

Comparing Physiological and Cognitive Effects of Different Sitting Break Interventions in Office Work

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Abstract

Introduction: The number of sedentary workers is increasing globally. Due to Covid-19 pandemic, the amount of remote work has increased, which has further increased sitting time at work. Prolonged time spent sitting at work has been consistently shown as an independent risk factor for adverse health outcomes. To reduce the adverse health effects, it is recommended to break sitting time occasionally. However, the existing recommendations lack a strong scientific basis.

Objective: This study was conducted to identify the most effective interventions among commonly used and feasible approaches for breaking up sitting during simulated sedentary office work.

Methods: During two hours of sedentary work, four interventions were used and compared to long-term sitting. The interventions were: 30 min sitting and 30 minutes standing, 25 minutes sitting and 5 minutes standing, 28 minutes sitting and 2 minutes walking, and 30 minutes sitting and 5 squats. The optimal frequency and mode of interrupting sitting were examined using a comprehensive set of physiological and cognitive measurements.

Results: Based on multivariate and sum variable analysis (24 parameters), the most efficient intervention was walking. The walking intervention reduced static muscle activity especially in neck-shoulder area, increased activity in large muscle groups, and reduced swelling of the lower extremity. In addition, cognitive functions remained stable during the work period.

Conclusion: To our knowledge, this was the first study to report the effects of different break-type interventions on physiological and cognitive function during sedentary work. Based on the holistic approach of the study, the most promising strategy for breaking up sitting was the intervention termed office walking, defined as interrupting sitting with two minutes of light walking every half hour. This intervention showed positive effects on work ability and subjective evaluations of work satisfaction. Based on these results, office walking is recommended as an effective strategy to reduce the negative health effects of prolonged sitting.

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