

Position Paper “Posture Ergonomics in Dentistry” by ESDE

November 2023

General scope ESDE

The ESDE society aims to contribute to an ergonomically sound professional practice for all healthcare providers in dentistry, enabling sustainable employability. This approach is characterized by the pursuit of a healthy way of working not only for the practitioner but also for the team and patient. ESDE has set itself the task of retaining only evidence-based solutions, while encouraging debate on those whose relevance has yet to be demonstrated.

ESDE therefore uses:

- Documents based on evidence-based knowledge, (ISO/CEN) standards and studies with appropriate literature references.
- Knowledge which is tested against above mentioned sources and is reviewed within the Executive Committee of ESDE.
- As starting point for an ergonomic approach the by the International Ergonomics Association (I.E.A.) distinguished three areas of ergonomics, namely:
 - Physical ergonomics concerned with human anatomical, anthropometric, physiological and biomechanical characteristics as they relate to physical activity (working postures, materials handling, repetitive movements, work-related musculoskeletal disorders, workplace layout, physical safety and health).
 - Cognitive ergonomics concerned with mental processes, such as perception, memory, reasoning, and motor response, as they affect interactions among humans and other elements of a system with (mental workload, decision making, skilled performance, human-computer interaction, human reliability, work stress, and training as these may relate to human-system design).
 - Organizational ergonomics concerned with the optimization of sociotechnical systems, including their organizational structures, policies, and processes (communication, crew resource management, work design, design of working times, teamwork, participatory design, community ergonomics, cooperative work, new work paradigms, virtual organizations, telework, and quality management).

Posture Ergonomics

Currently, ESDE bases on the following standards and documents regarding posture ergonomics:

- ISO standard 11226, 2000, Evaluation of static working postures
<https://www.iso.org/standard>
- An ergonomic approach to dental patient treatment by Expertise Center Dental Ergonomics, KEM foundation the Netherlands (2020), website ESDE
- Ergonomic Requirements for Dental Equipment, Hokwerda et al, (2007) website ESDE

General starting points:

- Musculoskeletal Disorders
 - are not the exclusive consequence of poor posture,
 - are often a combination of physical and psychological/mental constraints suffered by the practitioner and/or his ancillary staff.
- Aids such as stools, pillows but also loupes and microscopes
 - can be helpful in the course of treatment, but are not fundamentally "ergonomic" aids that automatically improve posture. Visual aids alter the physiological functioning of the perceptive system.
 - It is the responsibility of the user to ensure that aids can be used in a safe and responsible manner and that the basic principles of responsible (ergonomic) working methods can be met.
- Adequate illumination of the oral cavity
 - should be realized at all times, because of the need to properly perceive small contrasts.
 - must be shade-free and adapted to the personal needs of the specific user (age-dependent).
- Treating patients:
 - the dental team must be sitting in an upright position according to the ISO standard
 - the patients mouth oriented towards the viewing direction of the operator (most treatment patient's lying in supine position head tilted backwards)
 - light beam dental light parallel to the viewing direction of the operator
 - using the modified pen grip to manipulate hand instruments independently from the position of the hand/arm/upper body
 - avoid static postures