

## **Physical activity in obstructive sleep apnoea: If it were easy, everybody would be doing it**

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Imagine if an uninterrupted night's sleep was a right not a privilege! In many households the ability of an adult to sleep well is dependent on the sleep habits of their bed partner. If you are unlucky enough to share your bed with a snorer, the chances are an uninterrupted, restorative night's sleep is an unimaginable luxury.

Your own energy levels and sense of wellbeing may be affected by the presence of snoring but it is nothing compared to the potential health risks to the snorer themselves. Loud snoring is a key symptom associated with obstructive sleep apnoea or OSA, a common but often undiagnosed sleep disorder. OSA involves repeated collapse of the upper airway, resulting in a pause in breathing, often hundreds of times a night. The snoring results from sound generated by obstructed air movement during sleep. Oxygen levels drop and blood pressure increases when breathing stops. The brain is alerted when this happens and breathing resumes but the person is usually unaware of repeated awakening. Symptoms such as waking unrefreshed, morning headaches, low energy levels, poor concentration and feeling irritable seem normal.

Despite snoring being a conversation topic of some mirth, the associated risks of this disrupted breathing are no laughing matter. The frequent blood pressure rises overnight, from repeated arousal of the brain to trigger breathing, increases the risk of high blood pressure; a risk factor for a host of serious health outcomes, including heart attack and stroke. There are also higher rates of obesity and type 2 diabetes in the population with OSA.

Just getting through the day can feel like an enormous effort, and fatigue and depression in this population are common. Other risks, with potentially fatal consequences, include a greater chance of road traffic accidents, due to the increased likelihood of falling asleep whilst driving.

Physical inactivity can further contribute to health risks in people with OSA, as low levels of physical activity are linked to increased severity of disease. Perhaps not surprisingly, given that sleepiness and fatigue are common symptoms, those with OSA tend to be relatively inactive.

Looking at the evidence, it is apparent that physical activity has a role to play in management of this condition, with studies demonstrating that higher levels of physical activity can result in a reduction in breathing disruption during the night, as well as reducing cardiovascular risk, lowering rates of depression and improving quality of life. Studies have also demonstrated that the more people exercise, the lower their levels of fatigue. Physical activity is a broad term encompassing lower intensity activities like walking to work and gardening, as well as exercise such as interval training and marathon running. Although physical activity has been shown to benefit this population, the biggest clinical challenge is how to support fatigued individuals to integrate physical activity into their daily routines in ways that can be maintained. A one size fits all approach is doomed to failure.

Our research is looking at the effectiveness of an individualised approach to managing people with OSA by using motivational text messages designed to support them in increasing their physical activity levels. The messages are gradually reduced over the six-month period, as the aim is to support a change in physical activity behaviour that is successfully maintained in the long term. Texts are based on the person's activity preferences, significant people in their lives, pets, preferred content and preferred time of day to receive messages. Also considered are physical activity habits that may have worked in the past and the individual's level of personal motivation. Targeted activities are ones that the individual enjoys or regards as realistic. The focus is on trying to fit additional activity into the daily pattern of life to make it more sustainable. A personalised exercise plan is developed in partnership with each participant. Goal setting and action planning are strategies used to focus the individual's efforts and measure progress. For one person, motivation to be active comes from text questions that hold the individual accountable for their physical activity. For another, a more effective text will place greater emphasis on encouragement and praise. The text approach is tailored to the individual. Small amounts of relevant information on OSA and health related matters are also sent as text messages to provide participants with greater knowledge of their condition.

By developing this personalised approach, in collaboration with each participant, to support and empower them to change their physical activity behaviour, we hope to offset some of the risk factors associated with OSA, as well as improving symptoms, and maintaining changes in the long term. Greater empowerment could provide emotional health benefits too. A sustained increase in physical activity may help to reduce blood pressure and reduce snoring. That means an improved night's sleep for more than just our study participants!