

## **Does physical activity at work impact physical activity behavior in leisure time?**

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### **1. Introduction**

Physical inactivity is associated with adverse health effects (i.e. cardiovascular diseases and obesity), and therefore, determinants for physical inactivity should be investigated. Previously, unfavourable psychosocial work characteristics have been suggested to have a negative spill-over effect on leisure time physical activity (1). However, whether such an effect is evident from unfavourable physical work demands remains to be studied. Therefore, the aim of this study was to examine the association between high amounts of objectively measured standing activities at work and objectively measured physical inactivity during leisure-time.

### **2. Methods**

From seven different workplaces, 251 blue-collar workers participated in the study on a New Method for Objective physical Activity Measurements in Daily living (NOMAD). The project was approved by the Ethics Committee for the regional capital in Denmark: No. H-2-2011-047. The workers wore two accelerometers (Actigraph GT3X+), one at the thigh and one on the hip for four consecutive days and answered a questionnaire. Raw data from the Actigraphs were processed with the tailored software, Acti4, to estimate activities and position during work and leisure after work. Inclusion in the current study required that measurements of at least 7 hours of work and at least 7 hours of leisure time were available. In the current analyses, 204 subjects (58% male, 55% >44yrs, 44% smokers, 56% overweight/obese, 45% >10yrs job seniority) were included based in having valid objective measurements for at least seven hours of work and seven hours of leisure time after work. The following activities at work were investigated: standing still (categorized into tertiles high  $\geq 25\%$ , moderate = 12.5-24.9% and low  $\leq 12.49\%$  of working time, respectively), standing/moving-position (stand/move a little bit without walking) (categorized into high  $\geq 50\%$ , moderate = 25-49.9% and low  $\leq 24.9\%$ ) and total time on feet (stand, move, walk, run and stair-walking) (categorized into high  $\geq 75\%$  moderate = 50-74.9% and low  $\leq 49.9\%$ ). The association between the percentage of working time activities on the feet and percentage of leisure time physical inactivity (the sum of sitting and lying (night time excluded) categorized into low <60% and high  $\geq 60\%$  of leisure time) was investigated with logistic regression adjusted for age, gender, smoking and

BMI.

### 3. Results

A high percentage of standing still and standing/moving position at work was significantly associated with a 3-5 times higher risk of a high percentage of physical inactivity during leisure compared to a low percentage of standing still or standing/moving positions at work. Moderate standing/moving position and time on feet at work were not significantly associated with physical inactivity during leisure time. The results are shown in table 1.

*Table 1: Logistic regression between physical activities at work and physical inactivity during leisure time adjusted for age, gender, smoking and BMI.*

Activities at work		OR (95%CI)
Standing still	High	5.7 (2.30 – 14.1)
	Moderate	4.5 (1.75 – 11.3)
	Low	1.0 Reference
Standing/moving position	High	3.5 (1.33 – 9.33)
	Moderate	2.4 (0.98 – 5.95)
	Low	1.0 Reference
Time on feet	High	1.3 (0.60 – 2.85)
	Moderate	0.9 (0.43 – 1.87)
	Low	1.0 Reference

OR= Odds ratio, CI=Confidence intervals

### 4. Discussion

This study shows that occupational standing is associated with physical inactivity during leisure time. Possibly, standing work a lot may cause physical discomfort such as, fatigue and feet pain. Therefore, the higher prevalence of physical inactivity among workers with high amounts of standing at work may reflect a need for recovery. However, high levels of physical inactivity are shown to cause negative health effects irrespectively of general physical activity levels. Therefore, the mechanisms between standing work and leisure time physical inactivity should be investigated.

### References

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