts	Strong
22	Large-Scale longitudinal study. Demographic variables controlled for. No psychometric properties for the engagement in cultural activity scale. No differential analysis for type of arts	Strong
23	Large-Scale longitudinal study. Demographic variables controlled for. No psychometric properties for the leisure activity questionnaire. No differential analysis for type of arts	Strong
24	Intervention consistency not measured. No separation of the social and fine arts stimulation effects. Brief results and interpretations	Moderate
25	Large-Scale longitudinal study. Demographic variables controlled for. Not clear how health determinant were measured. No psychometric properties for cultural engagement questionnaire. No differential analysis for type of arts	Strong

Appendix 8: The effect of participating in music on health and well-being

Playing a musical instrument

Study	Methods	Participants	Setting	Intervention content	Control conditions	Follow up	Measures	Findings	Notes
4. Creech A, et al 2012	Pre-post test design with a control group	N=500 Age=43-93 F=81%, M=19%	UK	Musical activities (steel pans, guitars, ukulele, recorder, keyboards, samba, singing and song writing)	Other activities (language classes, art/craft classes. yoga social support a book group and a social club)	2 weeks	Demographic questionnaires	The music group reported more positive responses related to the following factors: purpose (having a positive outlook on life), autonomy and control and social affirmation (positive social relationships, competence and a sense of recognised accomplishment). (p = .0001)	Deci and Ryan (2000)
		Intervention, N=398 Intervention=professional occupations			N=102 Housewife /retired	9 months	CASP-12 measure of quality of life The Basic Psychological Needs Scale.		The self-determination of behaviour Active music making in a social context has the potential to enhance quality of life, well-being and physical and mental health in older people
3.Toyoshima	Pre-post test with a	N=57	Japan	G 1: piano	G 4: The silent	30-	Endocrine secretion	Post-session C levels were decreased for piano,	Music education

K., al, 2011	control group	Age=19–26 M=27, F=30 Group 1, N=18 Group 2, N=11, Group 3, N=13		playing, G2: clay modelling, G3: calligraphy	control group N=15	minutes	(salivary C levels) State-trait Anxiety Inventory (STAI-I)).	clay and calligraphy, indicating a reduction in stress (p = 0.0202) with piano having the greatest effect (p < 0.0000) Intervention groups reported a reduction in anxiety (p = 0.0014) with no differences among the creative activity groups	Music may regulate personal psychological and physiological states and have a vital function in enhancing mental fitness
17. Liddle et al, 2012	Australian Longitudinal Study on Women's Health (ALSWH).	2005: N=5058 2008: N=5560 Age: 80–87 Gender females	Australia	To explore the relationship between participation in painting pictures or playing a musical	Dependent Social activity Physical and subjective cognitive function	3 years 2005 2008	Assessment of artistic participation Social activity measure Change in instrumental activities of daily living	Women who had stopped painting pictures or playing a musical instrument experienced a greater decline in social activity (p= 0.002), a greater decline in IADL (p = 0.001), and a decline in mental health (p <	Csikszentmihalyi (1996) Flow experiences contribute to a sense of well-being and are particularly relevant to artistic activities.

instrument and physical and mental health	Quality of life	(IADL)	0.0001)
	Independent	Memory Complaint Questionnaire (MAC-Q)	Women who started participation experienced an increase in social activity (p = 0.0003), improvements in instrumental activities of daily living (p = 0.004) and emotional well-being (p = 0.002)
	Participation in painting pictures or playing a musical instrument	Change in the Short Form 36 (SF-36) Quality of Life questionnaire	

Drumming

Study	Methods	Participants	Setting	Intervention content	Control conditions	Follow up	Measures	Findings	Notes
12. Maschi, T, et. Al, (2012)	Pre-post test design without a control group	N=72 social workers Age=22-51 M=12, F=60 Caucasians=37	New York, USA	Recreational group drumming <i>I-We Rhythm</i> program	No control	4 months 2hours/week	The Culturally Competent Socio- Demographic Questionnaire Session Evaluation Questionnaire (SEQ)	Social workers that participated in the recreational drumming intervention show a change in levels of tension, stress, empowerment and connectedness(p=.001)	The use of creative arts strategies with a wide variety of client populations decreases stress and improves well-being
15. Wood, L et al, (2013)	Pre-post test design without a control group	N=180 youth at risk N=19 teachers	Australia	Drumming DRUMBEAT program	No control	10 weeks	Youth Risk questionnaire Rosenberg Self-Esteem Scale Evaluation questionnaire	Participants enjoyed the intervention, feeling supported, learning new skills and valuing the presenter. Participants reported a 10 per cent increase in self-	Faulkner, 2006 Musical expression and cognitive behavioural therapy

							Teachers	esteem scores by program completion. (p=0.00)	Drumming can play an important role in addressing health issues and support social and emotional development.
							Social Development Program Evaluation	Teachers also reported a positive change in students' self-esteem.	
							Feedback form	School data showed a decrease in reported behaviour incidents and half-day absences. (p=0.00)	

Choirs

Study	Methods	Participants	Setting	Intervention content	Control conditions	Follow up	Measures	Findings	Notes
10. Hampshire and Matthijsse (2010)	Pre-post test design with a control group	N=92	Durham, UK	Choir	No intervention	8 month	Social and emotional wellbeing questionnaire	Compared with the control, participants from the intervention group were more likely	Schaefer-McDaniel (2004) social capital approach
		Age=9-11		The SingUp Dales as part of	N=51	16 months	Perceptions of neighbourhoods	to be learning	
		High vs. low levels of economic deprivation		'SingUp Communities initiative'				to play a musical instrument (p= 0.002), taking drama classes (p=0.004), attending scouts/guides (p=0.002)	Bourdieu's (1997)
	Mixed methods	Intervention							notion of interlinked forms of capital

G1, N=22,
M=5, F=17,
IED=Middle
20%

G2, N=13,
M=3, F=10,
IED=Bottom
5%

G3, N=6
M=0, F=6
IED=Bottom
5%

(e.g. arts)

Relationships with
parents

Relationships with
friends

Attitudes to school

I

Self esteem

Aspirations

Social networking

and attending church
($p=0.007$).

Girls were more likely
than boys both to be
doing other arts/music
activities and take part in
the intervention

DeNora's (2000) idea
of music as a
technology of the
self,

Participation in
SingUp

could posed
considerable risks to
wellbeing, the
benefits being limited
to a small, and
already relatively
privileged,

set of children

.

14. Vaag, J. et al (2013)	Pre-post test design with a control group	N=1431 employees of two country hospitals G1=217	Norway	Music Sound of Wellbeing (SOW) initiative	No intervention N=94	3 months	Demographic characteristics Perceived work environment Psychological factors Self-perceived health	More engagement, organizational commitment and self-reported positive change with regard to psychosocial work environment and global health was recorded in participants compared to non-participants	The intervention showed promising results for incorporating cultural activities in the work environment
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Other mixed musical and artistic activities

Study	Methods	Participants	Setting	Intervention content	Control conditions	Follow up	Measures	Findings	Notes
9. Greaves and Farbus (2006)	Pre-post test design without a control group Mixed	N=229 Baseline data N==172 Age=52-96	Devon, UK	The Upstream Healthy Living Centre painting, print making,	No control	6 months 12 months	SF12 Short form 12 Geriatric depression scale (GDS-15): MOS social support	At 6 months, there were significant improvements in SF12 mental component, ($p < 0.005$) and reduction in depressive mood ($p < 0.02$) but not in perceived physical health or social	Participation in leisure and social connections produce social inclusion and mental/physical health

methods		writing, reminiscence/movement	Weekly visits and telephone contact	survey (MOSSS):	support.	benefit
6 month						
N=72		sound and music, craft work,				
12 month		quilting,				
N=51		singing			At 12 months, there were significant improvements in depression ($p < 0.005$) and social support($p < 0.005$) and a marginally significant improvement in the physical fitness ($p = 0.06$)	

Appendix 9: The effect of participating in dance on health and wellbeing

Study	Methods	Participants	Setting	Intervention content	Control conditions	Follow up	Measures	Findings	Notes
6. Movrovouniotis, F., H, (2010)	RCT	N=111	Thessaloniki, Greece	Greek traditional dances	Other social activities (Chatting and watching TV)	10 weeks	Heart rate measurement	After dance, 63% of maximum heart rate was activated	Dance as a form of aerobic activity could produce not only physical but also mental benefits, improving people psychological states and quality of life
						The Subjective Exercise			
		60 minutes/				Experience Scale (SEES)			
		session				State-trait Anxiety Inventory (STAI-I)).			
		Intervention, N=76			N=35			ntervention group reported low state anxiety (p<0.001) and fatigue (p<0.01), increased positive wellbeing (p<0.001) and reduced psychological stress. (p<0.01)	

1. Eyigor, S et al, 2009	RCT	N=37 females	Turkey	Turkish folkloric dance exercise program	No exercise	8 weeks	Physical performance (walking, stair climbing and chair rise)	Intervention group reported improvements in most of the functional performance tests, BBS scores and some of the SF-36 subscales	Dance is a pleasurable activity for older people that might also enhance their functional status and quality of life.
		Intervention group:		(warm-up period, a special	N=18	1 hour / week			
		N = 19		folklore dance stepping	Age (mean)=71.2		SF-36 health questionnaire	(physical functioning, general health and mental health) p < 0.05	
		Age (mean)=73.5		period, stretching and a cool-down period	Employment(%)=84.6		Geriatric Depression Scale		
		Employment (%)=76.5			Housewives /retired (%)=15.4		Berg Balance Scale		
		Housewives/retired (%) =23.5					Exercise intervention		

7. Hui, E., et al, 2009	Pre-post test design with a control group	N=111 Age=60–75 M=31, F=80 Intervention N=57	Hong Kong, China	Dance routine (Warming up, walking, progressive dance movement, stretching and cool down)	Usual daily activities N=54	12-weeks, 23-session 2X50min or 60 min sessions/ week	Physical function (6MWT, trunk flexibility, body mass index, waist-to-hip ratio. sit-and-stand test, lower limb endurance and strength, balance and TUG test) Quality of life SF-36 questionnaire Intervention Evaluation Questionnaire	Significant difference was observed in 6 outcome measures: heart rate (p = 0.02), 6MWT (p < 0.001), TUG (p = 0.01), lower limb endurance(p < 0.001), the general health (p = 0.04) and bodily pain (p = 0.04) 82.7% of the intervention subjects felt that dancing was very helpful or extremely helpful in improving their psychological health	Dancing may be an effective means for health promotion These findings are in contrast to reports of improved self-esteem, mood and social contact from previous studies
8. Quin, E., et al, 2007	Pre-post test design without a control group	N=348 school children Age=11-14 M=24%, F=76% Financial pressures=25%	UK: Southampton, Hampshire, Isle of Wight and Portsmouth	Dance routine (cardio-vascular warm-up, followed by creative movement tasks)	No control	10 weeks	Physiological assessments (capacity, flexibility and aerobic capacity) Psychological assessments (self esteem,. intrinsic motivation and attitudes towards dance)	There was a clear increase in all areas of physical fitness for both males and females (p<0.05) with females reporting the most significant improvement No significant pre-post intervention difference were observed for the psychological measures	Dance is of particular benefit for females. 'Dance Manifesto', (2006), calls on the Government to ensure that dance is an integral part of every young person's education.

Appendix 10: The effect of participating in creative writing on health and wellbeing

Study	Methods	Participants	Setting	Intervention content	Control conditions	Follow up	Measures	Findings	Notes
2.Chippendale and Bear-Lehman, (2012)	RCT	N = 45 Age >65 M=14, F=31 White=34, Black=5, Hispanic=2, Asian=4	USA-New York City	Life review writing workshop	No intervention (1) Have you discussed the workshop with any of those currently participating? (2) Have you been telling others or writing stories about your life? No details given	8 weeks 90 minutes per session,	Geriatric Depression Scale (GDS), Questionnaires measuring demographics, independence in ADLs and IADLs, levels of leisure participation, and social support	The workshop had a significant positive effect in mood and depressive symptoms promoting leisure participation and social interaction for the intervention group (p = 0.03)	Life review writing workshop is a convenient intervention that addresses psychosocial needs in older adults

11. Pot et al, 2010	RCT	N=171	Netherlands	Life review-based prevention course "Looking for Meaning"	20-minute educational video "The Art of Growing Older"	3 months	CES-D Depression Self-report scale	The intervention group reported less depressive symptoms (p=0.010) and a higher level of control over one's life (p=0.05). The changes in depressive mood were more significant than the minimal differences in the control group (p=0.25)	Butler(1963)
		3 month, N=152,				9 months	Hospital Anxiety and Depression Scale (HADS)		
		9 months, N=144		(sensory recall	N=88	12 sessions of two hours each	Manchester Short Assessment of Quality of Life (MANSA)	Intervention was found to be more effective for women with a relatively high level of depressive symptoms (CES-D ≥16).	The positive, adaptational aspects of reminiscence (life review).
		Intervention N=83		exercises, creative activity, and verbal exchange of experiences)	Age=51-90				
		Age=52-81			M=25, F=63				
		M=22, F=61			Not employed=72				
		Not employed=70			Low level of education=5		Mastery Scale		
							Reminiscence Function Scale (RFS)		
		Low level of education=5							

Appendix 11: The effect of participating in handicrafts on health and wellbeing

19. Lampinen,P , et al, 2006	Evergreen prospective Project on health and functional capacity	N=1887 Age=65-84 1988: N=1224 M=420, F=804 1996: N=663 M=212, F=451	Jyvaskyla", Finland	To examine the roles of physical and leisure activity as predictors of mental well- being	Dependen Depressive symptoms Anxiety Mental vigour Meaning in life. Independent Physical activity Leisure activity Mobility	8 years 1988 1996.	Beck's depression scale (RBDI Self-rated mental vigour. Physical activity assessment Leisure activity Index (active and passive art interests and handicrafts), Mobility assessment	At baseline, a low number of chronic illnesses, better mobility status and higher leisure activity(0.15, SE=0.02) showed the strongest associations with better mental well-being Higher leisure activity (0.08, SE=0.02) had an indirect effect on mental well-being at follow-up. No differential analysis for leisure activities	Participation in leisure may provide a global indicator of health and functioning through which the maintenance of health and functional performance is well perceived and reflected in everyday lives The activity theory of aging (Lemon, Bengtson, & Peterson, 1972)
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16. García-Martin, M., A., et al, 2004	Pre-post-test design with a control group	N=78 Age=50-82 M=30.6, F=69.4% primary education not completed = 43.9%, G1 fitness, N=23 G2 computing N=20, G3 handcraft, N=15, G4 painting, N=8, G5 all activities N=12	Málaga (Spain).	Fitness, computing, handcrafts and painting	No intervention No details given	8 months Between two and a half hours and four hours per week,	The DUKEUNC Scale for functional Social Support OARS Scale of Social Resources– Older Americans Resources and Services Schedule UCLA-Loneliness Scale The Life Satisfaction Index The Geriatric Depression Scale (GDS) Locus of Desired Control Scale Self-efficacy Scale Quality of Life Questionnaire Global health index	Participating in organized leisure activities leads to more opportunities to obtain social support (p < .01) , increases perceived control (p <.01), reducing loneliness (p < .01) and indirectly affecting the perceived overall health (p < .01)	Coleman and Iso-Ahola (1993) Leisure activities serve as a protecting element against the stressing life events elderly people have to face <i>Bandura's</i> Social Cognitive Model (1977)	Appendix 12: The effect of participating in drama on health and wellbeing
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Study	Methods	Participants	Setting	Intervention content	Control conditions	Follow up	Measures	Findings	Notes
5. Joronen. K., et al (2012)	Pre-post test with a control group	Students (N = 190) Parents (N = 190)	South Finland	Drama stories, home activities (interaction al tasks between parent) and child) and parents' evenings	No intervention No details given	Not mentioned	Multi-source Assessment of Competence (MASK) Social scale	Teachers reported an increased empathy in the drama group ($p<0.05$), with low levels of antisocial behaviour. Students in the drama group described an increased in their social relationships and less bullying victimisation ($p<0.05$)	Drama has the potential of learning social and emotional skills at school

Appendix 13: The impact of arts attendance on health and wellbeing

20. Gas, V., et al., 2006	Necessary analysis of data from a prospective community based study for Epidemiologic Studies of Espirit Study of Elderly Population (ESPES) disorder	1992: N= 2,812 N = 1,849 Age: N= (mean)=73.2 2321 M=41.2%, F=58.8% 1988: N= Medium Low education=29.6 1817 % Age >65 2001 N=463 participant with baseline depressive symptoms	Montpellier Haven, Connecticut, USA	To investigate the association between social engagement and leisure productive depressive and symptoms depression	Dependent Depressive symptoms baseline and follow-up Independent Demographics Disability Physical fitness Health Level of social engagement Life events Cognitive status Control age, gender, marital status, education, alcohol consumption, chronic illness, cognitive impairment	2 years 6 years 1999 2002 1985 1988	Center for Epidemiological Studies Depression scale Social engagement and CES-D Depression Scale Leisure of Daily Living (ADL) (restaurant, or sporting event, (b) going on day trips and overnight trips, (c) playing cards, games, or bingo, (d) attending religious services, and (e) participating in social and community groups) association, involving in cultural associations, going to cinema/theatre, artistic activities) Physical activity index Self-reported Health status Gospel Oak Questionnaire The Center for Epidemiologic Studies The Mini-Mental State Examination (MMSE)	High social activity was negatively associated with depressive symptoms at baseline For participants with depressed baseline, greater social engagement was the principal factor associated with a slower rate of increase in depressive mood at follow up. (p <.0001), independent of the age, sex, education marital status, health or physical fitness No differential analysis for type of leisure	The study has highlighted the importance of social engagement in older persons health activities as a predictor of the normative health behaviour Social engagement within gerontology (Cumming, 1975; Havighurst, 1961, 1963; Maddox, 1963)
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18. Chun-Tee, L., et al, (2012)	National longitudinal survey of older Taiwanese adults	203: N=1481 2007:N=1481 Age>65 M=54.02%, F=45.98% Unemployed= 89.20% <6 years education=73.80%	Taiwan	To examine the risk factors for depression in the elderly	Dependent	4 years	CESD-10 Depression Scale Leisure scale: (reading, doing outdoor building activities; talking with friends, listening to music, group activities; taking a walk, playing games and watching TV) Assessment of mobility Stress rating Social support scale Social participation Inventory SPMSQ	The leisure activities less associated with depression were reading newspapers/books (EL:-0.619) and participation in outdoor building activities (EL:-0.548). However playing or listening to music (EL:-0.145) was only marginally associated with reducing depressive symptoms	Fewer leisure activities (p = 0.0034), more mobility limitations and more stresses were independent risk factors for depression in the elderly The social determinants of mental health
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22. Bygren et al, 2009	RCT	<p>N=101 members of the local government officer's union in the health</p> <p>Services</p> <p>Intervention: N=42</p> <p>Age (mean)=49.8</p> <p>M=2, F=40</p> <p>Control: N=48</p> <p>Age (mean)=50.4</p> <p>M=3, F=45</p>	Sweden	<p>To examine the health effect of singing</p> <p>in a choir, or enjoying films, concerts or art exhibitions</p>	<p>Dependent</p> <p>health dimensions</p> <p>Independent</p> <p>Demographic variables</p> <p>Fine arts stimulation in an ordinary workplace setting (film, art, music and singing)</p>	8 weeks	<p>Preference of creative activities</p> <p>Health questionnaire short form (SF)-36,</p> <p>The episodic memory assessment</p> <p>Saliva testing</p>	<p>Fine art stimulation promoted perceived physical health, ($p=.009$). social functioning ($p=.005$), and vitality($p=.04$),</p> <p>Perceived health did not, however, decrease for the control group as a whole</p>	<p>The experiment adds to the findings in population</p> <p>studies that fine arts stimulations might be important for</p> <p>health within the work environment</p>
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23. Väänänen et al, 2009	Longitudinal study	N= 7545 domestic employees M=5864, F=1681 Age=18-65	Finland	To explore whether engagement in cultural activities –is associated with a reduced risk of various causes of mortality	Dependent Mortality Independent Demographic variables Cultural engagement	18 years 1986 2004	Work stress, co-workers' support , and frequency of social contacts with friends rating scale Engagement in cultural activities (arts and cultural activities, activities in associations, societal action, reading literature, studying) Mortality data (date and cause of death)	High engagement in solitary cultural/ intellectual activities was associated with longer overall survival and a decreased risk of cardiovascular mortality while socially shared cultural activities were associated with a lowered risk of external mortality. No associations were found with cancer mortality, alcohol-related mortality and mortality from other causes.	Cultural activities outside of work life may considerably increase the likelihood of overall survival, leading especially to the avoidance of accidents, violence and suicide
24. Hyypä, et al, (2009)	Longitudinal study	N= 5087 Age>30 M= 2464, F= 2623	Finland	To investigate studied whether leisure participation is independent predictor of survival.	Dependent Health Mortality Independent Demographic variables	20 years	Demographic questionnaire General Health Questionnaire (GHQ) Leisure physical activity index Self-reported health Weight and height measurements Cultural engagement questionnaire (, cultural	Subjects with abundant leisure participation survived significantly better than the subjects will less cultural engagement. The association is lacking in healthy women	Berkman–Syme (2002) social network index Abundant leisure participation predicts survival, whereas scarce leisure participation is

					Cultural engagement		and sports attendance (visiting theatre, cinema, concerts, art exhibitions, sports events or similar), cultural interests (reading books, listening to recorded music) and hobby activity (drama, singing, photography, painting, collecting, handicraft)		associated with higher risk of death
25. Bygren et al, 2009	Longitudinal study	9011 participants free from cancer Age=25-74	Sweden	to determine whether attendance at cinemas, theater, art galleries, live music shows, and museums was associated with cancer-related mortality	Dependent Health determinants Independent Demographic variables Cultural engagement	12 years	Attendance at cultural events questionnaire Cultural Participation Index (CPI) (cinema, theatre, art gallery, live music, and museum) Demographic data age, sex, and educational attainment at time of enrolment, disposable income, and residency (i.e. rural–urban).	Rare attendees of cultural events in urban areas had a higher probability of dying of cancer during the study period than frequent attendees after controlling for possible demographic and behavioral confounders	Rare attendees of cultural events had higher total cancer-related mortality rates over a 12-year period than frequent attendees. Finding might have implications for cancer-prevention and treatment in urban areas

Appendix 14: Standardised outcome measures

<u>Instrument</u>	<u>Variables</u>	<u>Concepts</u>	<u>References</u>
<u>General health</u>			
Basic Activity of Daily living (ADLs)	Bathing and showering Dressing Eating/feeding Functional mobility Personal hygiene	Physical wellbeing	Chippendale and Bear-Lehman, (2012), Isaac, et al, (2009)
Instrumental activities of daily living (IADLs)	Housework Taking medications as prescribed Managing money Shopping for groceries or clothing Use of telephone or other form of communication Using technology (as applicable) Transportation within the community	Physical wellbeing	Chippendale and Bear-Lehman, (2012), Isaac, et al, (2009), Liddle et al, (2012),
The Berg Balance Scale (BBS)	Static and dynamic balance abilities	Physical wellbeing	Eyigor et al, (2009)
<u>Quality of life</u>			
The Short Form (36) Health Survey	Vitality , physical functioning , bodily pain, general health perceptions, physical role functioning, emotional role functioning , social role functioning, mental health	Physical, Emotional and Social wellbeing	Bygren et al, (2009), Eyigor et al, (2009), Greaves and Farbus (2006), Hui et al, (2009), Liddle et al, (2012), Sole et al, (2010),
The Philadelphia Geriatric Center Multilevel Assessment Instrument, PGCMAI	Activities of Daily Living, ADL, Personal Adjustment, PADI, Physical Health, Social, Environment, Time Use, Time Use, Mobility and Cognitive Functioning	Physical, Emotional and Social wellbeing	Sole et al, (2010)
The CASP-19 Quality of Life Scale	Control, autonomy, self-realisation and pleasure	Emotional wellbeing	Creech et al (2012)
The Basic Psychological Needs Scale	Competence, autonomy, and relatedness	Emotional wellbeing	Creech et al (2012)
Manchester Short Assessment of Quality of Life (MANSA)	Quality of life, social networks, psychological functioning, psychiatric symptoms, needs for care,	Emotional and social wellbeing	Pot et al, (2010)

empowerment and stigma

Depression

The Geriatric Depression Scale (GDS)	Depression in elderly	Emotional wellbeing	Chippendale and Bear-Lehman, (2012), Eyigor et al, (2009), García-Martín et al, (2004)Greaves and Farbus (2006),
Center for Epidemiologic Studies Depression Scale (CES-D)	Depression experienced in the last week	Emotional wellbeing	Chun-Tee et al, (2012), Glass, et al, (2006). Isaac, et al, (2009), Pot et al, 2010,
Hospital Anxiety and Depression Scale (HADS)	Depression and anxiety	Emotional wellbeing	Pot et al, (2010)
The Beck Depression Inventory Second Edition (BDI-II)	Severity of depressive symptoms	Emotional wellbeing	Lampinen et al, (2006)

Anxiety

The State-Trait Anxiety Inventory (STAI)	State anxiety, or anxiety about an event, and trait anxiety, or anxiety level as a personal characteristic	Emotional wellbeing	Movrovouniotis et al (2010),Toyoshima et al, (2011).
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Self-esteem

The Rosenberg Self-Esteem Scale	Self-esteem	Emotional wellbeing	Sole, et al, (2010). Wood et al, (2013)
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Cognitive functioning

The Short Portable Mental Status Questionnaire (SPMSQ)	Orientation, concentration and remote memory	Mental health	Lee et al, (2012)
The mini mental state examination (MMSE)	Orientation, registration (immediate memory), short-term memory (but not long-term memory) as well as language functioning	Mental health	Isaac et al, (2009)
Subjective Memory Complaints Questionnaire (SMCQ).	Daily activities overall memory functioning	Mental health	Liddle et al, (2012)

Social support

MOS Social Support Survey Instrument	Number of aspects 'social support'	Social wellbeing	Greaves and Farbus (2006)
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The Duke-UNC Functional Social Support Questionnaire.	Functional social support	Social wellbeing	García-Martín et al, (2004)
Multi-source Assessment of Childhood Social Competence (MACSC)	Prosocial (cooperation and empathy) and antisocial behaviours (impulsivity and disruptiveness)	Social wellbeing	Joronen et al (2012)

Appendix 15: Theoretical underpinnings of the studies

References	Theories
Creech et al, 2004	Self determination theory (Ryan and Deci, 2001)
Hampshire and Matthijsse (2010), Hyypä et al, (2009)	Social capital theory (Bourdieu, 1986)
Pot et al, (2010)	Life review and reminiscence theory (Butler, 1963)
García-Martín et al, (2004)	Buffer model of leisure and health (1993)
Liddle et al, (2012)	Flow theory (Csikszentmihalyi, 1990)
Lampinen et al (2006), Lee et al, (2012)	Activity theory of aging (Lemon et al., 1972)