Original Article

# Office Exercise Training to Reduce and Prevent the Occurrence of Musculoskeletal Disorders among Office Workers: A Hypothesis

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## Abstract

**Pain in specific areas of the body (including the lower back, neck, and shoulders) due to extended periods of sitting and inactivity is the most widespread musculoskeletal disorder worldwide and has consequences that are both socio-economic and personal. This condition is particularly prevalent in industrialised countries, affecting roughly 70% to 80% of adults at some point in their lives; approximately 1% of the U.S. population is chronically disabled by this type of pain disorder. A practical way to reduce the prevalence of musculoskeletal pain among office workers would have a significant positive impact. More work is required to develop a package of exercises designed to prevent and treat musculoskeletal pain in office workers. Such a package would be preferable to pharmacological treatments, which can have undesirable side effects. The main objective of this package would be to increase the flexibility and strength of trunk muscles in order to decrease the soreness, pain, and degree of discomfort. In this article, we introduce our proposed package of exercises, which are based on guidelines issued bythe American College of Sports Medicine.**

***Keywords:*** *exercise, musculoskeletal pain, occupational health, prevention, therapeutics*

## Introduction

Many jobs share the characteristic of demanding long hours sitting in front of a computer (1). The demands of these jobs include the ability to sit in a chair at a desk (neither of which are standardised or can be adjusted) for about 8–9 hours. The workforce at these jobs often does not engage in adequate physical exercise (2). Pain and discomfort caused by musculoskeletal disorders, notably those involving the neck, shoulders, and lower back, are common among office workers due to the amount of time spent sitting in the same position while working. At a certain stage in their lives, an estimated 70%–80% of adults in

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industrialised countries experience some degree of musculoskeletal pain or discomfort (3).

The National Institute of Occupational Safety and Health (NIOSH) in Malaysia has stated that 61% of the nation's workforce uses computers at work, indicating the increased use of advanced technology in the workplace (4). It has also been noted that an individual's patterns of social behaviour, mood, and sleep can potentially be disrupted by the habit of sitting in the same position for hours and, amongst office workers, this behaviour can lead to a deterioration in efficiency (5).

Occupational health therapists have previously tried to examine the connection between musculoskeletal disorders and office work (6). In such studies, physical exercise and ergonomic modifications in the workplace have been recommended to curb musculoskeletal disorders. However, past studies did not focus on the type of physical exercise that was most suitable for preventing musculoskeletal disorders in these subjects, nor did the studies consider how and when to implement these exercises (7). Unfortunately, the frequency of musculoskeletal disorders continues to increase due to insufficient attention from both employers and government officials with regard to their prevalence among office workers (8).

Given these circumstances, it is important for sports scientists to design, assess, and utilise effective physical exercises for use in the workplace (9). The general daily performance of office workers can be improved through regular physical exercise. Physical exercise also enhances the strength and flexibility of the muscles; lowers the risk of injury to the neck, shoulders, and lower back; and strengthens the vertebral column (10). By performing such exercises, individuals can enjoy trouble-free and calmer sleep as well as reduced levels of daytime fatigue due to the tremendous decrease in pain (7).

Both workers and employers can now assist in curbing musculoskeletal disorders by performing a validated package of practicable training exercises specifically created to combat pain in the neck, shoulders, and lower back (11). Through implementing such an exercise program, employers can enhance the workplace efficiency of their employees, who in turn experience significant decreases in musculoskeletal discomfort with adherence to a specific exercise regimen designed for this purpose (12).

It is important to note that the proposed exercises can easily be performed in the workplace without requiring any sophisticated apparatus or equipment (13), and can be adapted as the health and well-being of the participants improve. To ensure real success, the exercises should not merely replicate those that have been used in past studies but rather should be novel and effective (14).

Based on this rationale, improving the flexibility and strength of trunk muscles can effectively prevent and treat musculoskeletal disorders, especially those affecting the neck, shoulders, and lower back. We suggest a series of stretching and resistance exercises for the upper body and lower body that do not require any exercise equipment. (Figure 1)

The main differences between our method and previous ones are: 1. This package does not require any special apparatus; 2. The package focuses on the lower back, neck, and shoulder areas; 3. The package is suitable for use by both genders over a wide age range (20–50 years); and 4. The duration of the exercises is short and they can be performed at any time of day.

This package is based on previous suggestions regarding exercises for office workers (15,16), guidelines from the American College of Sports Medicine (10), and some exercises suggested by Williams and Mackenzie (17,18). It is suggested that, each day, the set of exercises should be performed three times, with a rest between each set of 60–90 seconds. Each exercise within a set should be performed 10 times (or for 10–15 seconds) (15,19). How to perform the sets correctly should be explained to the participants, either by a personal interview in their workplace and/or by sending instructional material by e-mail. Muscle flexibility, strength, and pain should be measured electromyo graphically (11,15,19,20).

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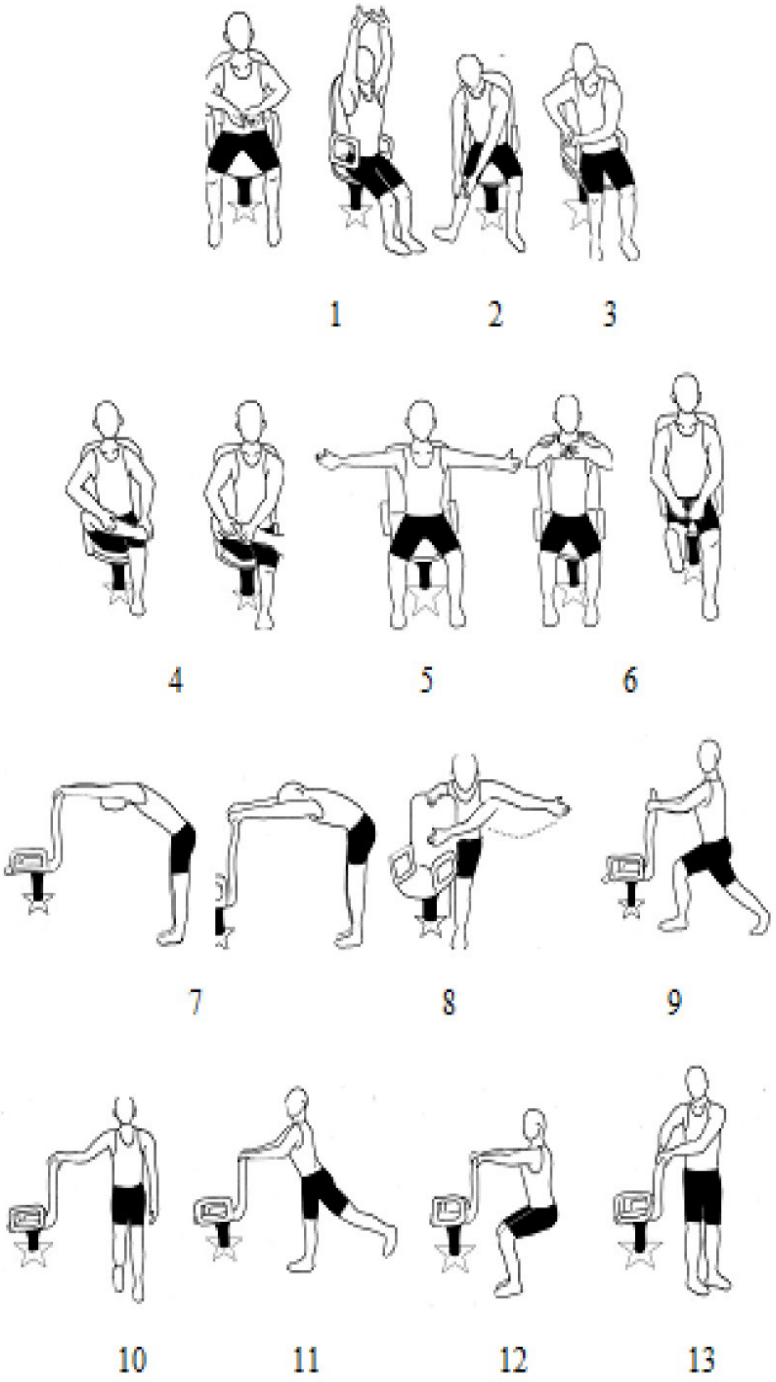



**Figure 1:** Package of exercise training for office workers

## Conflict of Interest

None

## Funds

None

## Authors' Contributions

Conception, design, data collection and drafting of the article: AS, SBMT
Critical revision of article: MA
Analysis and interpretation of data, Statistical expertise: MD
Obtaining of funding: RR

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