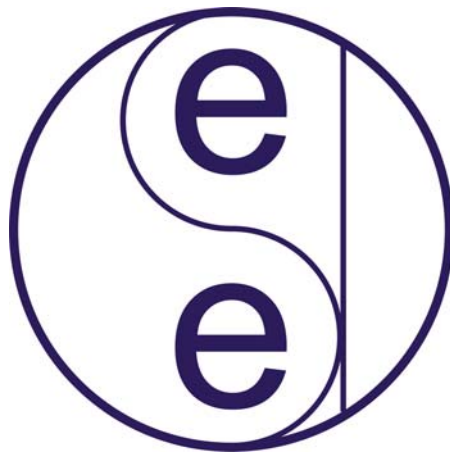


EUROPEAN SOCIETY OF DENTAL ERGONOMICS

EUROPÄISCHE GESELLSCHAFT FÜR ZAHNÄRZTLICHE ERGONOMIE

SOCIETE EUROPEENNE D'ERGONOMIE DENTAIRE

SOCIETÀ EUROPEA ERGONOMIA DENTALE



**23rd Annual Meeting
4-5 June 2010 in Ghent/Belgium**

ABSTRACTS



EUROPEAN SOCIETY OF DENTAL ERGONOMICS

oral health, health for the patient - dental ergonomics, health for the dental team

23rd ANNUAL MEETING - 4-5 June 2010 in Ghent/Belgium

- EXPLANATION OF THE PROGRAM -

by Professor Oene Hokwerda, Vice-President

The program of this year's Annual Meeting addresses dental practitioners, ergonomic advanced colleagues and representatives of dental industry as well. Based on feedback given in post-congress-questionnaires, personal comments, complaints and desires it offers partially two parallel sessions on Friday afternoon challenging 'beginners' as advanced ergonomists respectively.

On Friday morning, the program about visualisation and magnification is made on proposal of Dr. Marc Apap, President of the Association Française d'Ergonomie et de Gestion Dentaire (AFEGED), as he suggested a good survey of this issue with all problems a dentist may encounter. This topic is worked out in a way from which I think that you will hear what you never heard before.

About the use of a microscope will also be talked during this part of the program. The topic will stay in the focus by Professor Peter Kotschy who will speak on Saturday morning about his way of trying to work ergonomically, as a tall person.

On Friday afternoon, the ergonomic approach of patient treatment will be discussed extensively in Session A. It will show the way how one can assess ergonomic aspects of dental units using an 'ergonomic checklist'. This session is seen as an introductory program for practising dentists.

Mrs. Jacqueline Bos is a Dutch physiotherapist who is training dentists with musculoskeletal diseases or only for learning them to work in a healthy way. She also advises dentists about an ergonomic set-up of a dental practice. She will make clear that learning to work ergonomically requires a change of behaviour, to get motivated to make the change. It is not only learning a new technique. Dr. Rolf de Ruijter is training dental and dental hygiene students in ergonomics at the Dental School of the State University Groningen in The Netherlands. Both Jacqueline and he will work together for presenting the program of Session A.

In the parallel Session B on Friday afternoon, a summary will be presented by Dr. Paul Engels (from The Netherlands) of all what is known about the posture of dentists, as a survey of what has been discussed during the past 5 years of ESDE's annual meetings, together with new acquired knowledge. Paul is specialized in musculoskeletal problems of patients in relation with the care for head and neck problems of dental patients.

On Saturday, Professor Peter Kotschy (Vienna) will continue, as already mentioned above, to speak about the ergonomic use of a microscope and demonstrate a particular use of it for caries treatment and treatment of periodontal problems.

Mrs. Karen Hjalpers, from the Faculty of Odontology, Malmö University in Sweden will discuss how we could use ergonomic knowledge that has been gathered about the organization of a dental practice, for practical purposes to avoid problems of stress and physical overload. She is working now in a steering committee to work out this for general use.

Finally we invited representatives of dental industry to deal with developments in dental industry, with related ergonomic aspects. This is a new development in programming the annual meeting as dental industry approached ESDE: the scope of our former programs would have been too small and would not pay enough attention to new developments.

During the presentations the use of ergonomic principles will be discussed to realise the required functions of the dealt with themes, in relation with the wanted design. Also the conflict between design and ergonomics will be touched.

By this concept ESDE obtains the opportunity to discuss with the industry the way one is applying ergonomic principles; hopefully during the meeting but particularly intensively after the meeting.

We may conclude that in the program for the 23rd Annual Meeting in Ghent themes regarding different parts of dental ergonomics will be presented in an exhausting dimension.

I wish you a fruitful congress!

Groningen, 26 May 2010

ATTENTION

To learn from your experiences during and comments about this year's meeting, please fill in the Post-Congress Questionnaire in your Congress Bag and deposit it at the Registration Desk.

Thank you for your appreciated efforts!

VISUAL PERCEPTION AND USE OF VARIOUS OPTICAL MEANS

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The lecture will represent an explanation of different topics in optometry related on ergonomics and the effect on body posture especially for dentists.

We divided this lecture in units with different topics.

First we will give an overview about the anatomy of the normal eye, like picture perfect in the visual cortex, and the way to get there. The influences on binocular vision, depth perception, detail recognition and the consequences eventually how this effects the body position. Interesting is the role of visual acuity and the profession of a dentist, it seems to be that there is a match. Many dentists with fatigue eyes or heavy binocular dysfunctions are searching for telescopes or high spectacles solutions. Doing so will have negative aspects on neck, shoulder and back of the body. It is important to find a way that the two major questions, detail recognition and body posture, come together in an ergonomic solution without fighting each other.

During this presentation the aspects of magnification positive and negative as well as the influence of light will be discussed. Others aspects as eye movement, contrast sensitivity, measurements in optometry, the position of the head, the choice of a frame and many “normal aspects” that will have a major role in functioning as dentist for now and the future.

In the last five years we, the optometry knowledge centers, have collected data that was based on the pilot study, done by Joseph Wouters and Oene Hokwerda, and support the outcome of this presentation with new information.

The main purpose of this lecture is to explain what the positive and negative effects are on the body posture when an advice for glasses or telescope as well as the ergonomic influence of the position of the body will have during work as a dentist.

BASICS OF AN ERGONOMIC APPROACH - - PRINCIPLES AND PRACTICAL USE

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After a short introduction of the afternoon programme and the ergonomic problems the dentist is facing in his daily work. Jacqueline Bos and Rolf the Ruijter will enlighten you how you can change your way of working to a more ergonomic way.

First the principles of a adequate working stool will be presented followed by the explanation in what way to use it. After that the art of positioning the patient will give you insight in the way the patients body, head and jaws should be positioned in order to get an optimal result beneficial to an ergonomic way of working. The needed use of the support of neck and head during treatment will be explained. If you want to work in an ergonomic way, proper equipment is needed, making it possible to act according to the presented way of working. It must be adjustable to the required positions and furthermore it must comfort the patient during the dental treatment. Knowing that static posture is a major risk for developing musculo-skeletal complaints information will be given how to implement the presented knowledge into everyday practice and making just enough movements during treatment to stay bodily fit. For this dynamic way of working all instruments necessary for the dental treatment should be placed within ergonomic reach. The correct way of the use of the dental operating light will be highlighted so that a proper posture can be ensured. This all will be presented to you with clear pictures and lots of examples. In today's dentistry word wide the dental assistant is no longer the telephone operator. What she can do, at what level, to really assist your healthy posture will be presented using a stepwise approach to get the most out of four hands.

The fact that this presented way of working as a dentist probably differs from your current way of working may makes you want to change it. All aspect concerning the process of change that are needed and will take place will be pointed out by Jacqueline.

After the break chair side demonstrations will be given in different groups to get better acquainted with the newly learned way of working.

After that the individual differences of the human body will be discussed and the consequences for the use of the equipment will be enclosed using a checklist to find out what your specific challenges are with a given situation.

A plenary discussion will close the afternoon session giving room to ask questions, sort out unresolved items and share thoughts.

THEORETICAL ERGONOMICS

THEORETICAL BACKGROUNDS OF A WORKING POSTURE



Paul Engels, MD

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- **Theoretical basis sitting working posture**
- **Posture, an introduction to basic knowledge of the anatomy and physiology of the human body, when standing, lying in the dental chair and emphasized: the working posture of the sitting dentist.**

In nowadays dental curriculum anatomy and physiology are restricted to the working areas of the dentists and their co-workers. Live anatomy has never been instructed so knowledge about posture is either not there or has been gathered through other disciplines.

The responsibility of knowledge of posture doesn't only refer to the dentist him/herself but is a requirement in itself when dental co-workers are employed. These responsibilities may differ from country to country, but in general the European Directives on labour circumstances are very clear in all countries.

In this program all the lectures on anatomy and physiology held on ESDE congresses during the last 8 years are summarized and recapitulated into 2 extensive sessions during the congress.

Of course the basic features of balance and equilibrium will be shown and it will become clear that the also the masticatory system is part of the human kinetic chain. This is very important for every dentist who considers his/her patient not just as an open mouth.

In order to be able to adopt a healthy working posture in the dental office it is necessary to understand how posture always has been judged from an orthopaedic point of view. But of course there is this big difference in judging a standing upright position and a sitting working posture. What does this mean for the proprioception and the nervous system in general?

Practicing dentistry is physically a hard job to perform, how does this affect the working posture and the muscle groups to maintain that posture. What physical problems can we expect if we don't change bad habits?

What is the physiological and anatomical background of the ergonomic requirements of dental equipment regarding the operator stool.

Practicing dentistry should be a very pleasant job to perform and it shouldn't be a potential health risk for the dentist and yet ... inconveniences seem to be perfectly acceptable. Is this the consequence of a poor dental education or is it a lack of interest in your own well being (until it is too late and the consequences are felt every long lasting working day).

KINETIC PREPARATION IN MICROSCOPE DENTISTRY



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USE OF KINETIC ENERGY IN MICROSCOPE DENTISTRY

Kinetic preparation in microscope dentistry

For preparation in dentistry specially for enamel and dentin the microscope dentistry requires instruments, which do not use water spray and does not interfere the direct or indirect vision on the preparation field. Traditional rotary diamond and bur instruments produces, because of their application micro cracks in the tooth, which operate negatively to the preparation specially at the anterior teeth. It could be for example, that small parts – edges of the teeth spall during the preparation. The solution of all these problems manage the kinetic preparation with 27 μ alumina grains, which are shot with different pressure onto the tooth surface which should be prepared.

Microscope-controlled glass bead blasting for perfect root cleaning and micro-invasive periodontal pocket surgery

The introduction of the microscope into periodontology led to a quantum leap in detecting the causes underlying inflammatory periodontal conditions and added more precision to their diagnosis. The magnification x 15 to 20 afforded by the microscope opened the door for microinvasive therapeutic approaches to inflammatory periodontal conditions with minimal demands on the patients and excellent results.

A one-stage approach combining conservative and/or surgical treatment for the management of periodontal pockets of chronic periodontitis under the microscope with direct vision is described. The procedure – microscope-controlled glass bead blasting for perfect root cleaning and microinvasive surgery – is tailored to the pocket anatomy: It optimally preserves existent normal structures, obviates incisions, flap surgery and the resultant exposure of adjacent normal structures, is almost always painless, does not cause postoperative sensations and avoids postoperative dressings. All of these benefits together with excellent healing and regeneration of the diseased periodontal tissue underscore the usefulness of the procedure and dramatically shifted the paradigms underlying the management of inflammatory periodontal disease.

ORGANIZATIONAL ERGONOMICS

- REFLECTIONS AND GUIDELINES

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Background: Studies on the physical and psychosocial work situation for dentists constitute the background for ongoing studies about positive, healthy and rewarding aspects in dentists' work life, to find ways of achieving a sustainable work life. We investigate organizational differences in public and private dentistry in Sweden and Denmark.

Organizational ergonomics combines elements of both the physical and the psychosocial work situation and focuses on a good work situation with high efficiency. A condition for achieving this is that the dentists feel well. My research earlier has focused on the reality and the ideals for Swedish female unpromoted general practice dentists (GPDs) (material 1), working in the Public Dental Health Service (PDHS). In Sweden, more than half of all dentists are employed in the PDHS, where the female GPDs without a managerial function constitute the largest group. These dentists had serious work-environmental problems. The difference was marked between their ideal work situation and reality. They felt a lack of influence, with the greatest difference between ideals and reality of all measured indicators. When comparing these dentists with other human service groups, including oral and maxillofacial surgeons (mostly men, material 2), we have shown that the female dentists felt worse than the others. The strongest component in the dentists' work was "moral values and skill discretion", which confirms Hasenfeld's theory of Human Service Organizations.

Materials: Four materials were used.

1. A questionnaire about psychosocial work environment and healthy work to all female unpromoted GPDs in a region of Sweden. Response rate 94% (Hjalmers K; Diss. 2006).
2. A questionnaire concerning psychosocial work environment to all personnel at oral and maxillofacial surgery clinics in Sweden. Response rate 86% (Pilgård G; Diss. 2009).
3. Nine semi-structured, in-depth interviews with a phenomenological approach about overall job satisfaction with GPDs from Sweden and Denmark (Berthelsen H, Hjalmers K; 2008)
4. A questionnaire about the multidimensional concept of overall job satisfaction to 1,835 GPDs, randomly sampled from the Swedish/Danish dental associations. Response rate 68%. (Söderfeldt B, Hjalmers K, Berthelsen H, Bergström K, Ordell S; 2008)

Results and Conclusions: There were several differences for dentists working in public/private/Swedish /Danish dentistry, e.g. as to the perception of overall job satisfaction, professional autonomy, and how the job affected their health. The dentists' emphasis on moral values confirms the character of dentistry as primarily human service work and not industrial work, and should be considered when organizing dentists' work. The overall job satisfaction emanates from the patient relation, and from the possibility to perform high quality handicraft, thus involving both moral values and skill discretion. Support from colleagues is important. About 50 % of the Swedish public, 60% of the Swedish private and 75% of both the public and private Danish dentists, thought they would continue working until the normal age of retirement. To achieve a sustainable, complete working life, it is really important that dentists have decision authority over their work situation and feel overall job satisfaction.

DESIGNING ERGONOMIC WORKFLOW FOR A HEALTHY TEAM - INTEGRATING ENGINEERING DISCIPLINES WITH CUSTOMER NEEDS



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SCOPE: This presentation is given from a viewpoint of dental equipment manufacturer, considering the ergonomic needs of users. It does not deal with dental instruments.

ABSTRACT: Healthy dental work is well defined by ergonomics specialists. The whole workflow is crucial for the total health of a practice. It can be either counterproductive or efficient. By efficient we mean limiting unnecessary logistics, movements and use of force. Efficient in our vocabulary means ergonomic.

With "customer needs" we define the goals of product development: "What can we build to improve customers' life?" Not all of those needs are directly expressed by dental professionals. Many are based on anthropometrics and test data, and many can be found in ESDE documents.

Building a good unit requires seamless integration combining mechanics, electronics, software (both embedded in the unit and clinical software) and user interfaces. These have to comply with numerous standards and regulations. All these form huge product development challenges that - if well resolved - end in solutions increasing the ergonomics of dental workflow. This integration is often helped by generalists like industrial and usability designers.

SOLUTIONS FOR PATIENT COMMUNICATION SYSTEMS WHAT IS PATIENT COMMUNICATION? TODAY'S POSSI- BILITIES. A LOOK INTO THE FUTURE.

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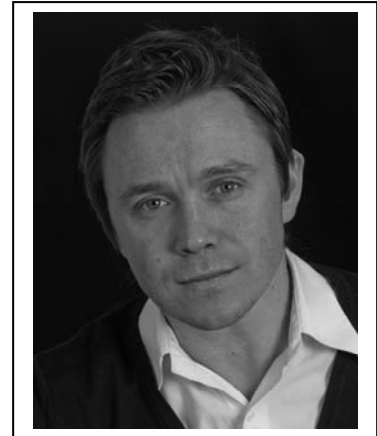
The definition of communication is to transfer information between several entities. The need for information on the part of the patient increased the past years, therefore the significance for the communication rose in the same degree. Patients choose their dentists under certain conditions and are willing to pay only for what they understand as the best solution for themselves. This understanding can be given through different methods. Through technical progress a full variety of possibilities is available to enhance the communication between patients and dentists.

The first communication within the patient-dentist-relationship is given by arranging an appointment - but the front desk assistant is not always the first to be contacted. It is getting common to arrange an appointment via SMS or Outlook-linkage through internet. When entering the practice the patient's health insurance card is providing the first information to the practice team before the anamnesis outlines the diagnostic findings. These findings are saved digitally in a practice management software. In case of a fracture for example the dentist starts a digital X-Ray directly from his treatment unit. He then informs the patient about the therapy possibilities via presentation or film that is shown on a monitor at the unit. After the treatment the dentist shows and explains his work by filming the patient's mouth with an intraoral camera.

The progress of digitalization offers a variety of possibilities for the communication. The communication of tomorrow will be affected by seamless integration of RFID chips, iris and fingerprint detectors, linked units and software solutions. It will reduce the actions of dentists and assistants in providing the right settings and the needed information on one hand and facilitate the communication by giving more time for the verbal communication itself on the other.

ERGONOMIC CONSIDERATIONS IN THE DEVELOPMENT OF XO 4 UNIT

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An introduction to the ergonomic considerations when developing a unit from a novel development platform. Standard development of units mostly involves improving on an existing design. This is not the case with the XO 4. What are the possibilities in this day and age, when a dental chair manufacturer is not bound by existing designs, developed on the basis of earlier ergonomics and design paradigms. How has XO used this possibility to implement ergonomics on a basic design level in the XO 4?

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