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# Movement Snacks: A Novel Program for Breaking up Sedentary Time in the Workplace

Kendra Guest, SPT, Daniel Murty, SPT, and Michael Westbrooks, SPT

## Introduction

Sedentary behavior is prevalent in high income nations and associated with the increase in mortality from lifestyle related illness. Both cumulative and continuous time spent sitting in the workplace are independently associated with metabolic health risk. Increasing physical activity alone is not sufficient to reduce the health risks associated with sedentary behavior. The sedentary time has to be reduced. While walking breaks are one option to decrease sedentary time they are too disruptive to workflow to be used with high frequency. Another is to perform exercises with the potential to improve balance, which declines with age and sedentary lifestyles. The purpose of this pilot study was to determine the acceptability of a novel program of diverse multiplanar movements to reduce total and continuous sedentary time at work, and the effectiveness of the program at improving balance.

## Methods

**Subject recruitment:** Subjects were selected from the University of Puget Sound Administrative Staff. Participants who met the inclusion criteria were randomized into the "Movement Snack" (MS) intervention group (3 Male, 13 Female avg age: 40.93), or the control group (C) (5 Male, 13 Female, average age: 42.2)

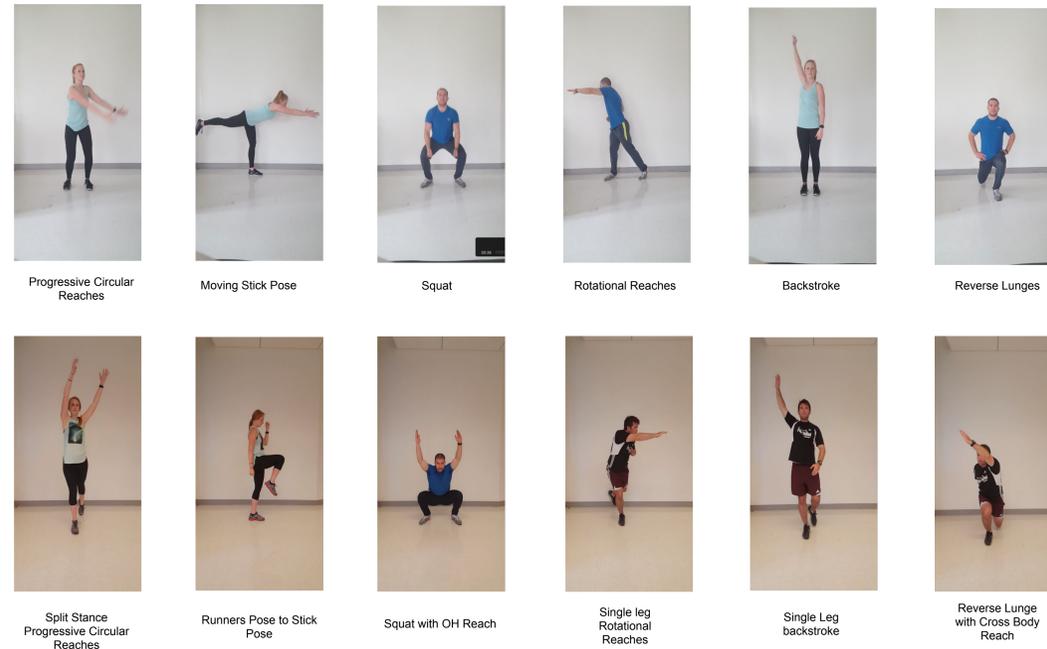
**Inclusion criteria:** Employed in an administrative department at the University of Puget Sound and aged 18 years or older.

**Exclusion criteria:** Marking 'yes' to any question on the provided PAR-Q form with the provided additional instructions to questions 4 and 5.

**Outcome Measures:** General Self Efficacy (GSE) scale, Stages of Behavioral Change Mode Questionnaire (SBCQ), Current Exercise Frequency (CEF), Y-Balance, Modified SFMA. Each of 5 SFMA movements were filmed from the front and side. Outcome measures were repeated and differences between the groups were analyzed using a one-way ANOVA.

**Movement Snack Group:** Participants in the MS group were led by the researchers in a demonstration of all "baseline" and "advanced" exercises involved in the program. (See videos) Subjects were instructed to perform the baseline movements for the initial 2 weeks of the study and were then free to perform the more advanced versions for the final 4 weeks of the intervention period. Participants in the MS group were provided instructional videos to guide them through their "movement snacks" as they progressed through the 6 week study period. Videos were sent to participants' workplace computers with cues to exercise at 30 minute intervals throughout the work day. Participants were instructed to record their daily adherence to the program, as well as the version of movement performed.

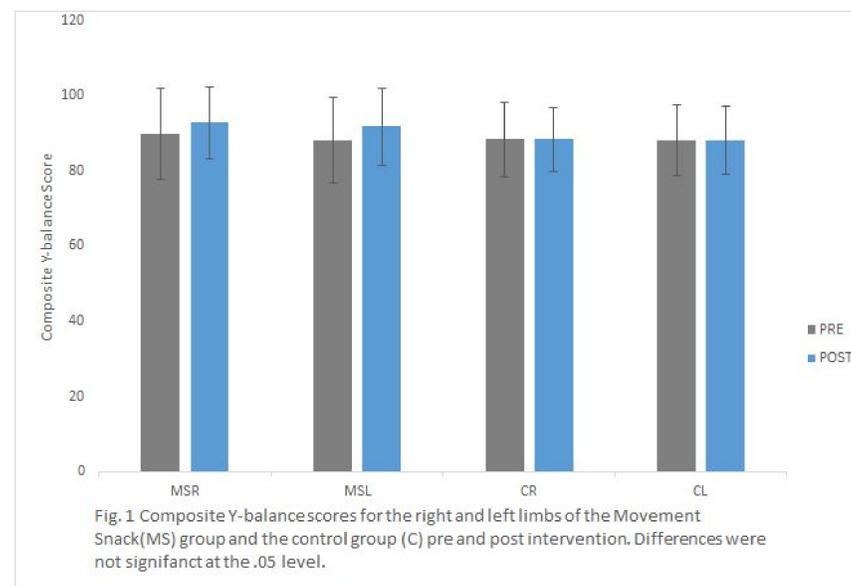
## Movement Snacks



## Participant Comments

<i>The videos were helpful.</i>
<i>I have people in and out of my office all day, so it made it awkward to do.</i>
<i>Some of the stretches are very odd to be performing in an open office area.</i>
<i>Every half hour seemed too often.</i>
<i>I found it very hard to stop my work flow.</i>
<i>I appreciate the whole-body movement aspect. The frequency made accomplishing thoughtful tasks difficult.</i>
<i>Every 30 minutes was too frequent.</i>
<i>I had a hard time breaking from work for even two minutes. Easier to take fewer, longer breaks.</i>
<i>This helped me see just how sedentary my role is and is causing me to rethink my day. When scheduled in back to back meeting for 6 straight hours, I now more clearly see the adverse effect on my health.</i>
<i>It wasn't too difficult. This was a great way for me to make myself stop and take break.</i>
<i>I think I might have done it more consistently if it was less frequent. It was fun and I'm glad my position allowed me to participate.</i>
<i>It made me a little self-conscious. The videos were very clear and helpful. The calendar reminder was helpful.</i>
<i>It became very hard to fit (the exercises) in with all the meetings I had. Every 30 minutes was too frequent, but I'd consider doing it hourly.</i>
<i>Appreciated the video instruction. I will likely continue, but may modify to perform 5 minutes every hour.</i>

## Results



For the composite Y-balance score, repeated measures ANOVA revealed a significant time x group interaction ( $p = 0.032$ ), though between-groups effects were insignificant ( $p=0.404$ , power = 0.13). Though experimental subjects were generally comfortable performing the movement snack in their workplace (mean = 3.93 on a 1-5 Likert scale,  $SD=1.16$ ), they were less positive about fitting the movement snack into their work day (mean=2.87,  $SD=0.99$ ), or continuing to use the movement snacks after the study (mean=2.6,  $SD=1.06$ ). Modified SFMA scores did not indicate significant differences between exercise and control group. Likewise, between group analysis of general self-efficacy and stages for behavioral change were not found to be significant. The average number of movement snacks completed per week was 20. Comments from participants in the experimental group suggest the need for greater individual choice regarding the frequency and duration of the movement snacks.

## Discussion

Though the hypothesized improvement in balance and movement quality were not proven, inadequate statistical power and adherence were limiting factors. Information gathered from the participants will be useful in designing a program of breaks that is less disruptive to workflow and easier to adhere to. A common sentiment was that 2 minute breaks every half hour was too difficult to adhere to with a break every hour being more manageable. There is currently no available literature detailing how long a break in sedentary time needs to be in order to confer benefit. However, there is some evidence to support higher frequency shorter duration (less than 2 min) standing breaks as having a greater energy expenditure over the same time frame, than a longer 15 minute standing break. With this in mind very short duration breaks every half hour (standing, doing a single purposeful movement, then sitting), integrated with longer movement breaks every hour should be explored. It is also likely the movement snacks were too general and more targeted movements should be chosen on an individual basis if improved balance is a desired outcome.