



TRINITY LABAN CONSERVATOIRE  
OF MUSIC AND DANCE

# Dancing towards well-being in the Third Age

*Literature Review on the impact of dance on  
health and well-being among older people*

Produced by Trinity Laban Conservatoire of Music  
and Dance

Commissioned by the London Thames Gateway  
Dance Partnership



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## Executive Summary

...the [social] dance experience is not only or simply a beneficial physical experience for older people, it also bestows other significant benefits for those who enter the third age and beyond...It offers a way to be sociable and have fun...It promotes a welcome sense of community spirit. It is a way of becoming visible and aesthetically pleasing...dancers can experience the joy of a fit and able body in both real and mythic senses.

(Cooper and Thomas, 2002, 689)

This literature review was commissioned by the London Thames Gateway Dance Partnership and produced by the Dance Science department of Trinity Laban Conservatoire of Music and Dance in autumn 2010. The purpose of the literature review was to produce a descriptive review of research carried out in the dance and health fields which investigated the impact of dance, both physiological and psychological, among elderly populations. This was as a means of gaining insight into the impact and potential impact of dance among older people, highlight reported successes of dance projects, and also point to areas for further research.

A comprehensive search for literature was conducted, using general and scholarly databases which included library and archive resources. Source documents and format of materials include books, journal articles, newspaper and magazine articles, evaluation reports, TV documentaries and video footage from research studies.

The scope of the literature review was quite broad. Inclusion criteria for studies were wide, despite differing dance styles, interventions, and populations assessed in the studies. As a result, no statistical analysis of the studies in the review was carried out. This literature review did not exclude studies on the basis of their specificity or incomparability, and therefore can only highlight the work carried out, and suggest areas for further research which might provide comparable data, and build on the canon of research within the wider field of dance and health.

Categories covered within the literature review are based around the physiological and psychological impact of dance on older people. Within these categories, topics covered include general fitness and strength, balance and gait, general psychological wellbeing such as self-confidence, social inclusion, and cognitive function in areas such as procedural learning. Populations assessed range from 50 years upwards, and include both healthy populations, and physically and psychologically impaired cohorts.

Dance styles covered include social dance, creative and contemporary dance, and traditional dance forms such as Turkish folklore dance, traditional Greek dance and Irish Céilí dancing.

The review concludes that dance can have a positive impact on both the physiological and psychological status of older people. More research is needed however, to explore these areas further and perhaps more vitally, to disseminate the potential benefits of dance to the wider public.

## Background and Context

This literature review was commissioned by the London Thames Gateway Dance Partnership and produced by the Dance Science department of Trinity Laban Conservatoire of Music and Dance in autumn 2010.

### London Thames Gateway Dance Partnership



The London Thames Gateway Dance Partnership (LTGDP) was founded in 2004. It brings together Laban, East London Dance, Chisenhale Dance Space, and Greenwich Dance Agency, as well as Arts Officers from the ten East and South East London boroughs. The aim of the partnership is for all organizations involved to work together and develop a united voice.

### Trinity Laban Conservatoire of Music and Dance



Trinity Laban is a leading provider of innovative music and contemporary dance education. Its community of performers, composers, choreographers, teachers and researchers builds on the Conservatoire's unique heritage whilst embracing the new, the experimental and the unexpected. Over 1000 undergraduate and postgraduate students are trained at Trinity Laban with dance students based at Laban. Laban is known for its excellent training, a vibrant programme of performances and festivals, and its education and community work.

### Dance Science Department

Dance Science is a relatively new but fast growing area of research and study. By recognizing the dancer as an athlete and investigating the dancer from physiological, biomechanical and psychological perspectives, the aim of dance science is to enhance dance training practices, optimise the dancer's potential as an elite performer, and assess the impact of dance within community settings. In addition to providing the world's first Masters in Dance Science, the Dance Science department conduct a wide range of research projects, collaborating with external organisations to provide consultancy in areas such as investigating dance within community settings, optimising performance health, and devising performer-specific training.

Partners within this area of Dance Science range from commissioning bodies such as regional councils to professional dance companies at the forefront of the dance industry in the UK.

### **Aims and Scope of Literature Review**

The aim of this literature review was to provide a broad overview of current and previous dance and research projects involving elderly populations, which have been carried out. This was as a means of gaining insight into the impact and potential impact of dance among older people, to highlight reported successes of dance projects, and also point to areas for further research.

Due to these aims, the scope of the literature review was naturally quite broad. Inclusion criteria for studies were wide, despite the differing dance styles, interventions, and specific populations assessed in various studies. It was therefore impossible to employ any statistical analysis on the studies in this review – rather, in recognition of the inevitable broadness of scope, the review aims to roughly map out the field of dance and health research among elderly populations, before highlighting specific recommendations and case studies from selected studies.

In devising the literature search and framework, it became necessary first to survey briefly, the physiological and psychological issues particular to elderly populations, which might be aided or enhanced by participation in physical activity or dance. Age UK (The umbrella organisation of Help the Aged and Age Concern), highlights specific age-related physiological and psychological issues such as heart disease in their ‘health and wellbeing’, factsheets, and emphasise the importance of exercise and healthy living as a way to prevent and combat age-related illness. In addition to physiological issues such as loss of mobility, Age UK also outlines the vulnerability of elderly people to depression and loneliness due to factors such as loss of independence or bereavement (Age UK website).

Following a broad examination of some of the health and wellbeing issues facing older people, it was then necessary to gain understanding of the areas that have been researched concerning general physical activity and older people. This field is naturally extremely widespread, and larger than that of dance and health research with older people. This literature review does not attempt to provide an in-depth survey of this field, but refers briefly to some of the known benefits of physical activity for older people, in order to provide context to the studies in this review, and also to highlight the need for further research into the specific potential impact of dance, rather than general physical activity, for older people.

Following these initial steps, a literature search was conducted in the areas of physiological and psychological impact of dance on older people. The resulting literature review is quite diverse in subject matter – generally studies were not excluded on the basis of specificity or lack of parity with other studies, but included so as to provide a general picture of the field.

## Areas covered within the literature review

### Population groups

Whilst certain themes recur in the field of elder dance and health research (which will be outlined later), some of the studies surveyed are quite disparate in terms of potential for comparison. Perhaps predictably when dealing with this broad population, many of the participant groups studied are quite specific. Often these populations are ones with physical impairment, such as Parkinson's disease (Hackney and Earhart, 2009), or cognitive impairment such as Alzheimer's disease (Rösler et al., 2002), or dementia (Palo-Bengtsson & Ekman, 2002). Due to the specificity of these groups, it is naturally difficult to draw broad conclusions as to comparable impacts; a particular dance intervention might prove successful for Parkinson's disease sufferers, but might not be effective for individuals with cognitive impairments for example.

It is also important to bear in mind that within umbrella terms such as 'older' people, and 'elderly' people, there may exist an age difference of up to and above 30 years, and therefore a vast difference in terms of physiological and psychological health. Whilst some populations examined within the studies in this review, were frail (Nordin and Hardy, 2009), others were apparently relatively fit and independent (Thomas and Cooper, 2003). Often too, these variances in age range and ability may exist within one study. Dance groups such as *Company of Elders* (Ross, 2007), whilst all mainly able bodied, contain dancers between the ages of 62 and 85.

### Dance and Research Interventions

Whilst the volume of studies may not be large in comparison with similar research in the Sports Science field for example, the ranges of dance style covered within this review are broad, from social dance (Verghese, 2006) to creative dance (Bertram and Stickley, 2007), and more traditional forms such as Turkish folkloric dance (Eyigor et al., 2009). Also varied are the modes and styles of research, from clinical trials using a range of standardized scales (Federici, Bellagamba, & Rocchi, 2005), to more evaluative modes of research, employed to assess existing dance classes and their impact on participants (Thomas and Cooper, 2003).

This literature review did not exclude studies on the basis of their specificity or incomparability, and therefore can only highlight the work carried out, and suggest areas for further research which might provide comparable data, and build on the canon of research within the wider field of dance and health.

### Dance Therapy vs. Dance Intervention

It is necessary at this point to discuss the differences between 'Dance Movement Therapy' and the dance interventions considered in this literature review (dance classes, groups and dance-based exercise classes). According to the *Institute of Dance Movement therapy*, dance

movement therapy (DMT) is a 'form of psychotherapy which uses creative movement and dance as a process to further emotional, physical, cognitive and social integration within a therapeutic relationship.' The institute goes on to say that DMT is 'based on the assumption that an individual's movement reflects his/her individual way of thinking and emotional processes'. The institute also stresses that 'DMT does not focus on dance - dance steps and movement sequences are very rarely taught during sessions' (IDMT website).

The American Dance Therapy Association also defines DMT as 'the psychotherapeutic use of movement to promote emotional, cognitive, physical, and social integration of individuals,' (ADTA website). Whilst DMT is practiced in many community settings, and may produce similar impacts to the ones discussed in this review, it became necessary to make some distinction between dance classes or dance-based interventions, and specific DMT programs. Naturally there are many crossovers between these two fields and it was difficult at times to differentiate between therapeutic impacts which may occur as a result of a dance intervention, and specifically therapeutically-devised dance programs.

As a general rule, this literature review tended to focus on dance interventions which either employed a discernible dance style, or contained aims and material which were weighted towards dance, rather than therapy. Where more therapy-weighted studies were included, it was due to them containing findings or recommendations which were deemed to be directly applicable to a dance and health research context. Much research is carried out in Dance Movement Therapy, and the ADTA website among others, provides excellent bibliographic information and context to the field.

## Search Methods for Literature Review

### Databases

A comprehensive search for literature was conducted, using general and scholarly databases which included library and archive resources such as

- Trinity Laban conservatoire of Music and Dance library and archive resources
- British Library
- International Bibliography of Theatre and Dance
- Web of Knowledge,
- Zetoc
- Medline
- PubMed
- PsychInfo
- JSTOR
- New York Public Library
- Suncat
- Sage
- Google Scholar

## Search Terms

Based on the most common flagged search terms in initial searches, the following search terms were selected:

- 'Dance\*' (truncated),
- 'Dance Aged '
- 'Dance Elderly'
- 'Dance for Older People'

## Source documents

Source documents and format of materials include:

- Journal articles
- Newspaper and magazine articles
- Evaluation reports
- Books
- TV documentaries
- Video footage

## Problems facing older people

As previously mentioned, Age UK stresses in its resources for elderly people, the importance of exercise and a healthy lifestyle for maintaining independence and combating age-related illness. Older people face a range of issues, both physiological and psychological from osteoporosis to depression (Age UK). In addition to age related issues, isolation, loneliness, and sometimes depression can occur as a result of factors such as bereavement or loss of independence and mobility (Age UK). Physiological and psychological issues can often be inter-related. Loss of functional mobility for example, can contribute significantly to depression (Vanková, et al, 2008). It seems natural therefore that interventions which may contribute to physical mobility, may also have other far-reaching psychological benefits.

In a vulnerable population group such as the elderly, a small increase in mobility or physical function could feasibly have a strong impact on their quality of life. The difference in for example, being functionally mobile might signify the difference between an individual remaining able to live independently, and travel outside the home to socialize, and one who becomes house-bound and isolated, or has to move into residential care. Discussing the importance of maintaining and improving functional fitness, Patricia A. Brill states that 'improving functional fitness enables older adults to maintain a range of functional movement', suggesting that this maintenance of functional movement can make the difference between 'being bedridden', and being able to do range of activities, including 'play with grandchildren,

travel, shop and go to worship services...drive to doctor's appointments [and]...get out of a chair' (Brill, 2004).

Within residential care, as well as with independently living older people, problems such as depression can be common (Vanková, et al, 2008), and many articles refer to an apparent lack of appropriate and stimulating activities for residents in care (Harmer & Orrell, 2008). A 2009 Guardian newspaper article which detailed a day in a care home, whilst acknowledging the hard work of the staff, stated that 'it's hard not to be shocked by the reality of daily life [in a care home]' (Gentleman, 2009). Studies and articles such as these outline a need for more appropriate activities for residents living in care, and point to a potential for enhancement of wellbeing through the provision of physical or stimulating activities which could be further explored.

Research into the impact of both physical activity, and also dance has often focused on areas outlined above such as depression and functional fitness, to examine further how wellbeing in later life might be aided by exercise and healthy living.

### **Benefits of physical activity for older people**

Increasing the level of physical activity across all age groups and populations is, according to the 2008 NHS National Health Survey, a 'global priority' (NHS National Health Survey Database). It is widely accepted that physical activity and exercise is vital to good health and well-being and of particular importance in later life. Physical activity can be beneficial to the older adult in numerous ways, such as prolonging functional mobility, (Vanková, et al, 2008), and therefore perhaps, independence, and lowering the risk of mortality (Warburton, Nicol & Bredin, 2006).

Findings from the 2008 National Health Survey stated that from a survey of self-reported physical activity; only 17% of men, and 13% of women over the age of 65 yrs, met the minimum adult exercise recommendations of the Chief Medical Officer (the UK Government's principal medical adviser and the professional head of all medical staff in England). Furthermore, the proportion of both men and women who met the recommendations declined with age. For both men and women, participation in walking and in sports exercise in particular, fell with age (NHS National Health Survey Database). These findings illustrate that it becomes an increasingly important priority, not only to increase the numbers of older people participating in exercise, but to determine age-appropriate and enjoyable forms of exercise for older people, in order to facilitate this wider goal.

In their report, *Active for Later Life*, the British Heart Foundation National Centre for Physical Activity and Health (BHFNC) discusses how promotion of physical activity in later life should be viewed, and the practical function it needs to serve among older people. The report suggests that 'striking a balance between disease prevention, the maintenance of independence, and improving quality of life is an aspiration expressed by older people themselves and provides a more optimistic view of aging' (British Heart Foundation, 2007).

The BHFNC goes on to put forward the suggestion that physical activity messages need to encompass a number of elements such as:

- Reducing the barriers and making it easy
- Offering choice
- Tailored to the individual

In view of these elements, it makes sense to investigate what particular impacts physical activity can have, and also, which activities seem to be particularly 'tailored' and appropriate to the population in question.

The benefits of physical activity in later life are well documented. A 2006 narrative literature review into the health benefits of physical activity (Warburton, Nicol & Bredin, 2006) outlines the range of studies which have been carried out in primary and secondary prevention of disease, covering topics such as cardiovascular disease, diabetes, cancer, and osteoporosis. This selection of studies and others demonstrate the significant role which physical activity has to play in disease prevention and good health. Research has shown a direct relationship between an increase in physical activity and a decrease in mortality (Gregg et al., 2003), and the greatest improvements in health status have furthermore been seen when least fit individuals become physically active (Warburton, Nicol & Bredin, 2006). Research also suggests that the preventive effects of regular physical activity in areas such as all-cause mortality (Lee & Skerrett, 2001), cardiovascular disease (Talbot, Morrell, Metter & Fleg, 2002), and type 2 diabetes is at least as strong when employed in old age, as middle age (Diabetes Prev. Prog. Research Group, 2002).

Among the health risks facing older people, falls are a significant factor in causing distress, injury and also mortality. Writing in his publication on the prevention and management of falls in older people, Rein Tideiksaar states that 'falls represent a major cause of death and disability in older people and pose a serious threat to their health and well-being' (Rein, 2002). Falls, and fear of falling can be a source of great anxiety to older people, and injuries sustained from falls can be a large cause of death among the elderly population in the UK (National Institute for Clinical Excellence, 2004). Studies have demonstrated that physical activity and strength training can prevent or reduce the incidence of falls among the elderly (Gillespie et al., 2004).

A systematic review on the 'effects of exercise on balance in persons with Parkinson's disease' (Dibble, Addison and Papa, 2009), concluded that there was moderate evidence that 'exercise was effective for improving balance task performance...[and] improvements in postural instability'. The review stated that longer term follow-up studies were needed to determine whether gains were retained across a longer term.

In addition to physiological gains, physical activity has also been shown to impact positively on various facets of psychological well-being among older people. Research has found that physical activity can reduce anxiety in older people for example (Taylor, 2000), and enhance mood (Arent, Landers and Etnier, 2000).

### **Appropriate physical activity for older people**

Given the wide-ranging benefits and the necessity of exercise to good health and longevity, it is worth considering what particular kinds of physical activity have been shown to be most appropriate for an older population.

Many current exercise guidelines highlight a multi-modal or varied form of physical activity as the most appropriate for older people. Multi-modal programs such as these might generally include cardiovascular training, strengthening exercises, flexibility, and balance training. A comprehensive review of numerous multi-modal interventions for older people concluded (in acknowledgement of the limited amount of data available), that multi-modal exercise has a small effect on 'physical, functional and quality of life outcomes' (Baker, Atlantis & Fiatarone Singh, 2007). The review also determined that multi-modal exercise programmes can have a positive effect on the prevention of falls in older adults.

### **Areas examined in dance so far**

When considering the recommendations both of organizations such as the BHFNC and physical activity studies, that appropriate exercise for older people should offer choice, be tailored to the individual and provide a balance between various elements such as cardiovascular and strength training, dance could be viewed as a most appropriate activity to be explored in terms of the potential wellbeing impacts it might elicit in older people. Dance, when viewed within these guidelines seems to offer the potential of being both an attractive and appropriate form of physical activity for older populations. Whilst research into the impact of dance on elderly populations has been somewhat limited thus far, and frequently tends to focus on particular population groups, there have been various positive findings which suggest that dance (in a variety of forms), can impact positively on both the physiological (Shigematsu, 2002), and psychological (Dayanim, 2009), well-being of older people.

## Dance and Physiological Well-Being

Broadly speaking, research into the physiological impacts of dance has covered styles such as aerobic, traditional, and social dance. Studies have focused on the physiological impacts in terms of lower muscle strength, general fitness, and in particular, balance and gait stability. Studies have looked at both healthy populations and specific populations such as Parkinson's disease sufferers.

A systematic review of 18 studies concerning the physical benefits of dancing for healthy older adults indicated that adults could 'significantly improve their aerobic power, lower body muscle endurance, strength and flexibility, balance, agility, and gait through dancing' (Keogh et al., 2009). The findings of this review also indicated that dance 'might improve older adults' lower body bone-mineral content and muscle power, as well as reduce the prevalence of falls and cardiovascular health risks' (ibid). This review pointed to the need for further research in the field to differentiate and determine the particular impact of different forms of dance.

### Aerobic dance and Exercise Dance

Among healthy older population groups, research has demonstrated the potential for aerobic dance to impact positively on well-being. An intervention which employed low-impact moderate intensity exercise, in the form of aerobic dance, on a cohort aged 68.6 (+/- 5.6 years), found that aerobic dance elicited improvements in peak oxygen uptake (VO<sub>2</sub>), lower extremity muscle strength and 'psychological vigor' (Engels, Drouin, Zhu & Kazmierski, 1998).

These findings support those of an earlier study which examined the impact of 12 weeks of low-impact aerobic dance on a group of sedentary elderly women, finding that after the intervention, the participant group improved significantly in 'all functional fitness components (except motor control/coordination), including cardio-respiratory endurance, strength/endurance, body agility, flexibility, body fat, and balance' (Hopkins et al., 1990). Both of these studies demonstrate the wide-ranging physiological impact of a relatively short dance based intervention.

Among middle-aged women, aerobic dance and dance-based exercise has also been shown to promote weight loss (Shimamoto, Adachi, Takahashi & Tanaka, 1998). Whilst this study involved middle-aged, rather than elderly women, the findings may nevertheless be illustrative of the potential physiological impact of aerobic dance on adult subjects

A recent study into the effects of a dance-exercise program (the Exercise Dance for Seniors – EXDASE) on lower-body functioning in institutionalized older adults also showed that dance-based exercise can 'support lower-body functioning in previously sedentary, frail older people' (Holmerová et al., 2010). A randomized control was carried out among individuals in residential care in the Czech Republic. In a variety of tests such as the '2-minute step test', and the chair 'sit and reach test', the experimental group outperformed the control group. The intervention was

described by researchers as a 'relatively simple' dance-based exercise program, which was nonetheless shown to elicit positive results in the population studied.

In response to findings which suggested that aerobic exercise training could improve functional capacity in patients with heart failure, a comparative study was carried out in 2008 to assess whether waltz dancing could be also deemed as a safe form of exercise to improve functional capacity in similar patients. The study compared two participant groups (with a mean age of 59 upwards); one participating in supervised aerobic training, and the other in waltz dancing. The study concluded that waltz dancing was a safe form of physical activity for patients with stable chronic heart failure. Researchers suggested that waltz dancing be considered in clinical practice 'in combination with aerobic exercise training or as an alternative to it' (Belardinelli et al., 2008).

### Traditional Dance

Various forms of traditional dance, including Korean, Greek, and Turkish dance have been examined in light of their potential physiological impacts.

A 1996 study which focused on traditional Korean dance among elderly subjects reported increases in lower body strength, and flexibility. The study also found reductions in body weight, body fat, heart rate and blood pressure among participants following the 12 week traditional dance programme (Jeon & Chloe, 1996).

In 2009, a randomized controlled study was carried out which examined the impact of Turkish folklore dance on females over the age of 65 yrs. After an 8 week dance-based intervention (based on Turkish folklore dance), improvements were seen among the experimental group in functional performance tests such as a 20-m walk test, stair climbing and chair rise time. This study suggests that folkloric dance (specific to countries), may prove an appropriate form of exercise for improving functional mobility in older people due perhaps to the receptivity of older people to participate in a traditional or familiar dance style.

*Dance 4 Health*, a 2009 arts and health project which assessed the impact of dance on physical health, psychological health and aspects of social inclusion among various population groups also reported the potential for a traditional dance style to be an appropriate physical activity for older women. A 10 week programme of 'Bhangra-cise', an exercise class based on Bhangra (traditional south Asian folk dance) was delivered to a group of Asian women aged between 65 and 75 years. Various positive outcomes were observed by the dance artists involved in the project such as improvements in 'participant's attitude to taking part in physical activity' (Nordin & Hardy, 2009).

Another traditional dance style which has been explored and shown to elicit positive physiological results is traditional Greek dance. A preliminary study conducted in Greece assessed the effect of a 10 week traditional Greek dance program on static and dynamic balance indices in healthy older people. Participants of the dance classes demonstrated improvements in balance (through a decrease in centre-of-pressure variation and trunk sway in

a one legged stance). An increase in trunk rotation was also noted when performing some of the post-test assessments. (Sofiandis, Hatzitaki, Douka & Grouis, 2009).

### **The significance of traditional dance to older people**

In addition to studies which have examined the physiological impact of traditional dance forms among elderly populations, there have been some studies which have sought to explore the cultural meaning and significance of traditional dance forms for older people. A 2007 study which looked at ballroom dance as therapy for older people in Brazil found that ballroom dance allowed elderly participants 'to establish cultural connections to the larger Brazilian dancing culture' (Moura Silva Lima & Pedreira Vieira, 2007).

Similarly, a study into the meaning of Irish (traditional) céilí dancing for three elderly céilí dancers found that in addition to the participants perceived health and social benefits of Irish traditional dance, they also felt that céilí dancing was important for the 'stimulus for reminiscence' it provided, and also 'its connection to cultural heritage' (Kay Allen, 2003).

### **Balance and gait**

Poor balance and a weak or unstable gait can contribute to an increased risk of falls in older people (Krampe et al., 2010). Increasing balance and developing a more stable gait can therefore be viewed as an aid to preventing falls in older people. Perhaps for these reasons, this is a strong area of research, both among healthy subjects, and those with functional impairments such as Parkinson's disease. Studies into the impact of dance on older populations have often focused on social dance. In addition to the Greek dance described previously which demonstrated balance gains as a result of a traditional dance intervention, many studies have examined social dance in the context of gait patterns and balance.

### **Balance and gait studies among healthy subjects**

A 2006 study into the cognitive and mobility profile of older social dancers found that older social dancers had better balance and gait patterns than age and education-matched non-dancers. The range of dance styles among the participant group included ballroom dancing, line dancing, swing dancing, and others. The study found that older social dancers had a more stable gait pattern than non-dancers. Older social dancers walked faster than non-dancers, and had longer steps and strides than older non-dancers. These factors contributed to a more stable gait and less vulnerability to falls, and the study therefore suggested that dance could be seen as a tool to improve balance and reduce the risk of falls in older people (Verghese, 2006).

Postural stability and physical abilities performance in social dancers were also explored in a 2008 comparative study which assessed the benefits of social dancing in dancers aged between 50 and 87 years (Zhang et al., 2008). Comparing walking speed, lower limb reaction time and low back flexibility between 202 social dancers and 202 community-dwelling participants, the

study found that dancers (older than 60 years) had better postural stability and faster leg reaction times than non-dancers. Despite variations in levels of difference (depending on age and gender), the study indicated that overall 'social dancing is associated with enhanced postural stability and physical performance in older adults' (ibid).

A study conducted by McKinley et al (2008) compared the effects of walking and Argentine tango on balance among elderly individuals deemed to be at risk of falling (aged 62-91). Whilst both walking and tango were deemed 'effective activities for increasing strength and walk speed', it was suggested that tango might result in greater improvements than walking, in balance skills and speed. Researchers highlighted the need for this study to be repeated with a larger sample size to verify its results as the participant group in this study was quite small (30 participants).

Alongside social dance studies carried out among healthy populations, one study was conducted into the effects of Caribbean dance-based training on balance in adult and young old subjects. A randomized clinically controlled trial in which participants followed a 3 month Caribbean dance exercise program demonstrated significant improvements in balance capability among the experimental group (Federici, Bellagamba & Rocchi, 2005).

### **Balance and gait studies among Parkinson's disease patients**

Perhaps due to the physical impairments associated with Parkinson's disease including balance, many studies into social dance have focused on the potential for social partnered and non-partnered dance to impact positively on aspects of gait and balance among Parkinson's diseases sufferers.

Researchers Hackney and Earhart have conducted a series of studies into the impact of social dance on balance and movement control among individuals with Parkinson's disease. These have included for example, a comparison of Argentine tango dance and American ballroom impact on movement control (Hackney and Earhart, 2009). This study found that whilst tango might target 'deficits associated with Parkinson's disease' more than waltz and foxtrot, both dance styles can benefit balance and locomotion (ibid).

A study of short duration, intensive tango dancing for Parkinson's disease (Hackney and Earhart, 2009) also found that frequent 1.5 hour tango lessons over a two-week period of time were appropriate and sufficient to aid in improving functional mobility among patients with mild to moderate Parkinson's disease.

A 2010 study (Hackney & Earhart, 2010<sup>a</sup>), which explored the potential and feasibility for tango lessons to serve as rehabilitation for one individual with advanced Parkinson's disease who 'primarily used a wheelchair for transportation' found that 20 partnered tango lessons improved 'balance, endurance, balance confidence and quality of life' in the participant.

Another recent study (Hackney & Earhart, 2010<sup>b</sup>), into the effects of dance on gait and balance in Parkinson's disease researched the impact of both partnered and non-partnered dance, suggesting that dance could serve as an 'excellent way to improve motor impairments'. Results

showed that 'after 10 weeks of 1 hour partnered and non-partnered dance lessons twice per week, 2 cohorts of people with Parkinson's Disease improved in measures of gait, balance and functional mobility.' The study also demonstrated maintenance of gait and balance gains among the participants in a follow-up study.

Partnered and non-partnered dance appeared similarly effective in terms of physiological impact, and the study also suggested that as dance 'interests and engages older individuals, it could be lastingly effective and enjoyable for individuals with Parkinson's Disease...' (ibid)

## Dance and Psychological Well-Being

Research has shown the capacity for various types of dance to have a positive impact on the psychological status of older people. The areas in which dance has been proven to be beneficial are wide-ranging, from assisting with the verbal abilities of patients with dementia (Dayanim, 2009), to promoting social inclusion and combating loneliness among healthy older people (Bertram & Stickley, 2008).

### General psychological well-being and social inclusion

Many studies have explored the role dance can play in promoting general psychological well-being among the elderly. An early study in 1988 which examined the effects of an 8 month weekly dance intervention, found that dance and movement classes had a positive impact on the self concept of adults between the ages of 55 and 85 yrs. Following the dance programme, the experimental group displayed 'stronger self-concept in the areas of physical self and personal self', than the control group (Berryman-Miller, 1988).

More recent projects such as the Young @ Heart study which provided a weekly creative dance session for participants (Bertram & Stickley, 2009) have reported various social and wellbeing gains as a result of taking part in dance classes. Participants in Young @ Heart reported consistently positive responses when asked to describe their feelings/emotions when taking part in the dance classes. They referred to an enhanced sense of self confidence, fostered both by their perceived physical gains as a result of dancing, and also group performances which they took part in. The participants also spoke positively about the 'emotional stimulation experienced through conversation, reminiscence and recollection' (ibid).

The social benefits of engaging in group dance sessions were further reflected in a study of women over the age of 60 yrs who participated in line dancing. Entitled 'Life without line dancing and the other activities would be too dreadful to imagine', the interview study identified certain themes surrounding how line-dancing affected the participants' lives. It reported that line dancing enabled the participants to 'expand their repertoire of social activity, leading to positive reinforcements such as further community involvement' (Nadasen, 2008).

The previously mentioned 2005 study involving the impacts of Caribbean dance on balance (Federici, Bellagamba & Rocchi, 2005) also examined the benefits of dance in psycho-social areas, through a 4-item questionnaire developed by the researchers. The majority of participants in the study reported 'great satisfaction' with the dance intervention, and there was a statistically significant improvement in sexual activity and sleep quality (ibid).

Quality of life improvements among participants were also reported in the 2009 Turkish study which examined Turkish folklore dance in the context of physical performance and balance (Eyigor et al., 2009).

## Depression, Dementia, & Alzheimer's disease

Depression symptoms are among the most common mental health problems affecting the elderly, especially those in long-term care (Vanková, et al, 2008). Research into the correlations between functional status and depressive symptoms among older adults in residential care found that poorer mobility was related to greater depressive symptoms, and elements such as functional limitation by pain were most strongly related to depressive symptoms. The study also stated that cognitive health and depressive symptoms were highly related (ibid).

Research has elicited many positive results in terms of the impact which dance can have on depression on older people. Much of the research so far has focused on populations within residential care, or those with cognitive impairment such as Alzheimer's disease or dementia.

A focus group (Harmer & Orrell, 2002), around the topic of 'what constitutes meaningful activity for people with dementia living in care homes', found that four themes emerged among older people with dementia, care home staff, and family carers: reminiscence, family, social, musical, and individual. Listening to music, singing and dancing were all highlighted as being important aspects of care-home residents' lives. The main factors identified that made activities meaningful for the residents were ones which were 'based on values and beliefs related to their past roles, interests and routines' (ibid).

Further research has focused on social dancing as a means to support intellectual, emotional and motor function in persons with dementia, and has demonstrated positive responses among participants to social dancing (Palo-Bengstson, Winblad & Ekman, 1998).

The 2009 *Dance 4 Health* study (Nordin & Hardy, 2009), found that the participants among its frail elderly people group who had Alzheimer's disease generally remained 'actively engaged' in the dance sessions, and demonstrated a strong level of commitment towards the dance sessions. This study, whilst small in number of participants demonstrated that dance can be an appropriate and engaging activity for those with Alzheimer's disease as well as healthy older people.

A study which researched emotional responses to social dancing and walking among individuals with dementia found that none of the participants had difficulty understanding how to execute movements in dance. The study also highlighted music as a key element in creating a positive atmosphere, and therefore eliciting positive emotional responses among the participants during the activity (Palo-Bengstson & Ekman, 2002).

A pilot-study of waltz lessons with patients with moderate Alzheimer's disease also demonstrated a significant effect in procedural learning among participants, suggesting potential implications for dance to serve as a therapeutic intervention for patients with moderate Alzheimer's disease (Rösler et al., 2002). The study compared Alzheimer's disease patients with patients with Major Depression, in an intervention which consisted of a 12 day series of half hour waltz lessons. In comparison with the depressed patients, the participants

with Alzheimer's disease showed significant improvements in procedural learning in the dance classes. Whilst this study was a trial, with a small sample group, it produced nonetheless positive results for the Alzheimer's patients, and suggested further studies with a larger sample group be conducted to validate its findings.

A more recent study (Hackney, Earhart & Gammon, 2010) which explored the effects of social partnered dance for patients with 'serious and persistent mental illness' found trends towards improvement in anxiety and depression (measured by Beck Depression II and Beck Anxiety inventories).

### Emergent themes and recommendations from selected projects

The range of findings available across different research projects means it can be difficult to draw broad conclusions surrounding the potential well-being impact of dance. In addition to the studies already discussed within the specific context of physiological and psychological health, there are projects where findings or recommendations seem of particular relevance when considering both the volume of research already in this field, and also the potential to move forward with this field. One project which offers particularly rich observations and evaluations is a 2002-2003 study which examined the meaning of social dance for older people in various settings in Essex and London (Thomas and Cooper, 2003). It seems worthwhile to include some selected observations from this project and others, along with recommendations from dance company *greencandle*, (a long established company who work with vulnerable groups, including the elderly), as a way of drawing together some additional information concerning what dance may mean to elderly people, and factors to consider if planning to devise a dance project for older people.

*Dancing into the Third Age: Social Dance as Cultural Text* (Cooper & Thomas, 2002 and Thomas & Cooper, 2003), aimed to 'interrogate the relationship between dance and the older individual' (Thomas & Cooper, 2003). Using an ethnographic approach, the project utilized interviews and observational techniques as a way of gaining insight into the meaning of various forms of dance for older people. The range of venues and dance types explored included a modern sequence club, a tap dance class, a creative dance class, two mixed social dance venues and a quadrille workshop. These took place in various venues across South-East London and Essex.

The study identified a number of factors as particularly important for the participants interviewed, including the sense of community fostered by social dances and dance classes. The importance to the participants of 'dressing up' also featured strongly, especially among social dancers, with the report suggesting that 'the dancer's visibility to each other counters their invisibility outside of the dance hall' (ibid). The choice of music was cited as integral to the dance classes, both in the reminder it provided for older dancers of their youth, and furthermore within social dance settings, as an integral part of social dancing itself.

Concerning the importance and enjoyment afforded by the music, one participant in the study noted:

*'...it's my kind of music. I like that sort of music; I can hear the music; I can feel the music; I like to dance; I like the feel of dancing[...]it's natural to go and want to dance and it's natural to enjoy the music that one dances to.'* (Don, participant in 2003 study)

The strongest feeling of community was fostered among modern sequence dancers in the study, and it has been suggested by researchers (and Whitworth, 1995, cited in Thomas and Cooper, 2003), that this could be owing to the 'feeling of togetherness from all couples performing the same sequence...[and] having the common aim of performing the given sequence properly'. It was noted in the report that the members of the creative dance classes also exhibited a group spirit as they were 'required to work together, as a group, in pairs and in smaller groups...' (ibid)

In all types of dance studied, it was reported that older dancers preferred when 'allowances are made for the ageing body and mind' in the content of the dance session (Thomas & Cooper, 2003).

These sentiments regarding maintaining an awareness of ability levels among older dancers are echoed in *Growing Bolder: a start up guide to creating dance with older people* (Hansen, Early & Davies, 1997), a resource guide written by members of *greencandle* Dance Company. *greencandle* have run numerous dance performances and participatory classes with older people, and drawing from these experiences, they list a number of recommendations for creating dance classes for older people in the *Growing Bolder* resource. When considering the content and choreography of a class, *greencandle* suggests it is important to: 'have careful regard for the range of abilities present in the group' and also have regard for 'people's expectations of dance sequences'. The resource also describes that whilst individuals may initially have a reluctance to experiment and improvise, as time and trust is gained, more adventurous avenues can be explored, such as improvising with props (ibid).

The recommendation that *greencandle* sets out concerning participant's expectations of dance and dance sequences is amplified by the findings of an evaluation of *Gener8*, a dance group for the over-sixties set up by the Scottish ballet in 2002 (Davidson & Powney, 2002). The evaluation found that after one term of dance classes which were largely 'dance-theatre based', and which involved much improvisation, participants were disappointed and unhappy with their experience of the dance classes. They expressed a desire for 'more structure' and greater dance vocabulary for the following term. Scottish ballet responded to the feedback from participants, and at the end of the second term which had featured a more structured class, with more emphasis on a balletic vocabulary, participants responded in a far more positive fashion to the classes, citing elements such as the 'discipline of dance', and the chance to meet new people, as among the best elements of the experience (Davidson and Powney, 2002).

This would seem to suggest that when the dance classes reflected participants' expectations, they were more open to the classes, and derived more enjoyment from them. In this case, the fact that the project was run by the Scottish Ballet may have resulted in participants expecting a largely balletic, or at least heavily structured dance vocabulary, which may explain their discomfort with the initial content of the classes which focused on improvisation.

In 2009, a dance group for older people was the subject of a BBC documentary (Ross, 2007, Craig, 2009, BBC1, 2009). *Company of Elders*, who have performed in Sadler's Wells and toured internationally, are made up of members ranging between the ages of 62 and 85. They have worked with various choreographers and their repertoire is based on creative, rather than social or traditional dance. During the documentary, many of the dancers spoke of the joy and stimulation, dancing brought to their lives. The opportunity for physical contact was cited by one company member as a particularly significant facet of the experience. The dancer mentioned that as many of the company members lived alone, they were not afforded the opportunity for physical contact on a regular basis however the dance classes allowed a kind of comfortable intimacy within the confines of dance.

In addition to elements such as touch and social interaction, which some studies cite as significant in dance interventions, reminiscence and the use of music are often mentioned as an integral or influencing factor in the success of dance projects with the elderly (Jenkins, 2003).

Reminiscence is often used as a tool within dance interventions for elderly populations. When working with patients with cognitive impairments, reminiscence through dance can be seen as a useful way to stimulate memory. Social dances such as tea dances may operate particularly in this way due to the music and structure they use. Discussing the benefits of tea dances for elderly patients with cognitive difficulties in a 2003 article, Nurse Susan Jenkins describes the role which reminiscence can play in the context of social dancing. 'Social dancing seems to have a reminiscence role. The person's feelings about his or her identity are prompted when he or she remembers the social skills and 'procedures' [associated with a tea dance]', such as 'escorting a partner back to their seat'. Jenkins suggests that social dancing provides a 'chance to reintegrate patients' memories and emotions from earlier years in dancing' (Jenkins, 2003).

Even in cases such as in the *Company of Elders*, who perform contemporary-style dance as opposed to traditional styles, reminiscence has been used by choreographers as a tool to generate movement material. Choreographer Chris Tudor who worked with the company for their 2009 Sadler's Wells performance asked dancers to draw on their experiences of the war, as a tool for improvisation. The piece also used the music of Hoagy Carmichael (a jazz composer and performer who rose to fame in the 1930's), which provided a clear link to the past lives of the performers.

Music has been cited as important in studies ranging from the 2002 focus group around meaningful activities for care home residents (Harmer & Orrell, 2002), to Thomas and Cooper's investigation of the meaning of dance to elderly people (Thomas & Cooper, 2002). Perhaps quite naturally, there are many crossovers between the use of music and the role of

reminiscence in dance. Whilst some studies, particularly those which deal with elderly people with cognitive impairments highlight the benefit of using familiar music, others recommend using different music to evoke a fresh reaction among participants, rather than kindling memory and recollection. *greencandle* for example, advocates using music different to that of the music of participant's youth, as they suggest that elderly people may already have a lot of exposure to music of that style, and music such as this will naturally prompt much recollection and nostalgia on the part of the participants (Hansen, Early & Davies, 1997).

Some current projects taking place in London such as *Dancing to the music of time*, a dance performance group run at Greenwich Dance Agency which was set up in 2010 have expressed a desire to move away slightly from more traditional dance projects with elderly people which may have used social dance and nostalgic music. Greenwich Dance Agency for example, have stated that the aims of *Dancing to the music of time* include 'challenging the stereotypes of what older people are capable of', creating a project that is fresh, performance-led, and not based around reminiscence (*Dancing to the music of time* draft evaluation report, 2010). This may indicate that organizers and deliverers of dance projects with older people are seeking to find new provision of dance for older people, and to break away from traditional moulds of dance projects with the elderly.

## Moving forward

Whilst the volume of research into the impact of dance among older populations may not currently be vast, it is diverse and wide-ranging. Findings seem to be generally positive, illustrating the ability for dance to elicit improvements in various elements of physiological and psychological status.

Dance can impact positively on physical health, particularly in areas such as strength, fitness, (Engels, Drouin, Zhu & Kazmierski, 1998) and balance (Federici, Bellagamba & Rocchi, 2005), both among healthy participant groups and those with physical impairments such as Parkinson's disease (Hackney & Earhart, 2010).

Within the area of psychology, dance has been shown to impact positively both in terms of general psychological well-being, such as the enhanced self confidence reported by participants in the 2009 Young @ Heart project (Bertram & Stickley, 2009), and also as a vital cognitive tool for patients suffering cognitive impairment (Dayanim, 2009).

As previously discussed, the range of research carried out makes it difficult to draw wide conclusions as to the best facets of dance for older people, or concrete best practice recommendations for appropriate delivery of dance among specific elderly populations. The potential areas for further research are numerous; to validate existing findings, and explore new areas for research. As many of the studies so far have dealt with relatively small population groups, it would be highly useful to replicate some studies with larger population groups. Further to this, it could be useful to explore specific elements in more detail such as employing differing dance styles, and conducting research within different population groups.

Whilst aerobic and social dance have been explored within the framework of physiological impact, (examining elements such as gait and fitness), similar research concerning creative or contemporary dance has been lacking. Social dance has been identified as a highly appropriate physical activity for older populations, however it is possible that many of the impacts of social dance might be replicated within the context of a creative dance intervention. Furthermore, creative dance could be shown to have additional or differing impact as it could potentially place greater emphasis on expressive and creative exploration, or employ a more adaptable, freer movement vocabulary. This would seem a particularly useful avenue to investigate, as increasingly more projects such as the current *Dancing to the music of time* performance project, seem to be adopting a different approach, and favoring creative, rather than social, styles of dance.

Given the emphasis which some studies have placed on the role of music and reminiscence within the context of dance projects with older people, further research could also focus on the interactions of music, nostalgia and reminiscence within elderly dance projects to provide more specific findings as to how reminiscence and music might enhance enjoyment or aid memory for individuals with cognitive difficulties.

Within the field of dance and health for older people, there is much opportunity for comparative studies, both in terms of comparing the impact of differing dance styles, but also comparing the demographic variables and their influence in areas such as participants' favored dance styles and expectations of dance. These might differ quite significantly between contrasting ethnic and geographic populations.

When considering the many issues older people may face, from physical impairment and loss of functional fitness, to loneliness and depression, it seems dance has a significant capacity to impact positively on the quality of life of older people. Elements such as maintaining physical function through physical activity, promoting creativity and social integration, allowing non-verbal stimulation and communication, and many more ensure that dance can be a highly appropriate and enjoyable activity for older people. Much research is needed to explore these areas further and perhaps more vitally, to disseminate the potential benefits of dance to the wider public.

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**East London Dance**

[www.eastlondondance.org](http://www.eastlondondance.org)

**Chisenhale Dance Space**

[www.chisenhaledancespace.co.uk](http://www.chisenhaledancespace.co.uk)

**Greenwich Dance Agency**

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