YOUNG-D

Breathing exercises for people with young onset dementia

Odisee
UNIVERSITY OF APPLIED SCIENCES

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Breathing exercises for people with young onset dementia

Lecture

Introduction

Deep breathing exercises are a simple and time-efficient technique that does not require specialized equipment, making it accessible in a wide variety of settings (Tavoian et al., 2023). Additionally, literature has described the positive effects of deep and slow breathing on anxiety and stress levels:

- Diaphragmatic breathing (DB) is a slow and deep breathing technique that affects the brain and various bodily systems (the cardiovascular, respiratory and gastrointestinal system) by influencing the autonomic nervous functions (Hamasaki, 2021). DB exercises have been shown to reduce stress, treat eating disorders, chronic functional constipation, hypertension, migraine and anxiety and improve quality of life (Hamasaki, 2021).
- Another study by Dass et al. (2022) also describes the positive effects of synchronized and controlled breathing in asthma patients. This type of breathing can reduce stress, strain and anxiety and change behavior, as well as improve the immune system and the strength/endurance of the respiratory muscles (Dass et al, 2022).
- Naik et al. (2018) conducted a study which demonstrated that a 12-week intervention of slow breathing exercise training significantly reduced perceived stress levels in healthy males.
- Tavoian et al. (2023) also reported positive effects of deep breathing at work on employee stress levels.

Although breath work and deep breathing have been reported to reduce anxiety and stress and improve sleep outcomes, there is currently only little research on the effect of deep breathing in dementia. James et al. (2021) conducted a small powered study on the effects of breathing on informal caregivers of people with dementia. Additionally, Min et al. (2023) reported on the preventive value of breathwork in the etiology of Alzheimer's' disease. Slow-paced breathing, via heart rate variability (HRV) biofeedback, stimulates vagus-nerve pathways that counter noradrenergic mechanisms in stress and arousal pathways. This can influence the production and clearance of Alzheimer's disease (AD)-related proteins (Min et al., 2023). While breathing exercises have been proven effective in reducing anxiety and stress, as well as in improving sleep, further examination is needed to determine the

effectiveness of breathwork as an intervention for people with dementia. Given the limited research on breath work in dementia, it is possible to extrapolate the importance and potential health benefits of breath exercises from previous studies conducted on the general population (Dass et al., 2022; Hamasaki, 2021; Naik et al., 2018; Tavoian et al., 2023).

Breathing or breath work, also known as deep breathing or focus breathing, can increase awareness of breathing and help control or slow down the pace of breathing. This can stimulate the vagal nerve (parasympathetic nervous system) and is known to reduce anxiety and stress (Dass et al., 2022; Hamasaki, 2021; Naik et al., 2018; Tavoian et al., 2023).

Our breathing can often indicate our feelings or stress levels. When we are tense or stressed, our breathing may feel shallow or superficial. By focusing on our breathing and by becoming more aware of our breathing patterns, we can slow down our breathing pace, which can help us breathe more deeply and profoundly. Slow and deep breathing can help to slow down the body and the brain and reduces bodily tension, anxiety and stress.

Breathing: goal and purpose

We breathe so our bodies can get the oxygen they need for energy. When we breathe in, air goes into our lungs. Oxygen from the air gets into our blood through tiny blood vessels called capillaries around little air sacs in the lungs called alveoli. The blood carries oxygen to all our cells.

Integrating regular breathing exercises into one's routine can contribute to:

- stress reduction
- improved respiratory function
- enhanced cognitive performance, and an overall sense of balance and vitality

Relation between breathing and stress

Stress can impact breathing patterns and breathing can influence experienced stress levels. Breathing exercises aim to increase awareness and control over the rate of breathing. The breathing exercises stimulate the vagus nerve, which is part of the parasympathetic nervous system, leading to reduced anxiety and stress.

Breathing exercises have been a cornerstone of various wellbeing practices and therapeutic interventions. The effectiveness of these exercises lies in their significant impact on both physical and mental wellbeing. Breathing exercises can be beneficial for individuals with dementia, including people with Young Onset Dementia, as these exercises can help promote relaxation, reduce stress, and improve overall well-being.

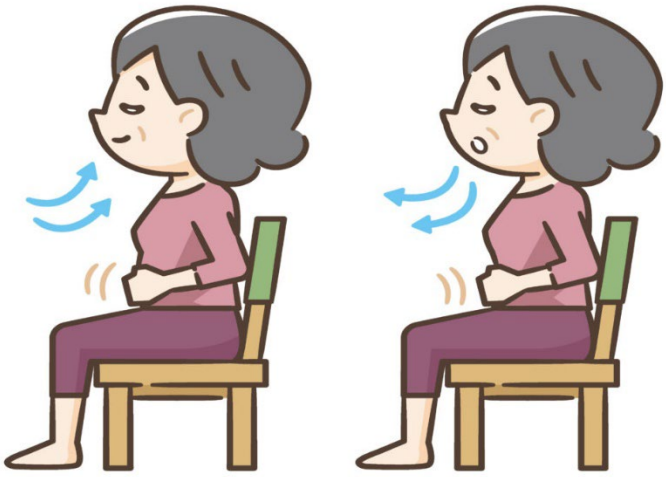
Strategies to improve breathing

It is important to address poor breathing considering untreated respiratory issues can have significant impact on overall health and quality of life.

- **Deep Breathing Exercises**: Practicing deep breathing exercises, such as diaphragmatic breathing (also known as belly breathing), can help improve lung capacity and oxygen exchange. These exercises can train the diaphragm to work more efficiently, allowing for more efficient breathing
- **Increase physical activity**: Engaging in regular physical activity can strengthen respiratory muscles and improve overall lung function. Aerobic exercises like walking, swimming or cycling can be particularly beneficial
- **Posture Correction**: Poor posture can restrict breathing by compressing the lungs and diaphragm. Improving posture through exercises and ergonomic adjustments can help optimize breathing mechanics
- **Stress Reduction Techniques**: Stress and anxiety can lead to shallow breathing patterns. Techniques such as mindfulness, progressive muscle relaxation, or yoga can help reduce stress and promote deeper, more relaxed breathing
- **Quit Smoking**: Smoking can damage the lungs and impair respiratory function. Quitting smoking can significantly improve lung health and breathing capacity over time
- **Stay well hydrated:** Staying well-hydrated helps keep the airways moist and facilitates efficient oxygen exchange in the lungs. Aim to drink plenty of water throughout the day
- **Dietary considerations**: Consuming a balanced diet rich in fruits, vegetables, lean proteins, and whole grains can support overall health, including respiratory function. Certain foods, such as spicy foods or those high in antioxidants, may also have respiratory benefits.
- **Medical treatment**: If poor breathing is due to an underlying medical condition, such as asthma, chronic obstructive pulmonary disease (COPD), or sleep apnea, it's essential to consult a healthcare professional for proper diagnosis and treatment. Treatment may include medications, inhalers, oxygen therapy, or other interventions tailored to the specific condition

Workshop

Abdominal breathing exercise (3min)



- **Description**: abdominal breathing: sitting on a chair placing hands on the chest and abdomen
- **Goals:** participants are offered different breathing techniques and exercises
- **Method:** individual exercise (in group) for 3-5 minutes. Sit or lie down comfortably in a quiet environment. Place one hand on your abdomen and the other hand on your chest. Tell them to breathe in and out. Let them focus on their breathing.

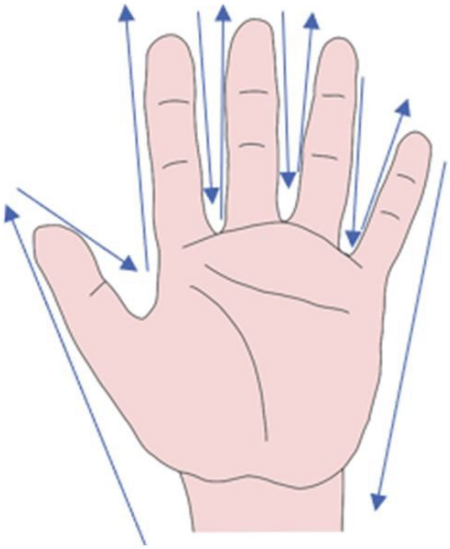
  , Inhale slowly and deeply through your nose, allowing your abdomen to rise as you fill your lungs with air. Exhale slowly through your mouth, emptying your lungs completely and allowing your abdomen to fall. Repeat for several breaths, focusing on the sensation of your breath filling your body".

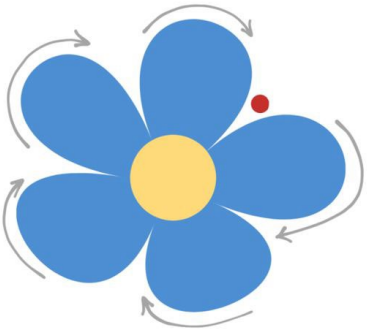
  Give all participants the chance to practice and reflect on/share their experiences
- **Tools:** quiet environment, yoga mat or chair

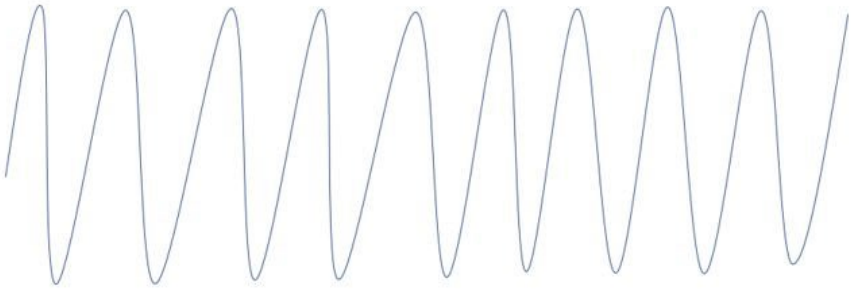
Breathing by means of a digital visual breathing tool

- **Description:** introduction of a visual breathing tool on internet or an app on an own device
- **Goals:** participants are informed on breathing and the effects of awareness breathing.
- **Method:** individual exercise (in group) for 3-5 minutes. Play the exercise on a large screen. Give all participants the chance to practice and reflect on/share their experiences
- **Tools/visual breathing tools:**
    - https://www.grc.com/breathe.htm (Follow the ball on the line. Adjust the levels correctly.)
    - https://www.youtube.com/watch?v=5DqTuWve9t8
    - https://www.youtube.com/watch?v=bF_1ZiFta-E
    - https://words.jamoe.org/46-breathing/

Breathing by means of an analogue visual breathing tool







- **Description:** introduction of a visual breathing exercise
- **Goals:** participants are informed on breathing and the effects of awareness breathing. Participants are offered different breathing exercises (Breathing with hand, figure or curves)
- **Method:** individual exercise (in group) for 3-5 minutes. Participants are provided hand-outs on paper. Participants have to follow the hand/figure/the curves/waves with their finger, and corresponding to their breathing. Give all participants the chance to practice and reflect on/share their experiences.
    - Figure of the hand: follow the curves of the fingers. Breathing in goes along with upward movement alongside a finger, breathing out goes along with moving downwards a finger
    - Figure of the flower: follow the edges of the petals. Breathing in goes along with upward movement alongside a petal of the flower, breathing out goes along with moving downwards a petal of the flower

- Curves/Waves: follow the curves of the wave/curve. Breathing in goes along with upward movement alongside a wave/curve, breathing out goes along with moving downwards a wave/curve

- **Tools:**

  Figures hand/figure/curves (see picture above)

  Hand/flower: inhale and exhale by following the arrows

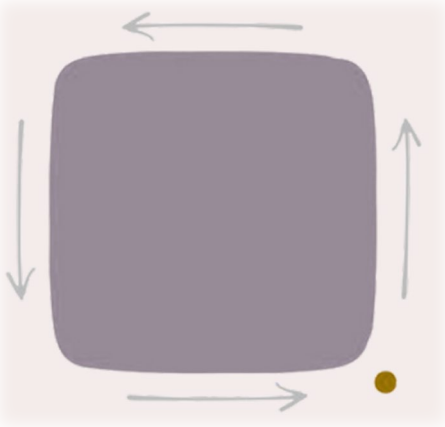
  Curves: Inhale when the curve is going up, exhale when the wave is going down

Pursed Lip Breathing

Method:

- Sit comfortably with your back straight
- Inhale slowly through your nose for a count of four
- Purse your lips as if you were going to whistle
- Exhale slowly and gently through your pursed lips for a count of six
- Repeat for several breaths, focusing on the controlled exhalation

Square Breathing (Box Breathing)



Method:

- Sit comfortably and close your eyes if you prefer to do so
- Inhale deeply through your nose for a count of four
- Hold your breath for a count of four
- Exhale slowly and completely through your mouth for a count of four
- Hold your breath for a count of four before beginning the next cycle
- Repeat the cycle for several rounds, focusing on the rhythmic pattern

Alternating Nostril Breathing (Nadi Shodhana)

Method:

- Sit comfortably with your back straight and eyes closed
- Use your right thumb to close your right nostril and inhale slowly through your left nostril
- Close your left nostril with your ring finger, and exhale slowly through your right nostril
- Inhale through your right nostril
- Close your right nostril and exhale through your left nostril
- Continue alternating nostrils for several breaths, focusing on the smooth transition between inhaling and exhaling

Guided Imagery Breathing

Method:

- Sit or lie down comfortably in a quiet space
- Close your eyes and imagine a peaceful and relaxing scene, such as a serene beach or a quiet forest
- As you inhale deeply, visualize yourself absorbing the calmness and tranquility of your chosen scene
- As you exhale slowly, release any tension or stress, allowing it to dissipate into the environment
- Continue breathing deeply and visualizing the calming scene for several minutes

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