

# **A Curriculum in Dental Ergonomics for Dental Schools. In relation with: Profile and Competences for the graduating European Dentists - Update 2009.**

## **1. Introduction.**

The European Society of Dental Ergonomics (ESDE), worked out already in 2001 a program for education in dental ergonomics. This has been updated in 2011 in relation with the document "Profile and Competences for the graduating European Dentist - Update 2009". In this document more attention is given to ergonomic competences and knowledge than in the past. See the explanation in the document "Ergonomic competences for training dental students in Europe". The purpose of ESDE's proposal for a dental ergonomic curriculum is to offer guidelines that could be used as a basis for developing programmes in dental schools in different European countries.

Training of dental students in practising dentistry in a healthy way during patient treatment is of major concern. Not only for applying ergonomic methods of working but also because more management and social-communicative skills are required now.

International dental literature shows that between 60-70 % of dentists have musculoskeletal complaints and disorders which vary in severity, but involve one or more of the following: discomfort, pain, hindrance in functioning and loss of working time with the risk of disability. Also stress, as a consequence of a high working load with the accompanying mental and physical load, is a common problem. Therefore it is important to integrate dental ergonomics in the dental curriculum. Programmes for education in dental ergonomics from different countries/dental schools and curricular guidelines for practice administration from the American Dental Education Association were used for the originally elaborated proposal for a dental ergonomic curriculum. This is now updated in relation with the above mentioned ergonomic competences for the graduating European dentist.

## **2. Starting points.**

Ergonomics in dentistry comprises all aspects of organisation, management and methods of working necessary to provide effective and efficient care for patients and in such a way that a dentist experiences work satisfaction and is able to avoid health risks as a result of practising dentistry.

Dental ergonomics is directed at:

- *the adaptation of the working environment and methods to the dentist and his team, with respect to their physical and psychological capacity, for a healthy, safe and comfortable functioning in their professional activity.*
- *the training of the dentist/dental team to use their own capacities and the possibilities of a dental team, equipment, instruments, organisation etc.*

A dentist is trained to treat patients during his education at a dental school but when starting practising dentistry he becomes aware that he has to manage a complex organisation and that he needs social and communicative skills to treat patients and to lead his dental team.

Ergonomics in dentistry has to become an important part of the training of dental students to prepare them for their future profession. The training of students has to be built up in parts, to be dealt with in different parts of the dental curriculum, in connection with the progress of the study. In some countries the dental school will execute the whole programme intramurally, in others it may be combined with extramural activities. It is also possible that a part of the training will be dealt with after graduation of students, may be by a professional association or in a vocational training program. However it is important that enough expertise is available with respect to modern management and organisation of a dental practice.

It is important that the training program in the dental school becomes an integrated part of the (pre)clinical training of students to be successful.

It is necessary to build up a relevant body of knowledge for ergonomics in dentistry in dental schools and to attract teachers with the right competence for the different aspects of this, and to train the clinical teachers in using the clinical aspects of ergonomics.

The starting points for the training of dental assistants have to fit in as much as possible with the training of dental students.

### **3. Programme for the training of students.**

#### *3.1 Pre-clinical period.*

- 3.1.1 Definition of Ergonomics
- 3.1.2 Posture of the dental operator
  - \* Anatomical and physiological aspects
  - \* Correct working posture (see Website ESDE: [www.esde.org](http://www.esde.org))
  - \* Problems of an incorrect working posture
  - \* Epidemiology of occupational diseases
  - \* Necessity of a dynamic approach of dental procedures
- 3.1.3 Use of a working stool to support a correct sitting posture
- 3.1.4 Correct positioning of body and head of the patient or phantom head
- 3.1.5 Positioning of the working field in the mouth
  - \* Visibility of the working field
  - \* Position of working field in relation to the dentist
- 3.1.6 Lighting
  - \* Correct lighting of the working field in the mouth with an operating light
- 3.1.7 Handling of instruments with fingers, hand and arm
  - \* Direct vision
  - \* Indirect vision
- 3.1.8 Positioning of the instruments
  - \* Static(hand) instruments
  - \* Dynamic instruments
- 3.1.9 Position of the foot control
- 3.1.10 Hygienic measures for infection prevention

#### *3.2 During clinical period I.*

- 3.2.1 Use of equipment in a clinical setting (ergonomic aspects)
- 3.2.2 Positioning of patient in the chair
  - \* Body of the patient
  - \* Head of the patient
- 3.2.3 Positioning of static and dynamic instruments, for an ergonomic use
- 3.2.4 Positioning operating light, idem
- 3.2.5 Digital data processing and imaging
- 3.2.6 Hygienic procedures for infection prevention.

### 3.3 *During clinical period II.*

#### 3.3.1 Organisation of patient treatment

- \* Scheduling patient treatment
- \* Role of a dental assistant at patient treatment
- \* Use of multimedia (IT)
- \* Four-handed dentistry
- \* Cooperation with different workers in the oral health care

#### 3.3.2 Digital patient administration

#### 3.3.3 Practice organisation

- \* Primary and secondary processes
- \* Functions in a dental practice
- \* Practice design
- \* Treatment area, waiting room
- \* Contacts with dental technicians, dental depots etc

#### 3.3.4 Equipment

- \* Ergonomic criteria
- \* Kinds of equipment as working stool for the dentist, patient chair, unit, operating light
- \* Water, air and electricity
- \* Aspiration
- \* Cupboards
- \* additional equipment (e.g. microscope, CAD/CAM, apex locator etc.
- \* Maintenance

#### 3.3.5 Instruments

- \* Static instruments
- \* Rotating instruments
- \* Other dynamic instruments

#### 3.3.6 Design of the working environment around the patient chair

- \* Lighting and use of colours
- \* Sound
- \* Air conditioning etc.

#### 3.3.7 Infection control

#### 3.3.8 Handling of waste and toxic products.

### 3.4 *In the final stage of the clinical period.*

#### 3.4.1 Practice management

- \* Strategy, creating personal and professional goals
- \* Patient oriented oral health care
- \* Entrepreneur role of dentist
- \* Different types of practices
- \* Principles of work satisfaction and causes of stress and burnout
- \* Financial management
- \* Building a dental team
- \* Role of the dental assistant in the organisation
- \* Staff management
- \* Buying and storage of instruments, materials etc
- \* Laws and regulations
- \* Public relations
- \* Quality assessment

#### 3.4.2 Policy of the government with respect to health care

#### 3.4.3 Practice planning and business plan

- 3.4.4 Training of the team
- 3.4.5 Management information systems for evaluation of treatment and organisation
- 3.4.6 Role of advisers
  - \* Functions of advisers
  - \* Relation dentist-advisers
- 3.4.7 Planning of continuing education, including use of Internet
- 3.4.8 Relation with professional organisations

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