



## Ergonomics and Dentistry

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### Editorial

The dental practice is demanding and time consuming. A dentist's musculoskeletal health can be affected adversely if appropriate working position is neglected. Area that is often overlooked is the physical strain caused due to long hours of working in uncomfortable and incorrect posture which in turn can contribute greatly to musculoskeletal disorders, stress, and loss of productivity.

In Greek, "Ergo," means work and, "Nomos," means natural laws or systems. Ergonomics, therefore, is an applied science concerned with designing products and procedures for maximum efficiency and safety [1]. The international Labor Organization (ILO) defines ergonomics as 'the application of human biological sciences in conjunction with the engineering sciences to achieve the optimal mutual adjustment of man and his work, the benefits being measured in terms of human efficiency and wellbeing. The principles of ergonomics touch all aspects of our life and can be applied in work place, at home and even in recreational and leisure activities [2].

Dentists develop musculoskeletal problems which are related to suboptimal work environment ergonomics that might be responsible for improper sitting postures and movements [3]. Sitting with a 90° angle between the trunk and the thighs causes the pelvis to rotate backward shifting the spine away from the line of gravity. This in turn reduces the lumbar lordosis, causing the spine to slump and increasing the loads placed on the spine [4].

The movement of the lumbar spine influences the movement of the cervical spine. Prolonged static loads can present a fatigue injury mechanism either due to low but prolonged muscle contraction and/or prolonged flexed postures of the spine leading to accumulated damage to the posterior component of the annulus [5,6]. It is the ideal positioning of the body while performing work with decreased risk of musculoskeletal injury. It is generally believed that the more a joint deviate from the neutral position, the greater the risk of injury [7].

The Ergonomic Standard mandated by the Occupational Safety and Health Administration (OSHA) recommended that the most efficient and effective way to remedy "ergonomic hazards" should be through engineering improvements in the workstation [8-10]. Four-handed dentistry is ergonomically the most favorable way to provide dental services since it minimizes undesirable movements of the operating team. Available research supports the idea that ergonomic hazards can be managed or alleviated effectively using a multifaceted approach that includes preventive education, postural and positioning strategies, proper selection and use of ergonomic equipment and frequent breaks with stretching and postural strengthening techniques [11-13].

The manufacturers typically do not design to accommodate the dimensions of the individual user. Without proper design, sitting will require greater muscular force and control to maintain stability and equilibrium which lead to greater fatigue and discomfort and is likely to lead to poor postural habits and neck and back complaints [10-15]. The strategy that should be followed by a dental professional to avoid work related pain or injury is:

1. Ergonomic set up
2. Gentle stretching and strengthening exercises

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