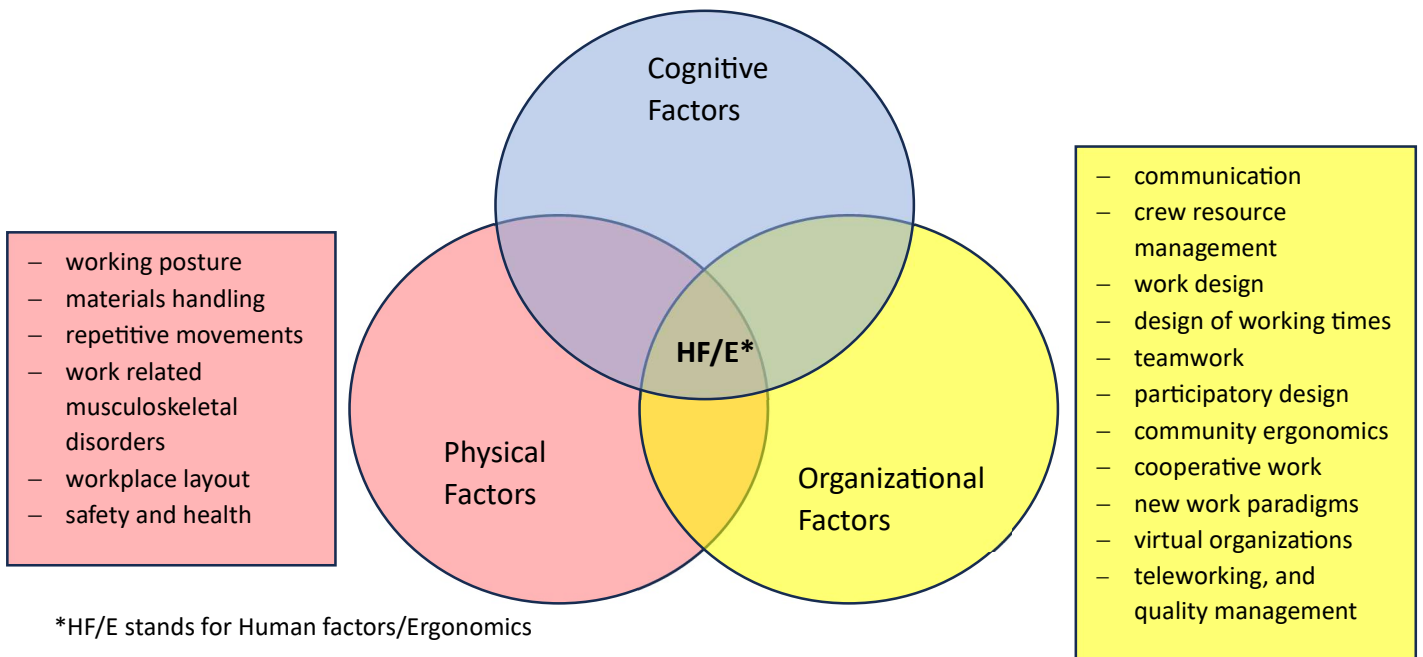




Statement 2024

The European Society of Dental Ergonomics focuses on ergonomics in the special field of dentistry. In this regard, it adheres to the principles of ergonomics formulated in the year 2000 by the International Ergonomic Association (IEA).

- mental workload
- decision-making
- skilled performance
- human-computer interaction
- human reliability
- work stress and training as these may relate to human-system design



*HF/E stands for Human factors/Ergonomics

(IEA graphic modified by ESDE)

Relationships and connection

Starting from a focus on the design of the dental workplace and the working posture of the dental team, ESDE in recent years has opened to a comprehensive ergonomic view also of the environment of dental activity.

As shown in the above graphic nowadays three aspects of ergonomics are taken into account: **physical factors** (the former starting point of ESDE), **cognitive factors** (have increased in importance with the advent of the computer in the dental practice) and **organizational factors** (all aspects of workflow and communication).

The complexity of these topics will require multiple specialists with knowledge of the different subjects to work together to find smart solutions to dental practice challenges. Working together in this way will also require taking into account the application and use of international standards, scientific (evidenced based) studies, knowledge and experience.

Learning ergonomics

During the education at the university students often do not learn all the skills that have to be dealt with in their future career. The clinical environment in many clinics and the conditions of the learning process do not always allow to teach all the matters that are necessary for the later daily practice. In these circumstances there is a risk of getting used to equipment, working methods and work processes that do not meet ergonomic requirements.

So, it is important that dental students do not only learn the theoretical background of dental ergonomics. They should also be able to train their skills accordingly to a curriculum based on ergonomic principles and (pre)clinical working place from the beginning of their studies.

History

In the 1960s, four so-called “basic concepts” were described in connection with the introduction of sedentary treatment on supine patients. The industry then implemented these concepts more or less strictly in the development of dental units, with sometimes country-specific emphases. Different schools or philosophies developed with pros and cons for the respective concepts. A recent study¹ has shown that working according to one of these specific concepts alone does not lead to avoiding high physical stress in dental work (and assistance).

With two publications the team of Prof. Hokwerda (NL) delivered a proposal for an ergonomic way of treatment and drew up the requirements for ergonomic dental equipment: :

- Adopting a healthy sitting working posture during patient treatment (2005)
- Ergonomic requirements for dental equipment (2006)

The documents are available at www.esde.org.

The industry offers many different models of dental equipment and it is rather difficult for the user to find out the best tools for himself. ESDE already provided an aid for that challenge with the document “Checklist ergonomic requirements dental units for individual use”. Additionally, the circumstances and conditions in different countries are quite unequal. This must be considered if one is surprised that, despite all the available findings, the knowledge is not being applied.

Today

As shown in the graphic, working posture and workplace layout are only two of the physical factors of HF/E. All together 24 items differentiated in cognitive, organizational and physical factors must be taken into account.

Currently there is no international organization that deals exclusively with ergonomics in dentistry beside ESDE. Because dentistry is a rather small part of all professional fields, dental ergonomics play no big role in the activities of IEA and the Federation of the European Ergonomics Societies (FEES).

Future

The vision of ESDE is to look for / to check the available knowledge, to collect and spread scientific studies with the focus of ergonomics in dentistry and to network those who are interested and involved in dental ergonomics in Europe.

¹Ohlendorf D et al.:Ergonomic Comparison of Four Dental Workplace Concepts Using Inertial Motion Capture for Dentists and Dental Assistants. Int J Environ Res Public Health. 2021;18(19):10453. doi: 10.3390/ijerph181910453.