Based on current knowledge on physical demands in professional cleaning can we introduce enough variation to create a healthy workday for cleaners?

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Keywords. cleaning task, upper extremity muscles, aerobic capacity, variation.

1. Introduction

An estimated number of three million cleaners makes professional cleaning one of the most common occupations in the European Union (EU). Persons employed in occupational cleaning report a high number of work related musculoskeletal disorders and bad health in general[1]. The literature on cleaners has during the last 20 years showed that cleaning work is characterized by repetitive muscular work of the upper extremities at high levels of dynamic and static force as well as standing and walking during most of the working day. Such working conditions may represent a biomechanical and physiological overload for the different structures and segments of the body and may lead to impaired work ability, sickness absence and early retirement.

2. Methods

In this presentation a literature review of the levels of physical strain during professional cleaning will be given as a platform for the design of an optimal variation in a cleaners workday.

3. Results

A lack of variation is one of the key issues in the occupational strain for cleaners. In the literature load on the upper extremity muscles has been investigated during the most common tasks such as floor cleaning, surface cleaning and vacuum cleaning. Further, some of these tasks have been studied during use of different equipment[1]. Results from these studies shows very little variation in the static load for the shoulder muscles between these tasks and between the techniques and equipment used. Interchanging cleaning tasks therefore does not seem to introduce a sufficient variation in the load profile. Considering, that these tasks are the major component of a cleaners working day the static level of muscle activity around 5-10% MVC must also be regarded as relatively high, both in accordance with existing guidelines and in comparison with the levels found in other sectors with repetitive work. However, in a health enhancing perspective the static and even mean and peak levels of activity during work are low when compared to muscle activity recommended for strength training. The work activity in itself can therefore not be expected to have a strengthening effect.

Regarding the aerobic strain during cleaning tasks a number of studies have shown a relatively high level ranging from around 25 to more than 50% of maximal capacity. A large part of the cleaners clearly exceeds the guideline level of 33% for a 8 hours workday given in international recommendations. The high load is partly due to a low aerobic capacity among cleaners and partly due to the fact that most cleaning tasks are performed while walking and standing. A recent study among Danish cleaners found the average number of daily steps taken of around 20.000[3]. This is more than recommended for maintaining a good aerobic capacity but in spite of this a number of studies show that cleaners do not present with a particularly good health and aerobic capacity. This may first seem as a paradox but in order to avoid development of fatigue over a work day the guidelines deliberately keep the aerobic intensity far below the level necessary to evoke a beneficial effect on aerobic capacity.

An overall strategy for increasing variation in cleaning work could be introduce job enlargement with cleaning tasks being interrupted by other tasks that potentially may offer some variation in both the cardiovascular and musculoskeletal load during the workday. However, in a Danish study with job enlargement for cleaners where cleaning tasks were combined with kitchen and porter tasks the physical load did not change notably during the workday, and no essential differences in workload were found between the different types of work tasks[4]. In contrast, a recent intervention study aiming at improving the cleaners capacity by tailored physical activity with high intensive training have shown positive results[2].

4. Discussion and conclusion

Based on the current knowledge of the strain during the major components of cleaning work interchanging tasks will not provide sufficient variation to expect a preventive effect on development of musculoskeletal disorders or maintained aerobic capacity. The task available for job enlargements are limited and may to a large degree share the exposure profile of cleaning tasks. Technological development of more ergonomic cleaning tools may still potentially decrease the physical load in some cleaning tasks and thereby add to the variation. Introducing sufficient rest breaks may be beneficial to avoid fatigue but will for 90% of the workday only contribute with a variation in muscle activity from 10% and down to zero. While these attempts may add small variation to the physical strain during a workday a large and beneficial variation may rely on also including planned active breaks with tailored physical exercise training. The adoption of such a holistic and comprehensive approach is probably needed to design an optimal variation in a workday that can maintain and improve the physical capacity as well as the working environment for cleaners.

References

Ergonomics and the promotion of health and competence in professional cleaning, edited by Louhevaara V. Kuopio: Finnish Institute of Occupational Health, 2006, p. 17-27.

Jørgensen MB, Faber A, Jespersen T, Hansen K, PT, Ektor-Andersen J, Hansen JV, Holtermann A, Søgaard K, (2012). Implementation of physical coordination training and cognitive behavioural training and the effect on pain - a randomised controlled trial among cleaners. Ergonomics. 2012;55(7):762-72.

Korshøj M, Krustrup P, Jespersen T, **Søgaard K**, Skotte JH, Holtermann A. A 24-h assessment of physical activity and cardio-respiratory fitness among female hospital cleaners: a pilot study. Ergonomics. 2013;56(6):935-43.

Søgaard K, Blangsted AK, Herod A and Finsen L. (2006). Work design and the labouring body: examining the impacts of work organization on Danish cleaners' health. Antipode 38: 579-602.