



## Physical Risk Factors for Work-Related Non-Specific Neck Pain Among Office Workers

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Prolonged computer use is increasingly causing a rise in cases of non-specific neck pain worldwide. Office workers, in particular, face heightened risks of work-related disabilities due to the inherent demands of their jobs. These work-related physical risk factors have been acknowledged as significant contributors to the development of non-specific neck pain over time. It is believed that maintaining a single body position for an extended period can lead to discomfort and fatigue [1].

As the body stretches to its limits, tendons and nerves elongate and compress, resulting in strained muscles in the shoulders and neck. These muscles remain tensed for the duration of tasks involving controlled arm, head, and neck movements [1].

Tightened muscles constrict the blood vessels, impeding blood flow from the head and neck down to the working muscles in the hands. This diminished blood flow leads to premature fatigue and increases the susceptibility of muscles to work-related injuries. Additionally, it hinders the healing process of micro-injuries in the soft tissues [1,2].

### Current evidence of work-related physical risk factors predisposing workers to non-specific neck pain

Damage to the muscle, nerve, tendons, joints, cartilages, and spinal discs because of prolonged computer work has been recognized as one of the common factors for non-specific neck pain development. What requires more attention in relation to the neck pain development is that it is believed to arise because of work or may increase as a result of work [2]. Physical risk factors are defined as either workplace (ergonomics) or individual's physical factors (sedentary lifestyle) [3,4].

The major predisposing physical factors associated with the development of non-specific neck pain are.

### Ergonomics

There is a strong association between poor ergonomics and non-specific neck pain among office workers in several studies.

### Working posture

Varying the sitting posture throughout the day is important to avoid neck pain, a good posture is one in which the head, trunk, and limbs are in a state of balance protecting the body from musculoskeletal injury or deformity. Poor posture occurs when the body produces increased strain on the supporting structures, and decreased balance over the base of support. Awkward posture sustained for long hours commonly results in development of neck pain among office workers [1].

### Armrest positions

Comfortably placing arms on the chair armrests when needed without raising or rotating shoulders is important. Activating the muscles of the neck and shoulder region for prolonged hours in an uncomfortable position without sufficient relaxation causes muscle overload [1].

### Keyboard/mouse hand posture

When sitting, typing, and using the mouse, it is important to keep the hands level in a relaxed position, avoiding any bending up, down, or sideways. Furthermore, the elbows should be comfortably tucked to the side, and the shoulders should remain relaxed. Continuous strain on the muscles due to improper posture can lead to muscle weakness and imbalances that develop over time [3].

### Wrist/hand compression

While typing or using mouse during work, the wrists must be free from any compression, this working position may cause impingement of the nerves and soft tissue structures [1].

### Screen height

The viewing angle is determined by the height of the screen, which is measured in degrees above or below an imaginary horizontal line drawn between the viewer's eyes and the screen's center. A bad viewing angle can lead to cause postural discomfort, while the inappropriate distance can cause eyestrain [5].

### Screen distance

Forward head position increases the pressure on the neck, so reading text on the screen without having to lean forward should be considered. As the body tries to adapt to hold the head up in a fixed position for straight vision, forward head posture can lead to muscle imbalance over time. The cervical spine's extensor muscles become extended and weaker, while the flexor muscles shorten, causing tension [3,5].

### Office lighting

Poor lighting not only affects the ocular system, but it can also cause stiffness and pain in the neck muscles. When trying to read on a screen in bad lighting circumstances, poor or uncomfortable posture causes pain and stiffness [1].

### Sedentary lifestyle

It has been acknowledged previously that those with sedentary lifestyle tend to develop chronic pain at some point in their life. Lack of physical activity becomes a risk factor for increased muscle weakness, tightness, physical capacity, and endurance. It is also believed that physical activity levels can modulate central excitability and inhibition in pain modulation [6,7].

### Working hours

Long periods of work are often associated with changes in spine curvature, increased strain on vertebral discs, ligaments, and muscles, and the development of non-specific neck pain over time. It is believed that those working for 8 hours or more in a day are prone to developing non-specific neck pain [8].

### Conclusion

Physical risk factors are readily apparent and are the foremost considerations for the examiner when assessing patients experiencing non-specific neck pain, particularly those engaged in computer-based work. Encouraging physical activity is essential, and it should be coupled with frequent breaks that enable individuals to stretch and alter their body positions periodically.

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