

The joy and freedom of dance

Gwen Korebrits, Amy Gajjar and Sarah Palmer introduce Dancewise, a movement program suitable for people at all stages of dementia who are living in care homes

The Dance Health Alliance is a not-for-profit organisation which delivers a movement program in Australia developed specifically for people with a wide range of physical and cognitive challenges, including dementia, multiple sclerosis and Parkinson's disease. Our mission is to provide people with the opportunity to regain freedom through movement.

The program, called Dancewise, is distinctive in that dance teachers go into residential care homes to run the classes, with the help of care staff, as well as offering them training in facilitating the dance sessions.

Dancewise is a form of aerobic exercise quite different from other forms of exercise. The classes, run by experienced dance professionals, offer a dance routine which addresses many aspects of exercise including strength, spatial awareness, agility, endurance, flexibility, balance and coordination (hence improved 'balance confidence' and reduced risk of falls), with carefully selected background music (from an era appropriate to the individual participants) and breathing exercises.

Each class can be geared to the ability of the participating dancers. All the movements start off slow and small. They can be done whilst seated and / or standing, making the program suitable for all levels of mobility and people at all stages of dementia. No dance experience is necessary. The aim is to get people moving and stimulate them physically.

We believe that everyone is a dancer; there is no right or wrong way to do the movements, only freedom to explore who you are and how it feels to move. The combination of music, flow and fluidity within the program helps people to lose themselves in the moment. This is the beginning of their journey to regain their freedom in the way they move. Some people dance to forget, some dance to remember but everyone dances to quench their desire to move and to feel empowered and liberated in their own body, regardless of ability.

About the program

Gwen's cousin, Andrew Greenwood, a well-known ballet master in Europe, with a background in injury prevention and rehabilitation for dancers, created the



Dancewise movement classes (pictured above and on p17) are suitable for people with a wide range of physical and cognitive challenges, including dementia, multiple sclerosis and Parkinson's disease

program in the Netherlands in 2012, originally to help enhance the physical and mental well-being of a colleague diagnosed with Parkinson's disease. Andrew invited Gwen, also a dance teacher, performer and choreographer, to work on the program with him in Europe, and in 2015, they co-founded the Dance Health Alliance to introduce the program in Australia.

From a medical perspective, Dancewise meets the needs of people with dementia on physical, cognitive, emotional and social levels. The participants, referred to as 'dancers', are invited to explore a series of movement sequences which challenge their cardiovascular health, muscular strength and endurance, flexibility and range of motion, balance, coordination and rhythm, whilst simultaneously creating an engaging environment, conducive to fostering social interactions and building relationships.

The music adds an additional component to the program. Different music playlists are used for each class and are specifically designed to meet the needs of every dancer, based on the musical memories and preferences of

participants. In particular, when working with people with dementia, signature pieces of music such as *Moon River*, *Que Sera, Sera* and the Elvis Presley classic *All Shook Up* are incorporated into the playlist to help unlock memories. Dancers often sing along to their favourite tune and remain quite unaware of the physical and cognitive exercises they are participating in or the health benefits they are gaining.

The Dancewise program is holistic in that it includes movement sequences that not only focus on large muscle groups such as those in the arms and legs, but also the smaller, more intricate muscle groups such as those in the hands and fingers, all of which are important in maintaining independence and quality of life. Some of the movements (slow and deliberate) have been developed from tai chi. Others are softer or faster. Some incorporate elements of sign language and ballet.

Every movement is specifically incorporated into the program to stimulate and / or challenge the dancer physically, cognitively or socially. For

example, the classes incorporate exercise which challenges coordination and cognitive function through the use of music with a strong rhythm component (eg African drumming). These exercises are repeated and built upon several times throughout the class to stimulate neuroplasticity.

The teachers use a repertoire of set moves called ‘anchor moves’, but also have the freedom to develop and incorporate their own moves into each class. This allows for flexibility to meet the needs of the dancers. For example, if the group has been on an outing earlier in the day they may be tired, which calls for less energetic movements for that day’s class.

The program also emphasises breathing exercises, not only for the meditative benefits but also to improve oxygen perfusion throughout the body, lung function and strengthen the muscles involved in respiration. Even those with very limited movement can benefit physically from the classes because we know that a person’s heartbeat speeds up and slows down in time to the rhythm of music.

The classes take place in a circle, with the dancers positioned facing inwards towards each other. We find that this creates an inclusive environment for people to connect and enables them to interact throughout the class when clapping, smiling, laughing and holding hands, for example.

The benefits of exercise

Exercise has been shown to be of benefit to people with dementia. A thorough meta-analysis of 1603 studies of exercise and dementia (Ahlskog *et al* 2011) showed that participants with dementia had better cognitive scores after six to 12 months of exercise compared with sedentary control groups. There were also significant improvements with respect to the prevention of dementia in participants without dementia. Many studies showed that the hippocampus and grey matter volumes increased with corresponding clinical observations including improved memory and cognition. Magnetic resonance imaging (MRI) also demonstrated improved neural connectivity.

Another breakthrough study conducted in the UK (Elwood 2013) followed 2235 men in Wales, aged 49-59 and observed the impact of five factors on their health over a 30-year period – exercise, healthy diet, normal weight, low alcohol intake and non-smoking. This study showed that exercise was the *most* powerful contributor, with a 60%

reduction in cognitive decline and dementia risk. As Dr Norman Doidge reflects, regarding exercise: “If any drug could do that, it would be the most popular, talked about treatment in medicine” (Doidge 2015 p96).

One of the most significant mediators of neuroplasticity is brain-derived neurotrophic factor (BDNF) (Flöel *et al* 2010). Many studies have suggested the role of BDNF in neurogenesis and synaptic connections (Huang & Reichardt 2001; Lessmann & Brigadski 2009; Edelmann *et al* 2014). BDNF is known to be increased with factors that include physical activity and social interaction (Mattson 2008).

Animal studies suggest that *coordination* and not endurance training induces synaptogenesis (nerve connections) and glial changes (Black *et al* 1990) – hence the relevance of the *type* of activity. Dance involves more coordination than other physical activities.

The benefits of dance

Dance is a form of aerobic exercise different to other forms of exercise because it *combines* physical activity with sensory stimulation (sensorimotor) and also has cognitive, social and affective components. Despite animal studies having shown that this combination has the strongest effect on neurogenesis, human studies to date are relatively scarce.

Vergheze *et al* (2003) compared six cognitive activities (eg crossword puzzles, reading, playing a musical instrument) and 11 physical activities (eg dancing, walking, swimming) in a 21-year prospective study in elderly participants. Although cognitive activity reduced the risk of dementia, physical activity generally did not. The only exception however was *dance*, which lowered the dementia risk by a staggering 76%. Risk reduction was also generally related to the *frequency* of the activity.

Muller *et al* (2017) studied two groups of healthy seniors over an 18-month period – one on a standard fitness program involving repetitive movements and the other in a dance program that involved constantly changing, new movements. MRI, BDNF and neuropsychological tests were performed at baseline, six and 18 months. Dancers had higher levels of BDNF compared to the standard group.

After six months, the dancers showed a significant increase in the grey matter volume (left pre-central gyrus which controls voluntary motor function) and at 18 months, an increase in the para

hippocampal gyrus volume. Attention and verbal memory in both groups improved at six and 18 months. The increase in pre-central gyrus volume may have been due to different movements (*polycentric*) with varying music (*polyrhythmic*).

The authors concluded that participation in a long-term dance program is superior in inducing neuroplasticity and that “*dance is highly promising in its potential to counteract age-related grey matter decline*”. They also commented that this is related to the multimodal nature of dance – combining the physical, cognitive and coordinative challenges.

Porat *et al* (2016) studied the effect of dance, music and song in groups with no and mild cognitive impairment. Participants were given a detailed questionnaire relating to their lifetime experience in music and dance. They had MRI scans and neuropsychological assessments. The results concluded that those who had been dancers performed better in cognitive tasks that involved memory and learning, suggesting that music, song and dance could potentially avert or delay mild cognitive impairment.

Lifestyle factors that help in preventing dementia were studied by Muller *et al* (2017) who yet again reported that a promising approach lies within dance programs because this incorporates both cognitive and physical activity to improve neuroprotection.

Guzman *et al* (2017) evaluated a 12-week dance program for people with mild to moderate dementia in three care homes. Collaborating data from 10 residents, 35 carers and three family members, they found there was a significant improvement in mood and socialisation. The residents wanted to continue with the program and the authors recommended that their dance program be disseminated further in care homes.

The power of music

Music is known to activate specific brain pathways related to emotion – including the hippocampus, amygdala, prefrontal cortex, insular and cingulate cortex and hypothalamus. There are thought to be several mechanisms as to how music influences the brain. Gómez *et al* (2016) state that there are four main theories: neuroplasticity; neurogenesis, regeneration and repair; neuroendocrine; and neuropsychiatric. The biochemical changes involved include the release of several neurotransmitters, neuropeptides and other biochemical mediators such as endorphins, endocannabinoids,

dopamine and nitric oxide (Boso *et al* 2006).

A recent systematic review (Abraha *et al* 2017) looked at different non-pharmacological interventions for behavioural and psychological symptoms in dementia and found that music and behavioural management were effective in reducing these dementia symptoms.

Fang *et al* (2017) reviewed literature on the use of music therapy (MT) in dementia. There have been several previous studies confirming this. They looked at music therapy, singing, background music and combining it with a physical activity which all had positive effects. The authors reported that music therapy should be ideally started early in dementia onset and to consider combining it with other physical modalities – such as dance. This combined therapy of music and dance was also suggested by Gómez *et al* (2016) following from their six-week study of music therapy for people with Alzheimer's disease, where significant improvements were recorded in memory orientation and mood (anxiety and depression).

Another study of residents with mild to moderate cognitive impairment at care homes used an intervention that combined dance (as a form of participation-based physical exercise) and relaxation. They found participants had reduced levels of anxiety and depression, improved cognitive function and improved quality of life (QOL). Dance as a form of participation-based physical exercise was found to reduce anxiety and depression levels and improve QOL and cognitive function among the studied sample of cognitively impaired elderly subjects in Malaysia (Adam *et al* 2016).

Conclusion

There has been substantial research into the effects of dance therapy and music in people with and without dementia. The benefits of dance include improved cognition (through increasing neurogenesis and neural pathways via many mediators including BDNF), memory, mood, stress relief, self-confidence and social and psychological well-being. Dance integrates several brain functions simultaneously including kinaesthetic, musical and emotional, which enhances neuronal connectivity.

For these reasons, Dancewise classes are of particular benefit for people with dementia. The combined power of dance and music provides a proven, positive and cost-effective intervention for people in care homes and the community. ■

Acknowledgments

Thanks to Dr Robyn Cosford for her support towards writing this article.

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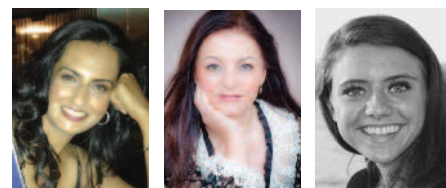
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■ From left: Dr Amy Gajjar is an Integrative GP in Sydney and a Director of the Dance Health Alliance (DHA); Gwen Korebrits is CEO of the DHA; and Sarah Palmer is a DHA Director. Contact the authors at: info@dancehealthalliance.org.au



A personal reflection

By **Gwen Korebrits**

I would like to share with you one particular story, involving one of my dancers from a care home in Auburn, in Sydney. She is in her late 80s, mobilises in a wheelchair and has advanced dementia.

To begin she was seemingly uninterested and shut off from the class. Then, halfway through her head lifted and her eyes gained a spark; she started clapping and moving her feet to the music. A classic war-time song began to play with the lyrics 'wish me luck as you wave me goodbye'. She started to sing at the top of her voice, march her legs in time to the music and continued to participate for the rest of the class.

Afterwards I spoke to her and she told me of her meeting and marriage to an Australian soldier. A tear appeared in her eye when she detailed how he had never returned from the war. Then she went on to clarify that he had actually physically returned, but mentally he was lost. She described her distress when he committed suicide, leaving her with four children to care for. She spoke warmly of her children, naming them all and how they continued to look after her, physically and financially, visiting regularly.



Dance teacher and the Dance Health Alliance CEO Gwen Korebrits (centre) during a Dancewise class

On my way out I mentioned to one of the carers how coherent the woman was and how lovely it was engaging in conversation with her. The carer was a little surprised, and told me that the woman hadn't

spoken for quite a while and was very rarely present. The impact of the music and movement had stimulated the woman's memory pathways and opened the floodgates to help her reminisce.

This is not an unusual case. Most of the Dance Health Alliance team have their own special moment when one of their dancers has surprised them with a story or a memory.

Sally Rule, Client Services Manager at Cranbrook Care's Lansdowne Gardens home in Sydney, explains her experience: "Since implementing the Dance Health Alliance program about 18 months ago we have noticed that residents are enthusiastic about participating. Those who cannot clearly enunciate why they want to go will indicate with their arms or hands some of the exercises that they enjoy. We have noticed an ease of socialisation among the dancers, particularly after the program is completed, where they will linger and talk to each other. The music revives memories and they will quite often be singing the melodies long after the program is completed."

Gwen Korebrits is CEO of the Dance Health Alliance

How to get involved

The Dance Health Alliance (DHA) Dancewise classes are offered in Sydney, with classes currently being held in 12 residential aged care organisations in and around the city, and on Queensland's Sunshine Coast. There are plans to introduce classes in Perth later this year, followed by Adelaide and Melbourne.

Demonstration

If you are interested in holding a program demonstration by the DHA team in your care facility, please email us at info@dancehealthalliance.org.au

Research partnerships

The DHA research team is passionate about verifying the benefits of dance for people with dementia. We would love to hear from health and aged care organisations interested in partnering or collaborating with the DHA to implement and evaluate a three-month Dancewise program for their clients with dementia. Email research@dancehealthalliance.org.au.

Training

The DHA offers an Endorsed Facilitator Training course – a two-day workshop designed to introduce and educate trainees about the program and the benefits of dance, with a particular focus on working with people living with movement challenges. The two-day training course is suitable for physical therapists, nurses,

movement therapists and care partners, and is also the first step for dance teachers wanting a taste before committing to DHA's five-day accredited teacher training course.

Those wishing to become certified DHA teachers are required to have a history of professional dance training and/ or performing as well as a comprehensive dance vocabulary. This training runs over five days and focuses on understanding more deeply the conditions of their dancers' experience.

We also run training sessions for care home staff to give them an understanding of the main structure of the program and classes, needs of participants when dancing and ways to support them between classes. We can come to you and run a short overview session or staff can attend the two-day training course.

For further information on the DHA staff and teacher training options, email training@dancehealthalliance.org.au or visit www.dancehealthalliance.org.au.

Support

As a not-for-profit organisation, the DHA appreciates support via sponsorship or donations. Email donations@dancehealthalliance.org.au.

– Gwen Korebrits, Amy Gajjar and Sarah Palmer