



# KEEP DANCING . . .

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The health and well-being benefits  
of dance for older people

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## ABOUT BUPA CARE SERVICES

- Bupa cares for over 18,500 people in the UK.
- We have over 300 care homes in the UK which provide specialist care to some of the country's oldest and most vulnerable people.
- Over 70% of our UK care homes residents receive some form of state funding.
- Bupa has extensive international experience and also operates care homes in Australia, New Zealand and Spain.



### Data sources

Research for this report was carried out for Bupa by the Centre for Policy on Ageing

# INTRODUCTION

The older population in many parts of the world is growing rapidly and, at the same time, it is becoming more diverse. Recent projections suggest that, in England and Wales alone, by 2026 there will be over 10 million people aged 65 and over, of whom 1.3 million will be from black and minority ethnic groups. As people age they tend to adopt an increasingly sedentary lifestyle but there is widespread and compelling evidence that increased levels of physical activity will improve both the longevity and the health of older people.<sup>1</sup> This report reviews the international evidence for the health benefits of dancing for older people.

Exercise programmes for older people commonly experience high drop-out rates. Dance, on the other hand, is an enjoyable and sociable form of exercise where participants report very high levels of motivation.<sup>2</sup>

Dance is also increasingly catching the public imagination. In 2010 over 10 million viewers tuned in to watch episodes of the BBC1 TV programme *Strictly Come Dancing*. This increased interest in dance provides an opportunity to offer dance sessions for older people in community centres, care homes, village halls and hospitals across the country.

Local dance projects for older people have been set up in many parts of the UK. Similar programmes of dance, including ethnic dance, for older people, have been adopted worldwide including recreational dance in Australia.<sup>3</sup>

There are a number of benefits to dance for older people:

- dance is inclusive and one of the principles of community dance for older people is that anyone and everyone can take part;<sup>4</sup>
- dance can be tailored to match the physical capabilities of an older person and dance can also reflect the cultural diversity of the older population; and
- dance is a social activity and, as such, can benefit both the physical health of older people and promote a sense of well-being and social inclusion.

<sup>1</sup> Lievesley, 2010; Health Survey for England, 2008

<sup>2</sup> Nordin and Hardy, 2009

<sup>3</sup> Connor, 2000

<sup>4</sup> Houston, 2005

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**“Dancing makes you feel alive, almost like you’re young again...”**

**I don’t know anything else that can have that effect on you...**

**Maybe it’s the music, the people... I don’t know...”**

- Young@Heart participant, 2009

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# EXECUTIVE SUMMARY AND KEY FINDINGS

This report identifies a number of issues around exercise for older people and draws together the key health benefits of dance for older people. These benefits can promote both physical and emotional wellbeing.

## Older people don't get enough exercise

- Only 20% of men and 17% women aged 65-74 get the recommended levels of physical exercise.
- For people aged over 75 this falls to 9% for men and 6% for women.

## This lack of exercise matters because taking part in physical activity improves both health and life expectancy

- Regular physical activity by older people reduces the occurrence of a number of chronic conditions including cardiovascular disease, diabetes, cancer, hypertension, obesity, depression and osteoporosis.
- Older people who engage in physical activity live longer and those who carry out more intense physical activity for longer periods live longest on average.

## Dance benefits the body and the mind

- Dance is a good source of aerobic exercise and a well-designed dance session can also provide low-level resistance exercise.
- Dance has physical health benefits including improvements in balance, strength and gait, which help reduce the risk of falls, a significant health hazard in later life.
- Dance has been shown to be beneficial in the direct treatment of a number of conditions including arthritis, Parkinson's disease, dementia and depression. Taking part in ballroom dancing has been shown to reduce the chances of getting dementia by 76%.
- Taking part in dance also improves the mental health of older people including reaction times and cognitive performance.

## Dance promotes emotional wellbeing of older people and combats isolation

- Older people enjoy dance sessions and are more likely to continue to attend them - thereby gaining proportionately more physical benefits than they would from ordinary exercise sessions.
- The social aspects of dance help to overcome feelings of social isolation and depression.
- Dance is inclusive - there no targets, and no failures, which contrasts with the philosophy of sports-based activities.

This report shows that there is considerable and emerging evidence of the benefits of dance as an exercise option for older people. However, too often policy makers in Government and beyond are overlooking the contribution dance can make to the welfare of older people, often concentrating on less inclusive exercise and sports-based activities.

Bupa calls on policy makers to pay more attention to dance.

We believe that supporting organisations that provide dance activities for older people in the community, in care homes and hospitals, can make a major contribution to better physical and mental wellbeing of the growing numbers of older people in the population.

# THE IMPORTANCE OF PHYSICAL ACTIVITY IN OLDER AGE

Physical activity may be defined as 'any movement by skeletal muscles resulting in energy expenditure'. Exercise is a particular form of physical activity which is characterized by 'structured and repetitive bodily movement done to maintain one or more components of physical fitness'.<sup>5</sup> With the addition of music and removal of any assumptions about the purpose of the activity, this definition of exercise as 'structured and repetitive bodily movement' sounds very much like dance.

Physical activity in older age improves the health, quality and length of life for older people. Older people who carry out more intense physical activity for longer periods live longest on average.

A study of 1,449 older people aged 75-84, with a seven-year follow up, reported in 2010 that, taking into account the effect of socio-economic and psychosocial factors such as body-mass index, smoking, marital status, ill health and frequency of contact with others, increased levels of both duration and intensity of physical activity had a significant improving effect on mortality.<sup>6</sup>

These results confirm other findings of the effects of physical activity on mortality for all adults, including older men and women over the age of 75.<sup>7</sup>

Being physically active reduces the risk of all-cause mortality. The largest benefits are found from moving from no activity to low levels of activity, but even at high levels of activity there are benefits. Increasing physical activity from low levels to the recommended level of 30 minutes per day, five days per week, (2.5 hours per week) of moderate activity reduces mortality by 19% while an increase to one hour every day (7 hours per week) increases the benefit to 24%.<sup>8</sup>

Regular physical activity has also been shown to be beneficial in the prevention of chronic conditions such as cardiovascular disease. A 2006 Canadian study confirmed that "there is irrefutable evidence of the effectiveness of regular physical activity in the primary and secondary prevention of severe chronic diseases such as cardiovascular disease, diabetes, cancer, hypertension, obesity, depression and osteoporosis".<sup>9</sup>

Despite the clear evidence of the efficacy of physical activity, levels of physical activity are generally well below recommended levels for all people aged 16 and over. In England levels of physical activity decline consistently from age 16 onwards for men while for women, after initially holding steady, albeit at a lower level than for men, decline from age 45.

<sup>5</sup> Cherubini, 1998  
<sup>6</sup> Hrobonova et al, 2010  
<sup>7</sup> Woodcock et al, 2011  
<sup>8</sup> Woodcock et al, 2011  
<sup>9</sup> Warburton et al, 2006

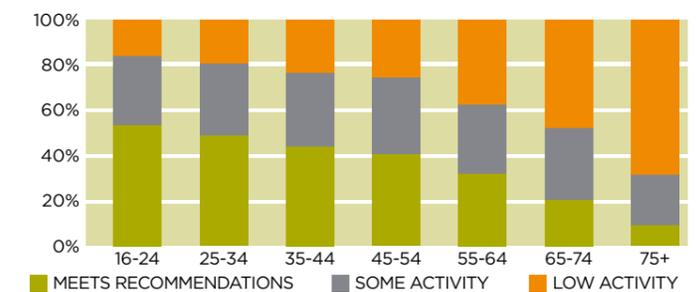
The Health Survey for England, 2008, measuring self-reported physical activity, found that just 39% of men and 29% of women met recommended physical activity levels of 30 minutes or more of moderate or vigorous activity on at least 20 occasions in the previous four weeks (equivalent to five days per week). This declines to 20% for men aged 65-74 (9% for men aged 75 and over) and 17% for women aged 65-74 (6% for women aged 75 and over).

The Scottish Health Survey, 2008, recording physical activity session of 10 minutes or more, found that the majority (over 50%) of men and women in Scotland fail to meet recommended levels of physical activity while the Welsh Health Survey, 2008 found that, in Wales, only 30% of adults meet recommended levels.

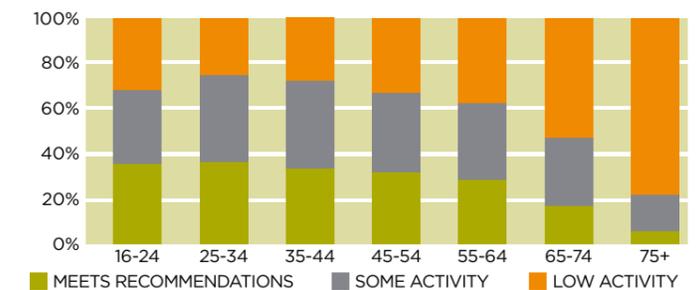
The Health Survey for England also fitted accelerometers to respondents to compare actual physical activity with reported physical activity and found that respondents generally tend to over-report their actual levels of physical activity but that the greater levels of moderate or vigorous physical activity found in men and the decline in physical activity with age continue to hold true.

## HEALTH SURVEY FOR ENGLAND 2008

Physical activity by age group - Men



Physical activity by age group - Women



### Note:

Health Survey for England, 2008 n= 6,737 (men) n= 8,317 (women)

Meets recommendations: 30 minutes or more of moderate or vigorous activity on at least 20 occasions in the last four weeks (equivalent to at least five days per week)

Some activity: 30 minutes or more of moderate or vigorous activity on 4 to 19 occasions (one to four days per week)

Low activity: 30 minutes or more of moderate or vigorous activity on fewer than 4 occasions (less than once per week on average) Episodes of activity of less than 30 minutes have been excluded.

## DANCE AS EXERCISE

Dancing can take many forms. Most forms of dance will provide the opportunity for aerobic exercise - exercise that requires more than the usual day-to-day levels of exertion and causes increased heart and breathing rates thus enhancing the body's ability to take in, transport and use oxygen.

Contemporary dance and some other forms of dance may, as well, allow the opportunity for some low-level resistance exercise - exercise that causes individual muscles to work against some form of resistance thereby increasing muscular strength. According to researchers "it has been observed that dance-based aerobic exercise can improve the balance capacity, as well as the walking and agility profile of the older participant".<sup>10</sup>

Some of the more energetic forms of dance, Cajun jitterbug, Irish set dance and Scottish country dancing for example, provide excellent aerobic exercise. Ballroom and Latin American dancing require good coordination and fluidity.<sup>11</sup>

With dance, the exercise gained, while important, is secondary to the dance experience as a whole. Nonetheless, the physical demands of the dance experience should be appropriate to the capabilities of the older person.

The Better Ageing Research Collaborative guidelines for exercise programming for older people suggest multiple components including warm-up, aerobic exercise, specific concentric and eccentric strengthening exercises, and exercises to improve co-ordination balance and flexibility/mobility (Tai Chi or similar). The guidelines recommend that aerobic exercise should be conducted at 60-80% maximum heart rate and resistance exercise should be targeted at eight to 10 repetitions on the large muscle groups, building from two to three sets over a period of 12 weeks.<sup>12</sup>

Recent reviews have drawn together evidence of the health advantages of dance for older people. These reviews offer compelling evidence that dance programmes for older people can have significant health benefits.<sup>13</sup>

One review considered the quality of the evidence and focused on studies that provide very strong or fairly strong evidence of the benefits or otherwise of dance as exercise for older people.<sup>14</sup> The review concluded that there is fairly strong scientific evidence that a dance-based exercise programme can improve older people's:

- aerobic power;
- muscle endurance of the lower extremities;
- muscle strength of the lower extremities;
- flexibility of the lower extremities;
- static balance;
- dynamic balance and agility; and
- gait speed.

There is less strong evidence that dance-based exercise programmes for older people can also:

- increase bone-mineral content in the lower body;
- increase muscle power of the lower extremities;
- reduce the rate of falls; and
- reduce cardiovascular health risk.<sup>15</sup>

## DANCE IS MORE THAN JUST EXERCISE

Dance for older people provides more than just an opportunity for greater levels of aerobic or resistance exercise than might normally be experienced, and the associated health benefits that such exercise will bring.

Dance, perhaps especially dance with a partner, including ballroom dancing and many forms of traditional folk dance, is a social experience with the mental-health benefits that can come from social involvement and avoiding social isolation.

Many forms of dancing, including ballroom dancing, require high levels of concentration and co-ordination with the mental-health advantages that can follow from increased levels of focused mental activity over a sustained period.

Dance is an enjoyable experience so that, in addition to the general improvement in an individual's sense of well-being that dance activity brings, dance programmes experience relatively low drop-out rates. As a result, older people gain proportionately greater exercise and other benefits overall from a dance programme.

Some forms of dance provide the opportunity for self expression and the mental health benefits that can follow from a sense of mental liberation and the release of tension.

Traditional folk dance, including Scottish and Irish country dance and traditional Greek or Turkish dance, may reawaken a sense of the cultural identity of youth for some older people with benefits similar to reminiscence and memory therapy.

Older people taking part in dance groups that have a performance outcome find additional satisfaction in a successful performance and the sense of purpose that the end performance provides to the dance experience.

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**“The opportunity to express oneself through the medium of dance holds benefit for both emotional and physical well-being.”**

**Involvement in dance facilitates a growth of confidence, is a forum for the expression of positive emotion and safe reminiscence, and helps participants increase physical activity levels and improve their physical health-related knowledge.”**

- Joynson, Hui and Stickley, 2009

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<sup>10</sup> Marks, 2005 referencing Judge, 2003

<sup>11</sup> Bremer, 2007

<sup>12</sup> Better Ageing Research Collaborative, 2005

<sup>13</sup> Keogh et al (2009), Trinity Laban Conservatoire of Music and Dance (2011) and Dance South West and the Department of Health (2011)

<sup>14</sup> Keogh et al (2009)

<sup>15</sup> Keogh et al, 2009b

# KEY BENEFITS OF DANCE

## Balance

One of the most commonly cited benefits of dance for older people is an improvement in balance. Balance, mobility and fear of falling are major factors associated with the risk of falling in older people. Dance studies have shown improvements in balance either in general or in association with specific conditions such as Parkinson's disease.<sup>16</sup>

Improved balance arising from dance has been found in studies of jazz dance, Argentine tango, Caribbean dance and social dance.<sup>17</sup>

A group of older social dancers from the Bronx, who were studied, averaged 80 years of age, danced on average four days per month, and had a median length of time dancing of 30 years. The group was matched with a control group of older non-dancers and, although no differences were observed in cognition and strength between the two groups, the older social dancers showed better balance and had longer steps and strides reflecting a better walking pattern.<sup>18</sup>

Dance has also been shown to improve 'balance confidence' associated with a reduced risk of falls. The fear of falling in itself causes an increased risk of falling so improvements in 'balance confidence' can be as important as improvements in balance itself in reducing the risk of falls.<sup>19</sup>

## Strength and gait

Evidence of the positive effect of dance programmes on strength and gait is less strong than for improvements in balance. The study of social dancers in the Bronx above, while finding no difference in the strength of older social dancers, did observe better stance and gait than that of the non-dancers.

Improving strength may not be a focus of dance, but dance classes can be designed to promote strength. In a 2008 study of the effects of Argentine

tango, a group of adults aged more than 60 years who had sustained a fall in the last year and reported a fear of falling, participated in twice-weekly, two-hour long sessions for 10 weeks. A control group participated in a walking group for the same frequency and duration. Members of the Argentine tango group demonstrated a greater improvement in lower extremity strength as well as normal and fast gait speeds than the control group.<sup>20</sup>

In a much earlier study to determine the effect of low-impact aerobic dance on 53 sedentary older women, after 12-weeks of low-impact aerobic dance, the group improved significantly on all functional fitness components except motor control/coordination, including cardiorespiratory endurance, strength/endurance, body agility, flexibility, body fat, and balance.<sup>21</sup>

A randomized control trial to examine the effect of the Exercise Dance for Seniors (EXDASE) programme on lower-body functioning among older individuals from residential care facilities in the Czech Republic, when compared with a control group, found that the exercise-dance group outperformed the control group on all measures from pre-test to post-test. The study concluded that relatively simple dance-based exercise can support lower-body functioning in previously sedentary, frail older adults.<sup>22</sup>

## Cognitive benefits

Despite the many positive benefits of experience and maturity, human ageing is commonly associated with a progressive decline in mental and physical capabilities. Older people typically experience a progressive decline in cognitive ability, memory and reaction time as they age.<sup>23</sup>

A 2010 Swedish study compared older people who had taken part in amateur dance over a long period (16.5 years on average) with a matching control group who had no history of dancing or sporting activity. In addition to improvements in posture and

balance the amateur dancers were observed, on average, to have superior performance in reaction times, motor behaviour and tactile and cognitive performance. Although the best performers in both groups were similar, the dancing group lacked the poor performers present in the control group. The researchers concluded that "the far-reaching beneficial effects found in the amateur dance group make dance, beyond its ability to facilitate balance and posture, a prime candidate for the preservation of everyday life competences of elderly individuals".<sup>24</sup>

## Social benefits

Interviews undertaken with older people who have taken part in dance groups tend to emphasise the social benefits of taking part. Experiences as varied as line dancing in South Africa, ballroom dancing in Brazil, Belfast or Blackpool or folk dance in Turkey record the social advantages of taking part together with improvements in well-being and quality of life.<sup>25</sup>

In the Belfast study, when participants were asked "what do you get out of dancing" and "how does it make you feel", as well as "losing weight", "staying active", "improved coordination" and "brain stimulation" some said it was for having fun, having a good time, or having a laugh.

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**For an older person, dance can provide continuity within change.**

**It offers an opportunity to be sociable and have fun in ways that both reflect and avowedly move beyond the dancers' teenage years.**

**It promotes a welcome sense of a community spirit.**

**It is a way of becoming visible and aesthetically pleasing, and it bestows a sense of worth and achievement in skills learnt through dancing.**

- Cooper and Thomas, 2002

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<sup>16</sup> Krampe, 2010; Hackney and Earhart, 2010

<sup>17</sup> Alpert et al, 2009; Wallman et al, 2009; McKinley et al, 2008; Hackney and Earhart, 2009; Federici, Bellagambi and Rocchi, 2005; Verghese, 2006

<sup>18</sup> Verghese, 2006

<sup>19</sup> Krampe, 2010; Hackney and Earhart, 2010; McKinley, 2008; Zijlstra, 2007

<sup>20</sup> Rabbia, 2010; McKinley et al, 2008

<sup>21</sup> Hopkins, 1990

<sup>22</sup> Holmerová et al, 2010

<sup>23</sup> Park, O'Connell and Thomson, 2003

<sup>24</sup> Kattenstroth et al, 2010

<sup>25</sup> Nadasen, 2008; Lima and Vieira, 2007; Skinner, 2009; Eyigor, 2007

# DANCE TO HELP WITH PARTICULAR CONDITIONS

## Arthritis

Dance-based exercise is often grouped with Tai Chi as a possible treatment for older people with arthritis. A 2005 review of all relevant evidence to date concluded that, although the quality of available evidence was variable, dance-based exercises and Tai Chi may be very useful rehabilitation strategies for people with different forms of arthritis. The review makes the point that, because dance-based exercise and Tai Chi are both pleasurable activities, people with arthritis will be more likely to participate.<sup>26</sup>

Observation of an eight-week dance-based aerobic exercise programme, for individuals with severe rheumatoid arthritis, consisting of 16 one-hour sessions (twice per week), rising to 25 minutes of dance in the hour, found that participants experience a significant improvement in gait speed compared with a control group. Participants also experienced positive changes in depression, anxiety, fatigue and tension.<sup>27</sup>

A similar dance-based comparative trial of individuals with rheumatoid arthritis in 1995 had observed an average improvement in aerobic power of 13% with a maximum improvement of 40%.<sup>28</sup>

## Falls

As with arthritis, Tai Chi and dance-based exercise are linked together as suitable strategies for the prevention of falls in older people by improving balance, lower body functionality and gait. Most of the studies already discussed that show dance as having the effect of improving balance and gait, mean that dance is also likely to have the secondary effect of reducing the risk of falls in older people.

As older people become frail, partly as a result of reduced physical activity, the fear of falling causes them to reduce their levels of physical activity even further resulting in a vicious spiral.<sup>29</sup> Improvements in both balance and 'balance confidence', arising from dance, can help to break this spiral.

Several studies suggest that improvements in balance and gait brought about by dance are likely to reduce the risk of falls but there is very little firm

evidence to identify a reduction in the number of falls following a dance intervention. However, a 2005 study of the effects of a Korean traditional dance movement programme on elderly women suggests that, in addition to improvements in balance and depression in the dance group, compared with a control group, a reduction in the number of falls was also experienced.<sup>30</sup>

## Parkinson's disease

Parkinson's disease is a progressive neurodegenerative movement disorder that is often accompanied by impaired balance and walking. The observed improvements in balance and gait brought about by taking part in certain forms of dance suggest that dance may be an appropriate intervention for older people and others suffering from Parkinson's disease.

Because dance is performed to music, the music acts as an external cue to facilitate movement. Dance also involves the teaching of movement strategies, in particular, with Argentine tango, the ability to walk backwards. Dance also generates the need to control balance dynamically, all of which are features of exercises recommended to offset the problems caused by Parkinson's disease.<sup>31</sup>

Several studies have demonstrated the benefits of dance for individuals with Parkinson's disease. An uncontrolled pilot study to explore the possible benefits of 'contact improvisation' dance for individuals with Parkinson's disease found measurable improvements in motor function and balance, improved walking, increased backward step length and a high level of enjoyment.<sup>32</sup>

A further study of 20 partnered tango lessons for people with severe Parkinson's disease, over a 10-week period, noted improved balance, endurance, balance confidence and quality of life. A comparative study of the effectiveness of Argentine tango compared with American ballroom dancing (waltz/foxtrot) or no intervention for individuals with mild-moderate Parkinson's disease concluded that tango may better target deficits associated with Parkinson's disease than waltz/foxtrot but that both dance forms may benefit balance and locomotion.<sup>33</sup>

## Dementia

Dance may be beneficial in two ways with respect to dementia: through prevention and through therapy.

A 2003 study looking at leisure activities and the risk of dementia in later life found that while mental stimulation, such as frequent crossword solving, reduced the chance of developing dementia in later life, physical activity generally did not. The major exception was frequent ballroom dancing which brought about a 76% reduction in the chances of developing dementia and was the most beneficial of all the hobbies and leisure activities examined.

The relationship between the occurrence of dementia and participation in particular leisure activities was examined in a pair of inter-related studies known as the Bronx Ageing Study and the Einstein Ageing Study. A group of 469 English-speaking older people aged between 75 and 85, living in the Bronx, New York, were followed up between 1980 and 2001 by researchers at the Albert Einstein College of Medicine led by Joe Verghese.<sup>34</sup>

The results were initially published in the New England Journal of Medicine. The study found that while frequent cognitive activity such as playing board games or playing a musical instrument, reduced the chances of getting dementia, physical activity, in general did not. The one exception was dancing.

Frequent dancing (mainly ballroom) was associated with a Cox hazard ratio for dementia of 0.24 - a 76% reduction in the chance of dementia, compared with a base of no activity. This was the greatest effect of any single leisure activity.

The explanation offered by Verghese was that "dancing involves precise physical activity, listening to the music, remembering dance steps and taking your partner into account, which is very mentally testing".

As non-verbal forms of communication, movement and dance are particularly suitable in the treatment of people with dementia and match well with the concept of person-centred care.

Arts-based activities can make a real difference in dementia care, giving people who have lost the skills of ordinary conversation an opportunity to express themselves in a different way. Dance sessions with older people with dementia combine exercise with creative expression and recreation activities for in-patients with dementia are important for promoting well-being and quality of life. For an occupational therapist, for example, setting up a seated dance group for older women with dementia there are particular challenges in trying to evaluate the benefits of the project in the context of both dementia and dance.<sup>35</sup>

## Depression

Dance is both a social and physical activity and, as such, might be expected to reap the mental health benefits associated with both physical activity and avoiding social isolation. A 2006 review of the health benefits of physical activity confirmed irrefutable evidence of the health benefits of physical activity in combating various chronic conditions, including depression.<sup>36</sup>

Furthermore, a recent research project working with two London communities of South Asian older people has highlighted the positive impact of dance on depression.<sup>37</sup>

Although people taking part in dance sessions tend to report them as enjoyable experiences, it is rare that studies report a clear reduction in overall depression as a result of the dance programme.

A 2005 University of Nevada study offering eight ballroom dance lessons to 20 depressed older people recorded a limited effect, while a 12-week Korean traditional dance movement programme, offered three times a week to older Korean women who were not necessarily depressed at the outset, recorded a significant improvement in overall depression scores. A 2009 study of the effect of modified jazz dance on balance, cognition and mood in older adults found no significant change in Geriatric Depression Scale (GDS) scores resulting from the intervention.<sup>38</sup>

<sup>26</sup> Marks, 2005

<sup>27</sup> Rabbia, 2010 referencing Moffet et al, 2000

<sup>28</sup> Noreau et al, 1995

<sup>29</sup> Zijlstra, 2007

<sup>30</sup> Keogh et al, 2009a; Keogh et al, 2009b; Jeon et al, 2005

<sup>31</sup> Earhart, 2009

<sup>32</sup> Marchant, Sylvester and Earhart, 2010

<sup>33</sup> Hackney and Earhart, 2010; Hackney and Earhart, 2009

<sup>34</sup> Vol 348 pp 2508-16 in June 2003 (Verghese et al, "Leisure activities and the risk of dementia in the elderly")

<sup>35</sup> Hill, 2001; Coaten, 2001; Kindell and Amans, 2003; Whyte, 2010

<sup>36</sup> Warburton, Nicol and Bredin, 2006

<sup>37</sup> Akademi, forthcoming

<sup>38</sup> Haboush et al, 2006; Jeon et al, 2005; Alpert et al, 2009

## DANCE AS PERFORMANCE

Performance as an end-product of dance activity can add an extra dimension to the dance experience for older people.

A number of performance dance groups for older people exist in the UK including 'Dancing stage' in London and 'Mapping Memories' in Northern Ireland.

Company of Elders is a London based dance and performance group for people aged 60 and over. Established in 1989, it is an offshoot of Sadler's Wells' weekly Lilian Baylis Arts Club. Comments from participants in the 'Company of Elders' dance group reveal the additional benefits of performance dance:

"I do feel healthier and it does keep you fit. It improves your flexibility, your mobility, strength, balance, all of these things. Mind you, we do get a few aches and pains. We don't dance like 20-year-olds but we are still dancing."

"The Company of Elders is more than just a dance class, it's a performance group and I have realised that that's what the attraction is for me because we work towards something so there's an end product and that's very satisfying."

Performance dance groups will, by their nature, have limited membership and the demand may well outstrip the availability of places. The Company of Elders, for example, is full with a substantial waiting list but also offers weekly over-60s outreach classes in the London Borough of Islington.<sup>39</sup>

## TECHNOLOGY AND DANCE

Interactive video dance is a recent form of physical activity widely used by the younger generation. Recent studies have examined the appropriateness and effectiveness of the technology for use by older people.

In one study, 36 healthy older adults were recruited and offered three months of training and supervision using a video dance game designed for older people. Of the 36 starters, 25 completed the course. Completers were healthier than non-completers and completers showed gains in narrow walk time, self-reported balance confidence and mental health. Of the 11 non-completers, four withdrew due to musculoskeletal complaints.<sup>40</sup>

A second study examined the attitudes of older women to interactive video dance. Forty relatively-inactive older women (average age 57) were organised into eight small groups performing interactive video dance which used a force-sensing pad with directional panels: the player stepped on the panels in response to arrows scrolling on a screen, synchronized to music. The experience elicited 113 positive responses and 71 negative. Positive responses included "it's fun" and "improves coordination" while negative responses related to the technology, the length of time to learn and the potential cost.<sup>41</sup>

## PROMOTING THE BENEFITS OF DANCE FOR OLDER PEOPLE

As the world population ages, and the number of older people increases, it becomes increasingly important to improve the health profile of the ageing population by encouraging older people to adopt a healthier lifestyle. Health improvements will benefit everyone as they age and help the management of some of the physical and psychological changes associated with growing older.

One of the key contributors to a poor health profile is that many older people live a more sedentary and, often, a more isolated life.

Dance is an enjoyable social activity that has been shown not only to provide increased levels of physical exercise but also the opportunity to improve coordination, cognition and general mental well-being. For many older people it is the social aspects of participatory dance that are most valued and most important although the physical benefits are also well recognised.

Evidence of the preventive health benefits of dance is compelling and conclusive. Dance has also been shown to be beneficial in the treatment of existing conditions such as arthritis or Parkinson's disease.

There can be no doubt that dance has an important contribution to make to improving the health of older people and, through its positive impacts, also challenges many of the negative stereotypes of ageing.

As one Young@Heart participant put it: "It makes you feel alive, almost like you're young again. It's amazing that dancing can make you do that. I don't know anything else that can have that effect on you."<sup>42</sup>

Too often policy makers in Government and beyond overlook the contribution that dance can make to the welfare of older people, often concentrating on exercise and sports-based activities and ignoring the inclusive nature of dance, and its potential contribution to the health and wellbeing of older people.

Bupa believes that this report shows that policy makers should pay more attention to dance when considering ways to promote active lifestyles and healthy living, especially for older people.

We believe that supporting organisations that provide dance activities for older people in the community, in care homes and in hospitals, can make a major contribution to the better future physical and mental wellbeing of the increasing numbers of older people that will make up the population of the UK and many other countries.

<sup>39</sup> Ross, 2007

<sup>40</sup> Studenski et al, 2010

<sup>41</sup> Inzitari et al, 2009

<sup>42</sup> Young@Heart (Joynson, Hui and Stickley, 2009)

## REFERENCES AND FURTHER READING

**Alpert P T, Miller S K, Wallmann H, Havey R, Cross C, Chevalia T, Gillis C B and Kodandapari K (2009)**  
The effect of modified jazz dance on balance, cognition, and mood in older adults, *Journal of the American Academy of Nurse Practitioners* 21 (3) : 108-115

**Audette J F, Jin Y S and Newcomer R (2006)**  
Tai Chi versus brisk walking in elderly women, *Age and Ageing* 35 (4) : 388-393

**Bassey E J (2000)**  
The benefits of exercise for the health of older people, *Reviews in Clinical Gerontology* 10 (1) : 17-31

**Becker B (2001)**  
Stage presence - body presence - movement and body experience with the elderly, *Care Management Journals* 3 (2) : 99-106

**Better Ageing Research Collaborative (2005)**  
*Guidelines for exercise programming for the frail elderly*, Manchester Metropolitan University, Manchester

**Bremer Z (2007)**  
Essay Dance as a form of exercise, *British Journal of General Practice* 57 (2) : 166-166

**British Heart Foundation (2008)**  
*Active for later life: promoting physical activity with older people*, British Heart Foundation, London

**Bunce J (2004)**  
Mary and Martha - dance movement with the elderly, *Generations Review* 14 (2) : 20-21

**Burns S and Harrison S (2009)**  
Dance mapping: *A window on dance 2004-2008*, Arts Council England, London

**Carroll J K, Fiscella K, Epstein R M, Jean-Pierre P, Figueroa-Moseley C, Williams G C, Mustian K M and Morrow G R (2008)**  
Getting patients to exercise more: a systematic review of underserved populations, *Journal of Family Practice* 57 (3) : 170-E3

**Chan W W and Bartlett D J (2000)**  
Effectiveness of Tai Chi as a therapeutic exercise in improving balance and postural control, *Physical & Occupational Therapy in Geriatrics* 17 (3) : 1-22

**Chang M, Yabushita N, Sakai T, Nakagaichi M, Nho H, Tanaka K and Shigematsu R (2002)**  
Dance-based aerobic exercise may improve indices of falling risk in older women, *Age and Ageing* 31 : 261-266

**Cherubini A, Lowenthal D T and Williams L S (1998)**  
Physical activity and cardiovascular health in the elderly, *Aging: Clinical and Experimental Research* 10 (1) : 13-25

**Chipperfield J G (2008)**  
Everyday physical activity as a predictor of late-life mortality, *The Gerontologist* 48 (3) : 349-357

**Clair A A (1996)**  
*Therapeutic uses of music with older adults*, Health Professions Press, Baltimore : 314

**Coaten R (2001)**  
Exploring reminiscence through dance and movement, *Journal of Dementia Care* 9 (5) : 19-22

**Connor M (2000)**  
Recreational folk dance: A multicultural exercise component in healthy ageing, *Australian Occupational Therapy Journal* 47 (6) : 69-76

**Cooper L and Thomas H (2002)**  
Growing old gracefully - social dance in the third age, *Ageing and Society* 22 (6) : 689-708

**Copeland R and Cohen M (1983)**  
*What is Dance? readings in theory and criticism*, Oxford University Press, Oxford

**Corbin D E and Metal-Corbin J (1983)**  
*Reach for It! A Handbook of Exercise and Dance Activities for Older Adults*, Eddie Bowers Publishers, Dubuque, Idaho : pp 232

**Crichton S (1997)**  
'Moving is the language I use - communication is my goal', *Journal of Dementia Care* 5 (6) : 16-17

**Dance South West; Department of Health (2011)**  
*Cool Facts - Hot Feet. Dancing to health: a review of the evidence*

**Donald J and Hall S (1999)**  
Dance: the Getting There group, *Journal of Dementia Care* 7 (3) : 24-27

**Durdey T (2006)**  
*Advance: creating wellbeing through movement and dance*, Dance 4

**Earhart G M (2009)**  
Dance as therapy for individuals with Parkinson Disease, *European Journal of Physical and Rehabilitation Medicine* 45 (2) : 231-238

**Ehrlich F and Zheng H (2005)**  
A falls injury prevention programme - Tai Chi, International Institute on Ageing (United Nations - Malta), November 2005 *BOLD* 16 (1) : 19-23

**Eyigor S, Karaplot H, Durmaz B, Ibisoglu U and Cakir S (2009)**  
A randomized controlled trial of Turkish folklore dance on the physical performance, balance, depression and quality of life in older women, *Archives of Gerontology and Geriatrics* 48 (1) : 84-88

**Federici A, Bellagamba S and Rocchi M B (2005)**  
Does dance-based training improve balance in adult and young old subjects? A pilot randomized controlled trial, *Aging Clinical and Experimental Research* 17 (5) : 385-389

**Forte R, De Vito G, Murphy N and Boreham C (2001)**  
Cardiovascular response during low-intensity step-aerobic dance in middle-aged subjects, *European Journal of Sport Science* 1 : 1-7

**Fox K R, Hillsdon M, Sharp D, Cooper A R, Coulson J C, Davis M, Harris R, McKenna J, Narici M, Stathi A and Thompson J (2011)**  
Neighbourhood deprivation and physical activity in UK older adults, *Health & Place* 17 : 633-640

**Gayvoronskaya E and Shapovalov D (2010)**  
Integrative dance/movement psychotherapy and the aging process, *Body, Movement and Dance in Psychotherapy: An International Journal for Theory, Research and Practice* 5 (2) : 185-196

**Gibson M V (2002)**  
Reawakening the language of the body, *Journal of Dementia Care* 10 (5) : 20-22

**Haboush A, Floyd M, Caron J, LaSota M and Alvarez K (2006)**  
Ballroom dance lessons for geriatric depression: An exploratory study, *The Arts in Psychotherapy* 33 (2) : 89-97

**Hackney M E and Earhart G M (2009)**  
Effects of Dance on Movement Control in Parkinson's Disease: A Comparison of Argentine Tango and American Ballroom, *Journal of Rehabilitation Medicine* 41 (6) : 475-481

**Hackney M E and Earhart G M (2009)**  
Short duration, intensive tango dancing for Parkinson disease: An uncontrolled pilot study, *Complementary Therapies in Medicine* 17 (4) : 203-207

**Hackney M E and Earhart G M (2010)**  
Effects of dance on balance and gait in severe Parkinson disease: A case study, *Disability and Rehabilitation* 32 : 679-684

**Hamburg J and Clair A A (2003)**  
The effects of a Laban-based movement program with music on measures of balance and gait in older adults, *Activities, Adaptation & Aging* 28 (1) : 17-34

**Hansen S, Early F and Davies S; Green Candle Dance Company (1996)**  
*Growing bolder: a start up guide to creating dance with older people*, Green Candle Dance Co., London 24

**Hansen S, Turnbull S and Smith A; Beyond the Tea Dance Conference; Foundation for Community Dance; Green Candle Dance Company (1997)**  
*Beyond the tea dance*, *Animated Winter 1996/97* : 26-32

**Hartman C A, Manos T M and Winter C (2000)**  
Effects of Tai Chi training on function and quality of life indicators in older adults with osteoarthritis, *Journal of the American Geriatrics Society* 48 (12) : 1553-1559

**Hill H; Dementia Services Development Centre - DSDC, University of Stirling, (2001)**  
*Invitation to the dance: dance for people with dementia and their carers*, University of Stirling, Stirling 63

**Hillier M (1996)**  
Song and dance, *HA Weekly* 472 : 10-11

**Hogan M (2005)**  
Physical and cognitive activity and exercise for older adults - a review, *International Journal of Aging and Human Development* 60 (2) : 95-126

**Hokkanen L, Rantala L, Remes A M, Härkönen B, Viramo P and Winblad I (2008)**  
Dance and movement therapeutic methods in management of dementia: a randomized, controlled study., *Journal of the American Geriatric Society* 56 (4) : 771-772

**Holmerová I, Macháčová K, Vanková H, Veleta P, Jurasková B, Hrnčiariková D, Volicer L and Andel R (2010)**  
Effect of the Exercise Dance for Seniors (EXDASE) Program on Lower-Body Functioning Among Institutionalized Older Adults, *Journal of Ageing and Health* 22 (1) : 106-119

**Hopkins D R (1990)**

Effect of low-impact aerobic dance on the functional fitness of elderly women, *The Gerontologist* 30 (2) : 189-192

**Houston S (1999)**

Burn and Rave at the Close of Day, *Animated Summer* (1999) : 8-10

**Houston S (2005)**

Dance for Older People, *Primary Health Care* 15 (8) : 18-19

**Houston S (2005)**

Dancing for Youthfulness, *Working for Older People* 9 (2) : 15-17

**Houston S (2005)**

Participation in Community Dance: a road to empowerment and, *New Theatre Quarterly* XXI (2) : 166-177

**Howarth R and Ketteringham R (1995)**

Let's face the music - and dance, *Journal of Dementia Care* 3 (5) : 22-23

**Hrobonova E, Breeze E and Fletcher A E (2011)**

Higher levels and intensity of physical activity are associated with reduced mortality among community dwelling older people, *Journal of Aging Research* ID 651931

**Hui A and Stickley T (2010)**

The elders dance project: a study of a culturally sensitive initiative., *British Journal of Wellbeing* 1 (1) : 29-34

**Inne A and Hatfield K; Bradford Dementia Group (2002)**

*Healing arts therapies and person-centred dementia care*, Jessica Kingsley, London, 2002 : 137

**Institute for Choreography and Dance (ICD) (2000)**

*Moving age : a symposium on dance for and with older people - a summary [of the event] at the Institute for Choreography and Dance (icd), Firkin Crane, Shandon, Cork City, September 1999*, Institute for Choreography and Dance, Cork 33

**Inzitari M, Greenlee A, Hess R, Perera S and Studenski S A (2009)**

Attitudes of Postmenopausal Women toward Interactive Video Dance for Exercise, *Journal of Women's Health* 18 (8) : 1239-1243

**Jeon M Y, Bark E S, Lee E G, Im J S, Jeong B S and Choe E S (2005)**

The effects of a Korean traditional dance movement program in elderly women [article in Korean], *Taehan Kanho Hakhoe Chi* 35 (7) : 1268-1276

**Jerrome D (1999)**

Circles of the mind - [circle dancing], *Journal of Dementia Care* 7 (3) : 20-24

**Joynson K, Hui A and Stickley T (2009)**

*An Evaluation of the development of Young@Heart, a dance Project for Older People*, Nottingham, England: Dance4

**Judge J O (2003)**

Balance training to maintain mobility and prevent disability, *American Journal of Preventive Medicine* 25 (3) : 150-156

**Katsumur T and Hinman A D; World Health Organization (1997)**

Longer, healthier lives, WHO, Geneva, July/August 1997 *World Health, 50th year* 4 : 31-32

**Kattenstroth J-C, Kolankowska I, Kalisch T and Dinse H R (2010)**

Superior sensory, motor, and cognitive performance in elderly individuals with multi-year dancing activities, *Frontiers in aging neuroscience* 2 (31) 1-9

**Keogh J W L, Kilding A, Pidgeon P, Ashley L and Gillis D (2009a)**

*Can Dancing Improve Physical Activity Levels, Functional Ability and Reduce Falls in Older Adults? A Comparison of the Benefits of Once versus Twice Weekly Dancing for Healthy Older Adults*, SPARC, Auckland, New Zealand

**Keogh J W L, Kilding A, Pidgeon P, Ashley L and Gillis D (2009b)**

Physical Benefits of Dancing for Healthy Older Adults: A Review, *Journal of Aging and Physical Activity* 17 : 1-23

**Killick J and Allan K (1999)**

The arts in dementia care - touching the human spirit, *Journal of Dementia Care* 7 (5) : 33-37

**Kindell J and Amans D (2003)**

Doing things differently - dance in dementia care, *Journal of Dementia Care* 11 (2) : 18-20

**King A C, Rejeski J and Buchner D M (1998)**

Physical activity interventions targeting older adults - a critical review and recommendations, *American Journal of Preventive Medicine* 15 (4) : 316-333

**Krampe J (2010)**

*Dance-based therapy to decrease fall risk in older persons*, Ph. D. Thesis University of Missouri-Columbia

**Krampe J, Rantz M, Dowell L, Schamp R, Skubic M and Abbott C (2010)**

Dance-Based Therapy in a Program of All-inclusive Care for the Elderly: An Integrative Approach to Decrease Fall Risk, *Nursing Administration Quarterly* 34 (2) : 156-161

**Lee I M, Hsieh C C and Paffenbarger R S (1995)**

Exercise intensity and longevity in men - the Harvard Alumni Health Study, *JAMA, (Journal of the American Medical Association)* 273 (15) : 1179-1184

**Lee I M, Paffenbarger R S and Hennekens C H (1997)**

Physical activity, physical fitness and longevity, *Aging: Clinical and Experimental Research* 9 (1/2) : 2-11

**Lewis R L, Dickerson J W T and Davies G J (1997)**

Lifestyle and injuries of professional ballet dancers - reflections in retirement, *Journal of the Royal Society of Health* 117 (1) : 23-31

**Lievesley N (2010)**

*The future ageing of the ethnic minority population of England and Wales*, Centre for Policy on Ageing and Runnymede Trust, London

**Lima M M S and Vieira A P (2007)**

Ballroom Dance as Therapy for the Elderly in Brazil, *American Journal of Dance Therapy* 29 (2) 129-142

**Mapp S (1996)**

And the dance goes on, *Community Care* 1122 : 9

**Marchant D, Sylvester J L and Earhart G M (2010)**

Effects of a short duration, high dose contact improvisation dance workshop on Parkinson disease: A pilot study, *Complementary Therapies in Medicine* 18 (5) : 184-190

**Marks R (2005)**

Dance-based exercise and Tai Chi and their benefits for people with arthritis: a review, *Health Education* 105 : 374-391

**McKinley P, Jacobson A, Leroux A, Bednarczyk V, Rossignol M and Fung J (2008)**

Effect of a Community-Based Argentine Tango Dance Program on Functional Balance and Confidence in Older Adults, *Journal of Aging and Physical Activity* 16 : 435-453

**McMurdo M and Burnett L (1992)**

Randomised controlled trial of exercise in the elderly, *Gerontology* 38 (5) : 292-298

**Mengelkoch L J, Polloc M L and Limacher M C (1997)**

Effects of age, physical training, and physical fitness on coronary heart disease risk factors in older track athletes at twenty-year follow-up, *Journal of the American Geriatrics Society* 45 (12) : 1446-1453

**Merriott S (2007)**

Dance as a form of exercise, *British Journal of General Practice* 57 (537) : 325-326

**Merton Community Dance (1997)**

*I'll eat and dance my words*, Merton Community Dance, London, 1997 : unnumbered

**Miller E and Buys L (2007)**

Predicting older Australians' leisure-time physical activity - impact of residence, retirement village versus community, on walking, swimming, dancing and lawn bowling, *Activities, Adaptation & Aging* 31 (3) : 13-30

**Moffet H, Noreau L, Parent E and Drolet M (2000)**

Feasibility of an eight-week dance-based exercise program and its effects on locomotor ability of persons with functional class III rheumatoid arthritis., *Arthritis Care and Research* 13 (2) : 100-111

**Morgan K and Clarke D (1997)**

Customary physical activity and survival in later life - a study in Nottingham, UK, *Journal of Epidemiology and Community Health* 51 : 490-493

**Morris J N; World Health Organization (1997)**

Resist old age: exercise!, WHO, Geneva, July/August 1997 *World Health, 50th year* 4 : 6-7

**Munro J, Brazier J and Davey R (1997)**

Physical activity for the over-65s - could it be a cost-effective exercise for the NHS?, *Journal of Public Health Medicine* 19 (4) : 397-402

**Nadasen K K (2007)**

"We are too busy being active and enjoying ourselves to feel the aches and pains" - perceived health benefits of line dancing for older women, *Quality in Ageing* 8 (3) : 4-14

**Nadasen K (2008)**

'Life without line dancing and the other activities would be too dreadful to imagine' - an increase in social activity for older women, *Journal of Women & Aging* 20 (3/4) : 329-342

**Nagano J (2008)**

Effects of Moderate Dance on Heart Rate (HR) and Rating of Perceived Exertion (RPE) in Middle-Aged and Elderly Women (The Proceedings of the 16th Annual Meetings of Japan Society of Exercise and Sports Physiology August 2-3, (Nara)), *Advances in Exercise and Sports Physiology* 14 (4) : 125

**Nordin S M and Hardy C (2009)**

*Dance4Health: A Research-based Evaluation of the Impact of Seven Community Dance Projects on Physical Health, Psychological Wellbeing, and aspects of Social Inclusion.*, Warwickshire County Council - County Arts Service

**Noreau L, Martineau H, Roy L and Belzile M (1995)**  
Effects of A Modified Dance-Based Exercise on Cardiorespiratory Fitness, Psychological State and Health Status of Persons With Rheumatoid Arthritis, *American Journal of Physical Medicine & Rehabilitation* 74 (1)

**O'Mailia S P, Scharff-Olson M and Williford H N (2002)**  
Activity Monitors and Dance-Based Exercise: Estimating Caloric Expenditure, *Journal of Dance Medicine and Science* 6 (6) : 50-53

**Osgood N (1990)**  
The creative arts for the older adult, *Journal of Applied Gerontology* 9 (3) : 251-324

**Palo-Bengtsson L, Ekman S L and Ericsson K (1997)**  
Nurses' opinions, ideas and beliefs about dancing and movement to music in Swedish and Finnish nursing home settings, *Health Care in Later Life* 2 (2) : 93-106

**Park H L, O'Connell J E and Thomson R G (2003)**  
*International Journal of Geriatric Psychiatry* 18 (12) 1121-1134

**Paulson S (2005)**  
How various 'cultures of fitness' shape subjective experiences of growing older, *Ageing and Society* 25 (2) : 229-244

**Paulson S (2005)**  
The social benefits of belonging to a "dance exercise" group for older people, *Generations Review* 15 (4) : 37-41

**Perri T (1998)**  
Lifted into a world of rhythm and melody, *Journal of Dementia Care* 6 (1) : 22-24

**Rabbia J (2010)**  
Dance as a Community-Based Exercise in Older Adults, *Topics in Geriatric Rehabilitation* 26 (4) : 353-360

**Redding E and Wyon M (2003)**  
Strengths and Weaknesses of Current Methods for Evaluating the Aerobic Power of Dancers, *Journal of Dance Medicine and Science* 7 (3) : 10-16

**Richardson C R, Faulkner G, McDevitt J, Skrinar G S, Hutchinson D S and Piette J D**  
Integrating Physical Activity Into Mental Health Services for Persons With Serious Mental Illness, *Psychiatric Services* 56 : 324-331

**Ross F (2007)**  
Company of Elders - [a dance and performance group for older people], *Working with Older People* 11 (4) : 37-40

**Rossberg-Gempton I E and Poole G D (1999)**  
An intergenerational creative dance program for children and frail older adults, *Gerontology & Geriatrics Education* 20 (2) : 49-68

**Ruigomez A, Alonso J and Anto J M (1995)**  
Relationship of health behaviours to five-year mortality in an elderly cohort, *Age and Ageing* 24 (2) : 113-119

**Scourfield P (2006)**  
The symbolic value of tai chi for older people, *Quality in Ageing* 7 (2) : 4-12

**Shedden M and Kravitz L (2006)**  
Pilates Exercise A Research-Based Review, *Journal of Dance Medicine and Science* 10 (12) : 111-116

**Sherman A (1997)**  
A case study of intergenerational relations through dance with profoundly deaf individuals, *Journal of Gerontological Social Work* 28 (1/2) : 113-123

**Skinner J (2009)**  
Motility 21: senior citizen social inclusion through social dance, Belfast: Institute of Governance, School of Law, Queen's University Belfast

**Stacey G and Stickley T (2008)**  
Dancing to keep young at heart., *Mental Health Practice* 11 (6) : 34-38

**Stevens W, Hillsdon M and Thorogood M (1998)**  
Cost-effectiveness of a primary care based physical activity intervention in 45-74 year old men and women - a randomised controlled trial, *British Journal of Sports Medicine* 32 : 236-241

**Stewart M (1995)**  
*Yoga over 50 - the way to vitality, health and energy in the prime of life*, Little, Brown and Company, London, 1995 : 128

**Studenski S, Perera S, Hile E, Keller V, Spadola-Bogard J and Garcia J (2010)**  
Interactive video dance games for healthy older adults, *The Journal of Nutrition, Health & Aging* 14 (10) : 850-852

**Trinity Laban Conservatoire of Music and Dance (2011 (forthcoming))**  
*Dancing towards well-being in the Third Age: Literature Review on the impact of dance on health and well-being among older people*, Commissioned by the London Thames Gateway

**Uitenbroek D G (1996)**  
A new public health model and ageing: the example of primary prevention by way of exercise and physical activity, *Health Care in Later Life* 1 (1) : 15-27

**Vergheze J (2006)**  
Cognitive and Mobility Profile of Older Social Dancers, *Journal of the American Geriatric Society* 54 (8) : 1241-1244

**Vergheze J, Lipton R B, Katz M J, Hall C B, Derby C A, Kuslansky G, Ambrose A F, Sliwinski M and Buschke H (2003)**  
Leisure Activities and the Risk of Dementia in the Elderly, *New England Journal of Medicine* 348 : 2508-2516

**Wallmann H W, Gillis C B, Alpert P T and Miller S K (2009)**  
The Effect of a Senior Jazz Dance Class on Static Balance in Healthy Women Over 50 Years of Age: A Pilot Study, *Biological Research for Nursing* 10 (3) : 257-266

**Wallsten S M, Bintrim K and Denman D W (2006)**  
The effect of Tai Chi Chuan on confidence and lower extremity strength and balance in residents living independently at a continuing care retirement community, *Journal of Applied Gerontology* 25 (1) : 82-95

**Warburton D E R, Nicol C W and Bredin S S D (2006)**  
Health benefits of physical activity: the evidence, *Canadian Medical Association Journal* 174 (6) : 801-809

**Weisberg N and Wilder R (2001)**  
*Expressive arts with elders - a resource*, Jessica Kingsley, London 288

**Wharton M A (reviewer) (1986)**  
Reach for It!! A Handbook of Exercise and Dance Activities for Older Adults, *Topics in Geriatric Rehabilitation* 1 (4) : 84

**Whyte S (2010)**  
Life-enhancing dance for elders with dementia, Hawker Publications, March/April 2010 *Journal of Dementia Care* 18 (2) : 37-39

**Williams B; Gateshead Elderly,Arts Project (1991)**  
*The Gateshead elderly arts project - a progress report November 1989 - October 1991*, Equal Arts, Gateshead 13

**Wilson H; Gateshead Elderly,Arts Project (1991)**  
*The Gateshead elderly arts project - a report on work to date*, Equal Arts, Gateshead 35

**Wolf S L, Sattin R W and Kutner M (2003)**  
Intense Tai Chi exercise training and fall occurrences in older, transitionally frail adults - a randomized, controlled trial, *Journal of the American Geriatrics Society* 51 (12) : 1693-1701

**Woo J, Hong A and Lau E (2007)**  
A randomised controlled trial of Tai Chi and resistance exercise on bone health, muscle strength and balance in community-living elderly people, *Age and Ageing* 36 (3) : 262-267

**Woodcock J, Franco O H, Orsini N and Roberts I (2011)**  
Non-vigorous physical activity and all-cause mortality: systematic review and meta-analysis of cohort studies, *International Journal of Epidemiology* 40 (1) : 121-138

**Xia J and Grant T J (2009)**  
Dance Therapy for People with *Schizophrenia*, *Schizophrenia Bulletin* 35 (4) : 675-676

**Yiannis K and Athanasios J (2004)**  
The Dancer as a Performing Athlete: Physiological Considerations, *Sports Medicine* 34 : 651-661

**Young A and Dinan S (2005)**  
Activity in later life, *British Medical Journal* doi : 330.7484.189

**Young D R, Appel L J and Jee S (1999)**  
The effects of aerobic exercise and T'ai Chi on blood pressure in older people - results of a randomised trial, *Journal of the American Geriatrics Society* 47 (3) : 277-284

**Zijlstra G A R, van Haastregt J C M, van Eijk J Th M, van Rossum E, Stalenhoef P A and Kempen G I J M**  
Prevalence and correlates of fear of falling, and associated avoidance of activity in the general population of community-living older people, *Age and Ageing* 36 (3) : 304-309

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