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Sit Less - Move More: Reducing sedentary behaviour to improve health

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Introduction

The link between physical activity and health is well-established, irrefutable and supported by decades of research evidence. More recently however attention has turned to the effect of prolonged sitting on health. Compared to previous generations, our working day, our leisure time and our daily transport provide an abundance of opportunities to sit for prolonged uninterrupted periods. Over the past five decades, one of the main culprits of increased sedentary behaviour has been the reduction in manual occupations with a shift towards desk-based office work. The advent of digital technologies has also increased the time we spend looking at screens and much of this 'screen time' is sedentary. As Moss (2013) has pointed out,

Until quite recently, if a child was sent to their bedroom during daylight hours, it was because they had been behaving badly. Today, things are very different. The average child's bedroom is no longer a place of punishment, but an entertainment hub: the epicentre of their social lives. Here they can access the outside world via their mobile phone, TV or computer screen;

There is now rapidly accumulating evidence that prolonged periods of sedentary time are detrimental for health. There is strong relationship between time spent in sedentary behaviour and all-cause mortality, cardiovascular disease, type 2 diabetes, obesity and metabolic syndrome (de Rezende 2014). Emerging evidence has also linked sedentary behaviours with other outcomes including poor mental health (Van Uffelen et al, 2013). Conversely, interrupting sedentary time and/or replacing it with light-intensity activity has been shown to improve several markers of cardiometabolic risk (Thorp 2014). Obesity may act as a mediator between sedentary behaviours and negative health outcomes suggesting that more sitting may cause obesity which in turn leads to a range of health problems (Same 2016).

Sedentary behaviour is defined as waking activity with very low levels of energy expenditure and a sitting or reclining posture. Sedentary behaviour in adults is characterized in domestic environments as TV viewing and other screen-focused behaviours, prolonged sitting in the workplace, and time spent sitting in cars (Owen 2011). Sedentary behaviour is distinct from physical activity and the evidence suggests that even those who undertake sufficient daily physical activity, in line with the current guidelines (DoH 2011) of 30 minutes of moderate to vigorous physical activity may be damaging their health by the amount of time spent sitting (Biddle et al 2010). In particular, prolonged periods of uninterrupted sitting, which is a characteristic of many modern educational and work settings as well as many leisure-time pursuits is emerging as a risky health behaviour.

How much time do people spend in sedentary behaviours?

Objective data suggests that UK men and women spend approximately 7.5 hours per day respectively being sedentary (Stamatakis 2012). Research from Ulster has shown that primary school children (P6 & P7) spend over 9.5 hours per day sitting, more than either their teachers or parents (Hegarty 2017) and that the majority of students in third level and further education spend more than 7 hours per day being sedentary (Murphy et al 2016). The UK Physical Activity Guidelines are currently under review by the 4 Chief Medical Officers and it is likely that they will include recommendations on sedentary behaviour when they are published later this year. Recent Australian guidelines recommend that children aged 5-17 should limit their screen time to 2 hours per day, younger children (aged 0-5) should not be restrained (car seat, buddy, high

chair) for more than 1 hour at a time and adults should aim to break up long periods of sitting as often as possible (Australian Dept of Health 2017).

What are the correlates and determinants of sedentary behaviour?

Three recent systematic reviews undertaken as part of the European DEDIPAC project have (have shed light on the correlates (factors associated with) and determinants (factors which have a causal relationship) of sedentary behaviour Chastin et al 2015, Steirlin et al 2015, O'Donoghue et al 2016).

In children, sedentary time increases with age probably due to increased 'screen time'. In addition family TV viewing time, living in lower SES neighbourhoods, lower playground density, and less facility and equipment availability were all associated with higher levels of sedentary behaviour. Of note, children who eat in from the TV have been found to have greater overall levels of sedentary behaviour.

In adults, advancing age, being female, not participating in regular physical activity, smoking, and mobile phone use were associated with higher amounts of sitting. Living in deprived neighbourhoods with limited access to green spaces as well as living in rural areas was consistently associated with an increase in sitting time in transport. For older adults, lower educational attainment, advancing age, unemployment, retirement, loneliness, obesity and ill-health were all associated with greater sitting.

What can be done to encourage people to sit less and move more?

The socioecological framework can help policy makers understand how to change health behaviours such as sedentary behaviour. The framework suggest that there are a range interrelated factors at the individual, interpersonal/social, environmental and policy level that can encourage more healthy behaviours such as less sitting and more moving. Several interventions to decrease sedentary behaviour have been tested empirically. These include increasing awareness of the dangers of prolonged uninterrupted sitting, using digital technology (eg mobile phones and activity trackers) to prompt people to interrupt prolonged sitting, providing height adjustable desks/workstations to allow individuals to stand at work (Stephenson et al 2017), changing norms around prolonged sitting (e.g. standing meetings) and

developing policies and guidelines that encourage breaking up prolonged periods of sedentary time (Scottish Cancer Prevention Network 2018). Many of these interventions show promise but require further research to refine and policy leadership to scale up to population level.

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