

Small Exercise Breaks can Save your Brain from Prolonged Sitting

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Editorial referring to the article: Effects of Breaking up Deskwork with Physical Activity Combined with Tea Consumption on Cerebrovascular Function, Mood, and Affect

A sedentary lifestyle is one of the major risk factors for the development of cardiovascular diseases.¹ For instance, in 2019, stroke was the second-leading cause of death, as well as the primary cause of death and disability combined in the world.² Active commuting to work is one strategy to decrease sedentary time and its impact,³ and the COVID-19 pandemic has changed work and daily routines worldwide. Moreover, the necessary social distancing has led to increased sedentary time,⁴ especially for those who are engaged in office desk work.⁵

Acute prolonged sitting seems to lead to transient impairment of the endothelial function in the healthy population,⁶ whether this phenomenon is related to cardiovascular or cerebrovascular events is unknown. Nonetheless, prolonged sitting impairs the cerebrovascular function.^{7,8} Conversely, exercise breaks from prolonged sitting seem to restore the endothelial⁹ and cerebrovascular function.⁷ Therefore, active breaks from prolonged sitting could be a good strategy to mitigate the effects of sedentary time. However, the ideal duration and intensity need further investigation. Additionally, the difficulty to implement exercise breaks as a daily routine for office workers must be considered.

In this sense, the effect of walk breaks from prolonged sitting on the cerebral vascular function was investigated, simulating a real-life routine.¹⁰ Hence desk workers took breaks from prolonged sitting to prepare tea every hour for six hours.¹ After six hours of sitting, medium cerebral artery blood flow velocity (MCB_v) decreased, and the small

walk breaks (e.g.; five breaks of 150 meters of slow walking) were insufficient to re-establish MCB_v. The authors also observed an increased phase and reduced gain in very low frequency in cerebral autoregulation, which would indicate an improvement in cerebral autoregulation. However, the results concerning cerebral vasculature are difficult to interpret due to the decrease in the partial pressure of end-tidal carbon dioxide after the tea-break session (PETCO₂). The partial pressure of arterial carbon dioxide (PaCO₂) is the most potent regulator of cerebral blood flow, where small fluctuations evoke significant changes in cerebral blood flow.¹¹

Furthermore, the walk breaks were followed by black tea consumption, but acute ingestion of tea seems to increase the endothelial function,¹² and therefore the effect of the walk breaks cannot be isolated from the effect of the tea on the vascular function. Finally, the energy expenditure during those small walk breaks was not measured, but there is a possibility that higher energy expenditure is needed so that the exercise can exert a systemic vascular effect.

The study conducted by Speretta et al.¹⁰ does not allow a more thoughtful interpretation of the effect of small walk breaks or tea consumption on the possible cerebrovascular risk caused by prolonged sitting. However, the literature does support the conclusion that active breaks from a sedentary time are important in order to decrease vascular risks, but activities that produce higher energy expenditure than small walks must be considered.

Keywords

Exercise; Sedentarism; Lifestyle; Cerebrovascular Circulation; Stroke, Risk Factors; COVID-19; Pandemics; Physical Activity.

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