

Review

Music and dance in chronic lung disease

Cite as: Philip K, Lewis A, Hopkinson NS. Music and dance in chronic lung disease. *Breathe* 2019; 15: 116–120.

Arts in Health interventions show potential to improve the quality of life of people with chronic lung disease. Listening to music, making music, and dance have accepted and established roles in the lives of people without chronic disease. However, their potential utility in chronic disease management is infrequently considered by medical professionals. The aim of this review is to examine the use of music and dance in the treatment and self-management of chronic lung disease. Although the evidence base is currently limited, existing research suggests a range of biopsychosocial benefits. As personalised medicine and social prescribing become more prominent, further research is required to establish the role of arts interventions in chronic lung disease.

Introduction

Across the world and throughout history, music and dance are and have been central components of society and culture. They are present throughout our lives: singing nursery rhymes to our babies, folk songs transmitting our histories and legends, dancing at our weddings and festivals, the music at our funerals. For many of us, the arts are central to our sense of identity. However, for medical professionals, music and dance are not often considered as potential tools to help patients live well with their disease. Nevertheless, many people with chronic lung diseases have seen the potential for music and dance to contribute to their health and well-being, and are taking part in Arts in Health activities, such as group singing [1] and community dance groups [2, 3]. This area deserves attention and investigation to see how and where such approaches fit in the world of evidence-based medicine.

Chronic lung diseases can have “holistically detrimental” biopsychosocial impacts, with physical deconditioning, low mood and social isolation all being common features. Symptoms of breathlessness, cough, wheeze, weakness, fatigue and exercise limitation are disabling in themselves but, additionally, often lead to embarrassment and fear of participating in physical activity, with subsequent reductions in social participation.

People without chronic lung disease often use music and dance to improve their health and well-being. People listen to music to relax or while exercising; they join choirs to engage in a creative and social activity; and similarly go dancing as a creative, expressive and social physical activity. The reasons for engaging in such activities and the benefits gained are complex and can be highly individual. Additionally, for people without chronic lung disease, it is accepted that physical activity, exercise and fitness training take many forms.



CrossMark

 @ERSpublications

Interest in the arts in health is growing, and initial research suggests that music and dance have a range of health benefits and show promise as tools to promote living well and self-management in people with chronic lung disease <http://ow.ly/bFxd30o8t0X>



© ERS 2019

Individuals have different motivations, interests and passions, which are reflected in the types of physical activities they engage in. Moving the focus from the disease to the person prompts us to question if types of physical activity beyond pulmonary rehabilitation and walking could be beneficial.

Some of the benefits of creative arts participation may be more challenging to measure, or at least less well appreciated, than the conventional health outcomes used to evaluate respiratory care. For example, the well-being experienced during group singing may be of real value to the participant, but it is unlikely to be given the same level of consideration as improvements in spirometry or a reduction in hospital admissions. That said, the arts may also be a tool to improve conventional outcomes related to physical activity, physical capacity [4, 5] and healthcare utilisation [6].

In this context, from patient to policy levels, interest in Arts in Health is growing. In the UK, this is highlighted by the creation of the All-Party Parliamentary Group on Arts, Health and Wellbeing in 2014. The group's recent report "*Creative Health: The Arts for Health and Wellbeing*" [7] provides a compelling overview of the evidence base for arts in health, with clear policy recommendations to develop and integrate such approaches more widely. Such recommendations are being seen in practice, with increasing promotion and adoption of social prescribing [8]. Therefore, evaluating the role of arts interventions in chronic disease is of increasing importance.

Music listening

Listening to music has the same potential benefits for people with chronic lung disease as those without, such as improving mood and relaxation. However, there are also a variety of potential impacts specifically relating to the management of their disease.

It is well established that physical activity and exercise are core components of living well in chronic lung disease; however, symptoms such as dyspnoea, fatigue and anxiety can inhibit participation. One area that has received attention is the use of music listening as an adjunct to exercise. In healthy people, listening to music during exercise has been shown to improve work output and reduce perceived exertion, with further positive effects on mood and enjoyment [9].

A recent systematic review explored the use of music as a distractive auditory stimulus in chronic obstructive pulmonary disease (COPD) [10]. The authors considered distractive auditory stimuli in relation to exercise capacity, symptoms and health-related quality of life during exercise training and testing, and for symptom management at rest. They found that distractive

auditory stimuli improved exercise capacity and health-related quality of life when combined with exercise training over time. Dyspnoea was lessened during exercise training, but results were inconsistent during short-term exercise testing and for symptom management at rest. Subsequent research has shown that music listening during a high-intensity endurance test can reduce dyspnoea and increase endurance time [11], and can reduce dyspnoea during low-intensity exercise in elderly subjects with COPD [12]. Similarly, rhythmic auditory stimulation, in which music is linked with movement to elicit a neurological response and affect behaviour, has been shown to increase 6-min walk distance [13]. Such findings have potential applications in relation to pulmonary rehabilitation, as well as dyspnoea-inducing activities of daily living. Other potential applications of music include being a calming distraction during unpleasant procedures; for example, music during bronchoscopy has been shown to reduce heart rate and both systolic and diastolic blood pressure [14]. Furthermore, hospital admissions are common in many chronic lung diseases, with associated psychological distress. In this setting, targeted music therapy has been shown to reduce anxiety levels and physiological correlates including blood pressure [15].

Music making

Actively making music is a further area of interest. Singing, for example, is a complex physical activity involving breath, posture and voice control, and the active use of respiratory muscles. Group singing creates a social component. Perhaps not surprisingly, there is a growing body of evidence suggesting a range of health and well-being benefits from singing in both healthy individuals and people with chronic disease [16]. A recent systematic review suggested that group singing can have a positive impact on health-related quality of life in a range of health conditions; however, it is important to note that the research included was of generally low quality with methodological limitations [17]. Singing for Lung Health is a group singing programme developed specifically for people with chronic lung disease [18]. The sessions involve physical and vocal warm-ups, breath control exercises, and group singing of songs specifically chosen to aid breath control, relaxation and a sense of well-being.

Singing for Lung Health is an ever-expanding programme. There are approximately 100 singing groups in the UK, with others in Australia, New Zealand, the USA and Uganda. The enthusiasm driving this growth is further evidenced by reports of consistent participant attendance over many years. However, funding for these groups is variable and patchy. Some groups receive funding from organisations such as the British Lung Foundation,

while others are paid for by the participants or charitable donations [6].

Research on singing for people with chronic lung disease suggests a range of benefits. Most studies have focused on COPD, although a small number of studies have also been conducted in asthma and cystic fibrosis [1]. Studies in COPD have found impacts on physiological parameters including maximum expiratory pressure [19], health impairment (St George's Respiratory Questionnaire) [19, 20], the physical component of the 36-item Short-Form Health Survey (SF-36) [21, 22], and the anxiety score of the Hospital Anxiety and Depression Scale (HADS) [22]. Qualitative data consistently state that participants perceive singing to be an effective therapy to improve physical and psychological functioning, and social aspects are greatly valued [6, 18, 19, 23, 24]. Importantly, evidence suggests that the training delivered for Singing for Lung Health teachers translates into a consistent pattern of training, which is important to maintain intervention fidelity in clinical trials [6, 25].

There has also been interest in the use of wind instruments. In one study using "multimodal psycho-music therapy", which included wind instrument playing, singing and music visualisation, reported statistically significant improvements were found in the Beck Depression Inventory, chronic respiratory questionnaire self-reported dyspnoea component, and the dyspnoea visual analogue scale [26]. Additionally, a recent pilot study investigating the effect of a 12-week harmonica programme found significant improvements in respiratory muscle function (maximum inspiratory and expiratory pressures) and 6-min walk distance in COPD patients who had completed pulmonary rehabilitation [27].

Research in other chronic lung diseases has been more limited. One study involving aboriginal Australians investigated using didgeridoo and singing lessons to improve engagement with asthma management. They found the approach was highly successful, with participants enjoying the lessons and stating that their knowledge of asthma and management strategies was greatly improved. Interestingly, they also found that in the didgeridoo group, forced expiratory volume in 1 s, forced vital capacity and peak flow all significantly improved [28]. Didgeridoo has also been shown to be an effective alternative treatment for moderate obstructive sleep apnoea [29]. Other activities showing potential include beatboxing [30] and singing [31] for people with cystic fibrosis.

Overall, the evidence base remains limited. Indeed, the most researched topic in this area, a recent Cochrane review titled "*Singing for adults with COPD*", found that "There is low to very low-quality evidence that singing is safe for people with COPD and improves physical health" [32]. The review calls for more, better quality research to establish the benefits attributable to singing in COPD.

Dance

Physical activity and physical performance are important components of living well in chronic lung disease. Pulmonary rehabilitation is one of the most effective components of chronic disease management; however, access is highly variable, completion rates are often poor and benefits are often of limited duration [33]. Therefore, other forms of physical activity and exercise training should be considered to complement formal pulmonary rehabilitation.

A recent systematic review and meta-analysis found that dance interventions can be equally and occasionally more effective at improving a range of health outcomes compared with other forms of physical activity [34]. With an appreciation of the impacts seen in other groups, dance groups for people with chronic lung disease now exist. This includes South Asian dance sessions in both community and hospital settings [2], and a community dance group in North London, UK. Furthermore, interest from other people with chronic lung disease in using music and dance as adjuncts to physical activity has also been shown [3]. Other groups may well exist.

There are currently no published studies on the impact of dance in chronic lung diseases. However, studies are taking place in Canada (ClinicalTrials.gov, identifier NCT03636594) and the UK. Such approaches may also have applications in other countries. In South Africa, dance and exercise to music are being used on multidrug-resistant tuberculosis wards, with participants and staff giving very positive reports [35]. In the Kyrgyz Republic, during stakeholder engagement for the development of a pulmonary rehabilitation programme, the potential for including music and dance was highlighted as a particular area of enthusiasm and interest by both participants and staff delivering programmes [36].

Discussion

Using music and dance within the management of chronic lung disease is not without challenges. Many unanswered and important questions exist. For example, what are the important outcome measures: physical, psychological or social? What is the best way to deliver them and how much: what dose is needed? How can creativity be maintained but standards met? And what should those standards be? Whose criteria? There will inevitably be discussions around semantics: can these activities be considered rehabilitation, activities, therapies, or something else? Furthermore, as an evidence base grows for what works, and what does not, there will be discussions around who finances such activities and how they are delivered. These discussions should not detract from the simple

observation that music and dance are integral parts of people's lives and as such may play a part in holistic approaches to disease management. If we listen to the patients who are self-motivated to attend and participate already, these avenues deserve consideration. Therefore, if we are to aspire to include bottom-up approaches to person-centred healthcare provision, approaches to care that are being driven by patients deserve our attention.

The current evidence base is limited, but it is important to appreciate the inherent challenges of conducting research in this area. For example, these are complex interventions and research methodologies most highly valued by commissioners and guideline developers, such as a double-blind placebo-controlled trial, are not possible. Creating outcome measures related to artistic expression that assess what is valuable to both participants and the medical community can be challenging. The limited potential for financial gain may reduce interest from funders such as pharmaceutical companies. Additionally, deeply entrenched views about what constitutes

medicine may create resistance to exploring these areas. Although there are multiple contributory factors, the current situation remains that the evidence base is highly limited, and that evidence-based recommendations cannot easily be made. Furthermore, the current gaps in research should not be confused with being evidence that such interventions are not of benefit.

Conclusions

Music and dance can contribute to living well with chronic lung disease. There are a variety of different uses being explored, with a growing evidence base helping to shape more effective uses and novel interventions. Currently, there is a lack of high-quality research in this area. However, with increasing interest from patients and social prescribing becoming more commonplace, this is likely to change. It is therefore necessary for further research to craft best practice whilst these interventions are developing.

Affiliations

Keir Philip, Adam Lewis, Nicholas S. Hopkinson

National Heart and Lung Institute, Imperial College London, London, UK.

Conflict of interest

None declared.

References

1. Goldenberg RB. Singing lessons for respiratory health: a literature review. *J Voice* 2018; 32: 85–94.
2. Farmer C. Dance Well Evaluation Report 2016–2019. London, Akademi, 2018. Available from: <https://akademi.co.uk/wp-content/uploads/2018/11/DW-Evaluation-Report-2018-FINAL-web.pdf>
3. Philip K, Williams S, Townes H, *et al*. Letter to the Editor. *Holist Nurs Pract* 2018; 32: 60–61.
4. MacBean V, Reilly CC, Rafferty GF, *et al*. Dance as a rehabilitative strategy for patients with COPD. *Eur Respir J* 2017; 50: Suppl. 61, PA3715.
5. Borges EGDS, Vale RGS, Pernambuco CS, *et al*. Effects of dance on the postural balance, cognition and functional autonomy of older adults. *Rev Bras Enferm* 2018; 71: Suppl. 5, 2302–2309.
6. Lewis A, Cave P, Hopkinson NS. Singing for Lung Health: service evaluation of the British Lung Foundation programme. *Perspect Public Health* 2018; 138: 215–222.
7. The All-Party Parliamentary Group on Arts, Health and Wellbeing. Creative Health: The Arts for Health and Wellbeing. 2nd Edn. 2017. Available from: www.artshealthandwellbeing.org.uk/appg-inquiry/
8. Bickerdike L, Booth A, Wilson PM, *et al*. Social prescribing: less rhetoric and more reality. A systematic review of the evidence. *BMJ Open* 2017; 7: e013384.
9. Karageorghis CI, Priest DL. Music in the exercise domain: a review and synthesis (Part II). *Int Rev Sport Exerc Psychol* 2012; 5: 67–84.
10. Lee AL, Desveaux L, Goldstein RS, *et al*. Distractive auditory stimuli in the form of music in individuals with COPD: a systematic review. *Chest* 2015; 148: 417–429.
11. Lee AL, Dolmage TE, Rhim M, *et al*. The impact of listening to music during a high-intensity exercise endurance test in people with COPD. *Chest* 2018; 153: 1134–1141.
12. Shingai K, Kanezaki M, Senjyu H. Distractive auditory stimuli alleviate the perception of dyspnea induced by low-intensity exercise in elderly subjects with COPD. *Respir Care* 2015; 60: 689–694.
13. Hernandez AK. Effects of Rhythmic Auditory Stimulation on Distance Walked and Dyspnea in Individuals with COPD. Dissertation. University of Illinois at Chicago, 2018. Available from: <https://indigo.uic.edu/handle/10027/22591>
14. Tam WW, Lo KK, Hui DS. The effect of music during bronchoscopy: a meta-analysis. *Heart Lung* 2016; 45: 86–94.
15. Horuz D, Kurcer MA, Erdogan Z. The effect of music therapy on anxiety and various physical findings in patients with COPD in a pulmonology service. *Holist Nurs Pract* 2017; 31: 378–383.
16. Kang J, Scholp A, Jiang JJ. A review of the physiological effects and mechanisms of singing. *J Voice* 2018; 32: 390–395.
17. Reagon C, Gale N, Enright S, *et al*. A mixed-method systematic review to investigate the effect of group singing on health related quality of life. *Complement Ther Med* 2016; 27: 1–11.
18. Lewis A, Cave P, Stern M, *et al*. Singing for Lung Health – a systematic review of the literature and consensus statement. *NPJ Prim Care Respir Med* 2016; 26: 16080.
19. Bonilha AG, Onofre F, Vieira ML, *et al*. Effects of singing classes on pulmonary function and quality of life of COPD patients. *Int J Chron Obstruct Pulmon Dis* 2009; 4: 1–8.
20. Skingley A, Page S, Clift S, *et al*. "Singing for Breathing": participants' perceptions of a group singing programme for people with COPD. *Arts & Health* 2014; 6: 59–74.

21. Lord VM, Hume VJ, Kelly JL, *et al.* Singing classes for chronic obstructive pulmonary disease: a randomized controlled trial. *BMC Pulm Med* 2012; 12: 69.
22. Lord VM, Cave P, Hume VJ, *et al.* Singing teaching as a therapy for chronic respiratory disease – a randomised controlled trial and qualitative evaluation. *BMC Pulm Med* 2010; 10: 41.
23. Skingley A, Clift S, Hurley S, *et al.* Community singing groups for people with chronic obstructive pulmonary disease: participant perspectives. *Perspect Public Health* 2018; 138: 66–75.
24. McNaughton A, Weatherall M, Williams M, *et al.* Sing Your Lungs Out – a community singing group for chronic obstructive pulmonary disease: a 1-year pilot study. *BMJ Open* 2017; 7: e014151.
25. Lewis A, Cave P, Hopkinson NS. Singing for Lung Health: a qualitative assessment of a British Lung Foundation programme for group leaders. *BMJ Open Respir Res* 2017; 4: e000216.
26. Canga B, Azoulay R, Raskin J, *et al.* AIR: Advances in Respiration – Music therapy in the treatment of chronic pulmonary disease. *Respir Med* 2015; 109: 1532–1539.
27. Hart MK, Stewardson E, Jamil A, *et al.* Harmonica playing improves outcomes in patients with COPD. *Respir Care* 2018; 63: Suppl. 10, 3024192.
28. Eley R, Gorman D. Didgeridoo playing and singing to support asthma management in Aboriginal Australians. *J Rural Health* 2010; 26: 100–104.
29. Puhan MA, Suarez A, Lo Cascio C, *et al.* Didgeridoo playing as alternative treatment for obstructive sleep apnoea syndrome: randomised controlled trial. *BMJ* 2006; 332: 266–270.
30. Royal Brompton and Harefield Hospitals Charity. The Arts in our Hospitals: Vocal Beats. 2017. [www.rbhcharity.org/rbandharts](http://rbhcharity.org/rbandharts) Date last accessed: December 26, 2018. Date last updated: February 27, 2017.
31. Irons JY, Kenny DT, McElrea M, *et al.* Singing therapy for young people with cystic fibrosis: a randomized controlled pilot study. *Music Med* 2012; 4: 136–145.
32. McNamara RJ, Epsley C, Coren E, *et al.* Singing for adults with chronic obstructive pulmonary disease (COPD). *Cochrane Database Syst Rev* 2017; 12: CD012296.
33. Rochester CL, Vogiatzis I, Holland AE, *et al.* An official American Thoracic Society/European Respiratory Society policy statement: enhancing implementation, use, and delivery of pulmonary rehabilitation. *Am J Respir Crit Care Med* 2015; 192: 1373–1386.
34. Fong Yan A, Cobley S, Chan C, *et al.* The effectiveness of dance interventions on physical health outcomes compared to other forms of physical activity: a systematic review and meta-analysis. *Sports Med* 2018; 48: 933–951.
35. Greaves D. Dancing towards better health. Escourt and Midlands News, 2015. <https://estcourtnews.co.za/19571/dancing-towards-better-health/>
36. University of Plymouth. Pulmonary rehabilitation in Crete, Vietnam and Kyrgyzstan (FRESH AIR programme). 2018. [www.plymouth.ac.uk/research/primarycare/fresh-air/pulmonary-rehabilitation-in-crete-vietnam-and-kyrgyzstan](http://plymouth.ac.uk/research/primarycare/fresh-air/pulmonary-rehabilitation-in-crete-vietnam-and-kyrgyzstan) Date last accessed: December 31, 2018.