



European Regional Organisation of
the Fédération dentaire internationale

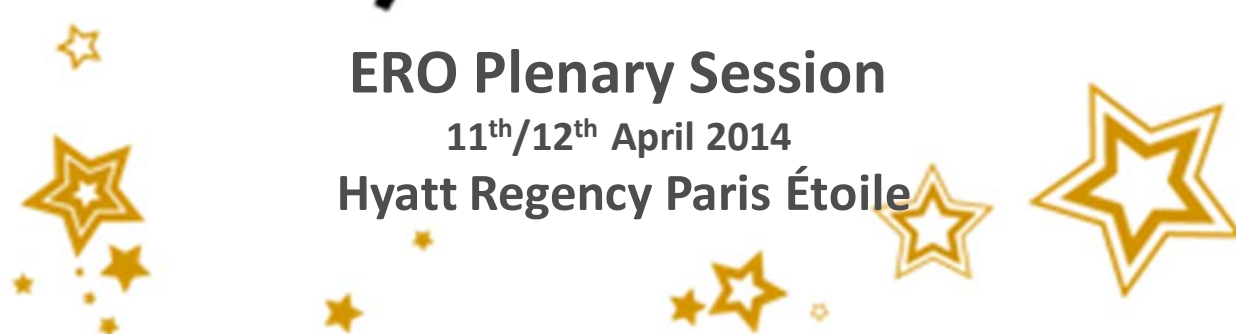


50 years ERO

ERO Plenary Session

11th/12th April 2014

Hyatt Regency Paris Étoile





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the Fédération dentaire internationale

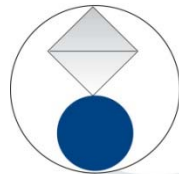


50 years ERO

CONGRATULATIONS!

AGAZ

from



German Academy of Dental Ergonomics
of the German Society of Dental, Oral and Craniomandibular Sciences



European Regional Organisation of
the Fédération dentaire internationale



50 years ERO



CONGRATULATIONS!

also from



European Society of Dental Ergonomics



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Are Dentistry and Back Pain linked like Coal Mining and Silicosis?

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RWTH Aachen University

Faculty of Medical Sciences





German Academy of Dental Ergonomics
of the German Society of Dental, Oral and Craniomandibular Sciences
Arbeitsgemeinschaft „Arbeitswissenschaft und Zahnheilkunde“
der Deutschen Gesellschaft für Zahn-, Mund- und Kieferheilkunde

Founded 12th October 1973

1986-1996 AGAZ-President

1996-2005 AGAZ-Vice-Pres.

2005-2013 ESDE-President

2005-today AGAZ-President



[european society of dental ergonomics](#)

Are Dentistry and Back Pain linked like Coal Mining and Silicosis?

Where does the title come from?

MEDI-LEARN Foren > Zahnmedizin: Foren nach Studien
abschnitten > Zahni: Klinik / Staatsexamen (6.-10. Sem) >
Zahnärzte und Rückenschmerzen (2006):

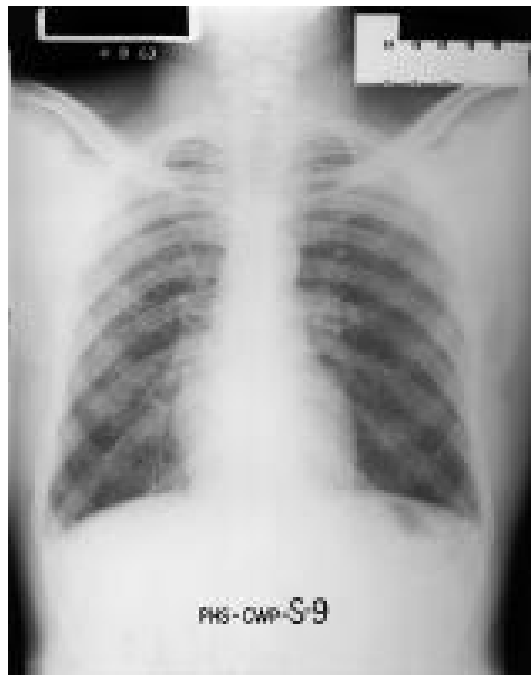
 sir kent (22.01.2006, 12:42)

 „Zahnmedizin und Rückenschmerzen gehören zusammen
 wie Bergbau und Staublunge.“

www.medi-learn.de/foren/archive/index.php/t-26422.html

Are Dentistry and Back Pain linked like Coal Mining and Silicosis?

The word silicosis comes from the Greek word *silix*, meaning flint. It is perhaps the oldest known occupational disease; Hippocrates and Pliny referred to this disease. Silicosis is radiographically depicted in the lungs as widespread nodules measuring 2-5 mm in diameter, with a predominance in the middle and upper lung zones.



Pneumoconiosis = „lung dust“

Are Dentistry and Back Pain linked like Coal Mining and Silicosis?

Preventive Measures

- Initial Assessment
- Air Monitoring
- Engineering Controls
- Personal Hygiene
- Protective Clothing
- Respiratory Protection



CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People.™



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CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People.™



1974 Nymegen/NL

1975 Tübingen/Germany

1978 1st Ergo-Publication

Originalarbeit:

**Überlegungen zur Ausstattung
eines zahnärztlichen Arbeitsplatzes in einer Zahnklinik**

J. Rotzans, Tandarts, Dr. med. dent.
Zentrum für Zahn-, Mund- und Kieferheilkunde des Universitätsklinikums
Tübingen, Abteilung für Zahnerhaltung
Adresse: Osianderstraße 2—3, 7400 Tübingen 1
E. W. Linn, W. J. van Luyn und H. L. Wakkermann, Tandartsen
Subfaculteit Tandheelkunde der Katholieke Universiteit
Adresse: Philips van Leydenlaan 25, 6525 EX Nijmegen, Niederlande

I. Einleitung

Nach einer stürmischen Entwicklung ist es um die Anwendung ergonomischer Prinzipien in der zahnärztlichen Praxis ruhiger geworden. Die neuen Konzepte schienen überzeugend, und viele Zahnärzte sahen sich veranlaßt, moderne zahnärztliche Arbeitsplätze zu installieren und sich ergonomisch umzustellen. In der Praxis jedoch zeigten sich weniger befriedigende Resultate, als man auf Grund der Informationsflut erwarten durfte. Zwar arbeiten heute die meisten Kollegen im Sitzen, aber Haltung des Zahnarztes und Lage des Patienten sind immer noch nicht optimal,

und so „krümmen“ sich die Zahnärzte weiter, um das Operationsfeld im Gesichtsfeld zu haben (Abb. 1). Unnatürlich und ermüdend ist die Arbeitshaltung von Händen und Armen; eine Wirbelsäulen-Torsion mit spezifischen Rücken- und Beinbeschwerden ist die Folge.

Bei vielen Arbeitskonzepten befindet sich das Instrumentarium noch immer nicht in unmittelbarer Reichweite des Zahnarztes. Oft wird mit Schläuchen und Kabeln „gerungen“, und man muß sehr weit und seitwärts nach Bohrer und Spritze greifen (Sollewijn Gelpke, 1974). Man fragt sich, ob diese „Entwicklun-

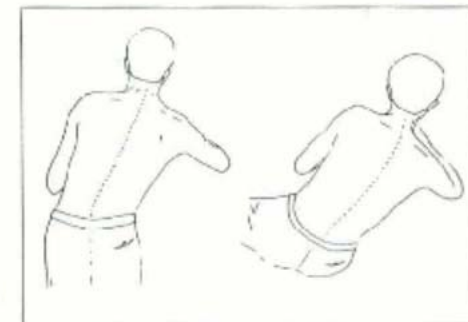


Abb. 1 Falsche Arbeits-
haltungen

Typical working posture of dentists



What are the consequences?

Rohmert W, Mainzer J, Zipp P (1986)

Der Zahnarzt im Blickfeld der Ergonomie

Eine Analyse zahnärztlicher Arbeitshaltungen

Forschungsinstitut für die zahnärztliche Versorgung (FZV)

Stiftung der Kassenzahnärztlichen Bundesvereinigung

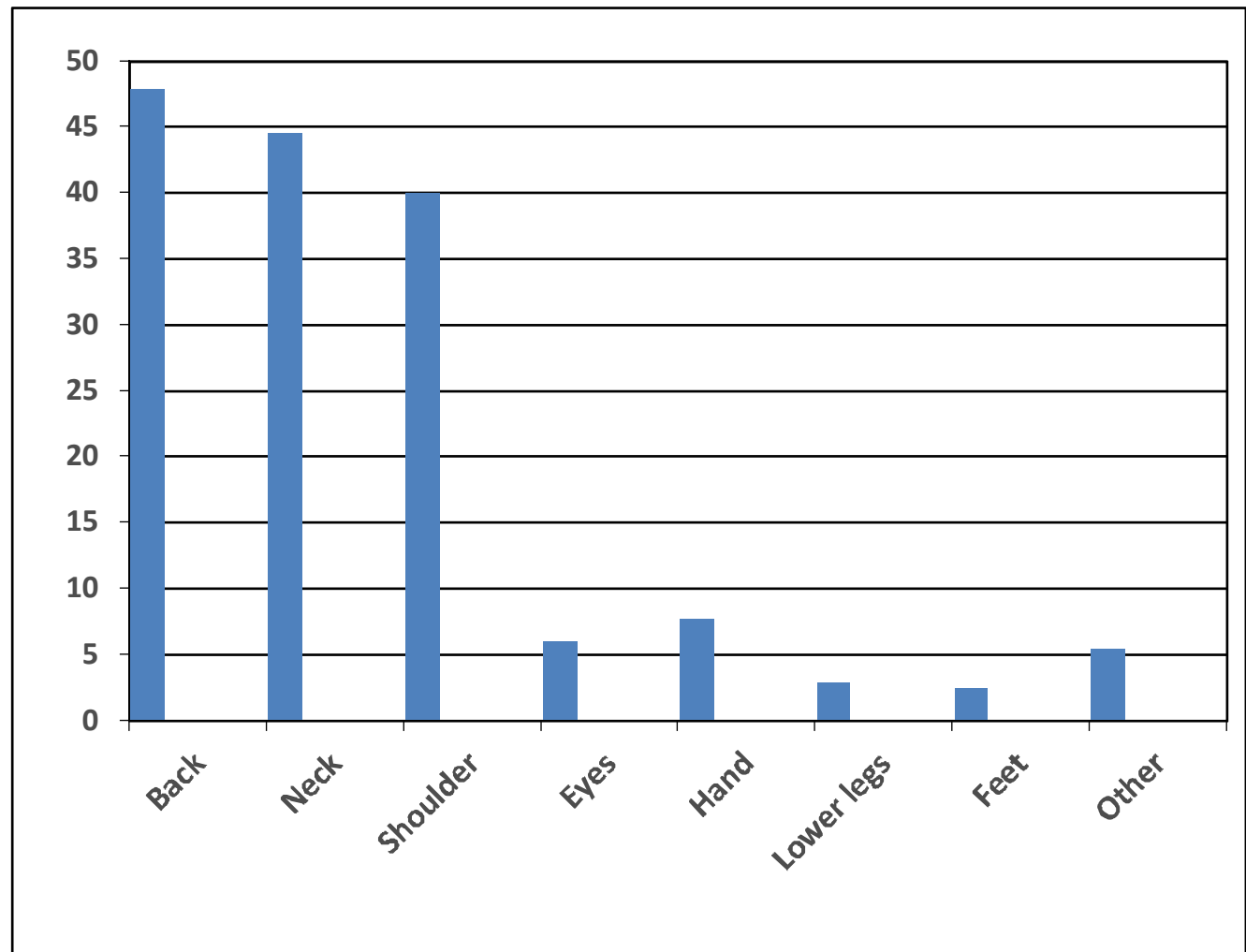
**The complaints concentrate in head, neck, shoulder
and back:**

64% back- and 42% headache



Kerschbaum, 2000

N = 450 Dental Chamber North-Rhine



Hjalmers 2006

Sweden: N = 170

- Tired without direct cause
- Headache
- Eye fatigue
- Sleep disturbances
- Fearful, anxious, nervous
- Unmotivated, sad
- Stomach-aches
- Back-/neck-/shoulder pain
- Joint pain
- Deaf hands
- White fingers

	Frequency (%)	
	Dentists	Population
	70	28
	40	19
	40	
	51	23
	46	12
	46	13
	36	
	76	44
	47	22
	33	
	23	

University of San Francisco (2006)

1. - 3. Study year: 70%,
in extension and intensity!



**Are Dentistry and Back Pain
linked like Coal Mining and Silicosis?**

YES!
for the moment

however



European Society of Dental Ergonomics

Since 2006 there are the

with the result

Ergonomic requirements for dental equipment.

Guidelines and recommendations for
designing, constructing and selecting dental equipment.



Prof O. (Oene) Hokwerda,
dentist and dental ergonomist



J. A. J. (Joseph) Wouters,
registered occupational assessor and
ergonomist



R. A. G. (Rolf) de Ruijter,
dentist and in training as dental
ergonomist

S (Sandra) Zijlstra-Shaw B.D.S.,
dentist

Publication May 2006
First update April 2007

...., that dentist's stool, patient's head rest, OP-light and patient's chair - ergonomically regarded - need advanced development urgently!

→ no ergonomically correct dental unit is available!

Example: No appropriate dental unit is available for female dentists shorter as 155,7 cm and male dentists taller as 195,8 cm



There is a dilemma

Manufacturers say

- **Our products are designed optimally ergonomic**
- **Cause for the complaints is the wrong working posture of the professionals**
- **There is no explicit demand for ergonomically designed dental units**

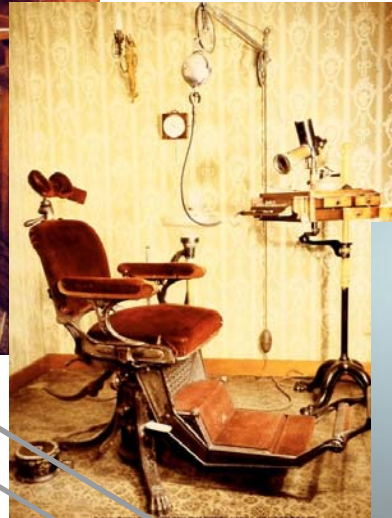
Universities say

- **There are is no dental units on the market which fulfil the ergonomic requirements!**

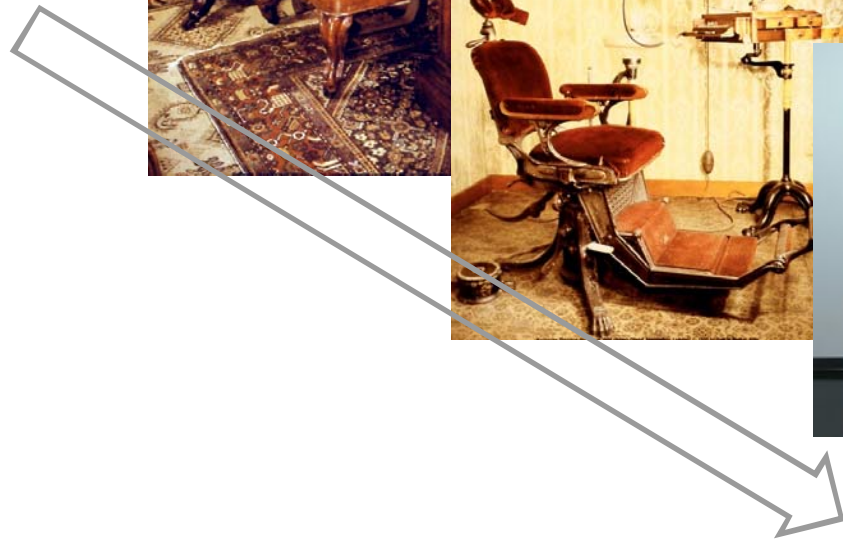
Is there a solution?

YES, but know about history!

Status until ca. 1950/1960



Working Posture Problems ?



In the Sixties: Developmental Revolution

Development of the turbine with spray coolant



- ➔ Treatment at higher rotation speed
- ➔ Time saving, shorter treatments
- ➔ Higher efficiency
- ➔ Better sight
- ➔ Better results
- ➔



KaVo 1012

→ Careful and faster preparation

→ Increasing patient demand

Orthopantomograph OP1

→ Increasing patient demand

Better working local anaesthesia

→ Increasing patient demand



Rising welfare (and better social security benefits)

→ Increasing patient demand

→ other working method

→ other working pace

→ **Work stress**

with „clear“ posture problems

Since ca. 1990 (e.g. in Germany)

- Continuous new legislation
- Social security benefits cuts

Since the Economic Crisis 2008

- Patient's insecurity
- Dentist's economic insecurity
- Dentist's competitive pressure

Since Internet access
Patient's needs and demand
for comfort and communication
..... with own „competences“!

➔ Work stress
with „clearer“ posture problems



The „Golden Solution“

To work sitting on the laying patient



Four-Handed
in „correct“ working posture

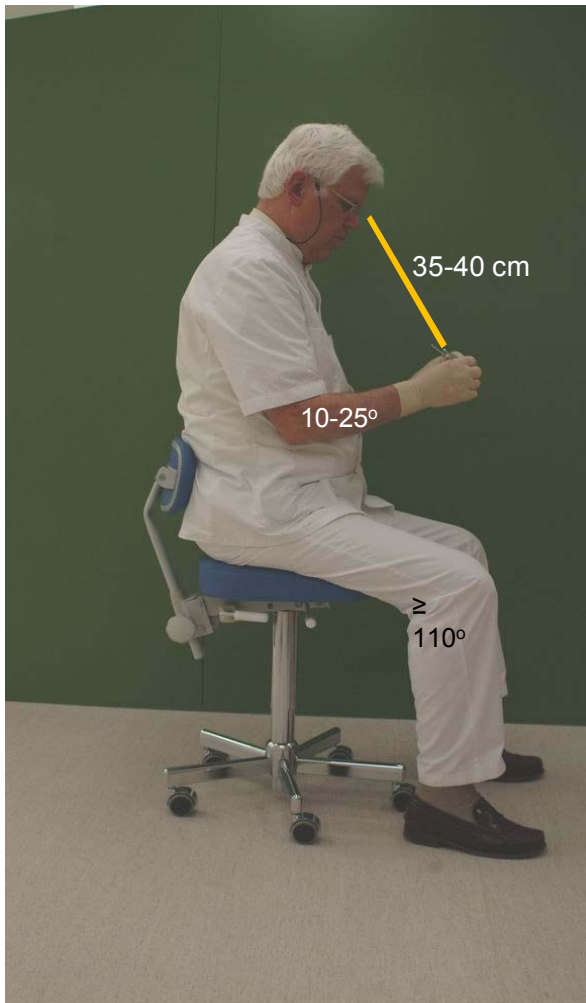
Be aware!



The „Ideal Working Posture“

... adapting to the “machine”?

Correct measures



All-symmetrical



The „Ideal Working Posture“

active



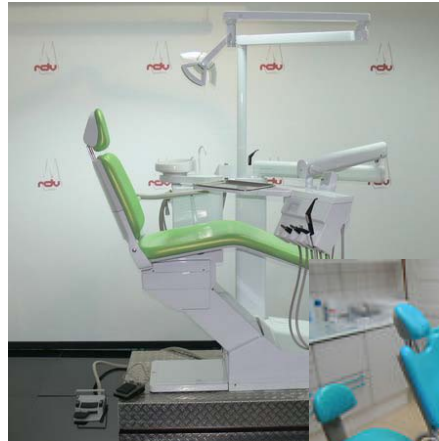
passive



Wrong working postures



What hardware developments occurred? until today technical, colour and design „only“



with the consequence that

- **Ergonomics as scientific discipline scarcely influenced the design of the dental working place**
- **the dental profession was left themselves without feedback to ergonomic principles**

We remember!

Hjalmers 2006

Sweden: N = 170

	Frequency (%)	
	Dentists	Population
▪ Tired without direct cause	70	28
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▪ Deaf hands	33	
▪ White fingers	23	

Neuhaus 2014:

Dissertation project

**Occupational loads and demands in the dental
profession**

Studie zur Erfassung arbeitsbezogener ergonomischer und
psychosozialer Stressoren in Bezug auf das psychische
Wohlbefinden und Beschwerden im Muskel-Skelett System

The first „patient contact“ (6th semester)



**FOCUS „Working Position“
too narrow-minded?**

YES,
the FOCUS „Working Position“
is too narrow-minded!

Dentistry and Back Pain
still look linked like Coal Mining and Silicosis

a broader concept is necessary!

FOCUS „Health and Wellness“
to avoid occupational diseases!



with conscious inclusion

- **of labour protection**
- **structured ergonomic education & training**
- **systematic ergonomic research**
- **individually fitting organisation models for the dental profession**

as vital complex to secure the health of the dental team

in terms of the shift from „machine“ to „man“ within the man-machine-system

LABOUR PROTECTION

Europe: Laws for health and safety on the working place

Germany: Arbeitsschutzgesetz (ArbSchG)

Gesetz über die Durchführung von Maßnahmen des Arbeitsschutzes zur Verbesserung der Sicherheit und des Gesundheitsschutzes der Beschäftigte bei der Arbeit

BuS-Service BZäK: „The Prevention Concept,,

Betriebsärztliche und Sicherheitstechnische Beratung

 **Obligations**

**→ Obligation for welfare
of dentists towards their personnel**

**→ Obligation of welfare
of the universities towards their students
in Germany: from the 7th semester on they should be
employees according to 13 ZHG**

Exemplarily :

Rijksuniversiteit Groningen – Tandheelkunde

Health Care Questionnaire of the RUG

WS 2013/2014

Gesundheitsfragenbogen für Studierende der Zahnmedizin im 1. vorklinischen Semester

Der Zahnarztberuf stellt hohe Anforderungen an die Gesundheit. Manche Gesundheitsprobleme lassen sich sehr schlecht mit diesem Beruf vereinen, andere sind mit einigen wenigen Hinweisen zu beheben. Diese Fragenliste bezweckt Informationen über Ihren Gesundheitsstatus zu erhalten, insofern diese für den Verlauf Ihres Studiums so relevant sind, dass Sie Ihren Beruf später ohne Schäden ausüben können.

Die Ergebnisse werden vertraulich behandelt und dienen vor allem dazu, dass Sie – wenn sich auffällige Resultate ergeben – entsprechend fachärztlich beraten werden.

Geschlecht männlich weiblich

Alter

Bitte beachten:

- Der Fragebogen ist vom Datenschutzbeauftragter überprüft und genehmigt worden.
- Die Teilnahme an der Fragebogenaktion ist freiwillig.
- Zur Wahrung der Anonymität erfolgt die Rückgabe ausschließlich über den Semestersprecher/die Fachschaft.
- Offene Fragen bitte nur in Druckbuchstaben beantworten.
- Für den Eigenbedarf ist ein zweiter Bogen beim Semestersprecher/bei der Fachschaft erhältlich.

Fragen in Bezug zu Ihrem Sehvermögen:	nein	ja
1. Haben Sie Sehbeschwerden (sogar wenn Sie eine Brille oder Kontaktlinsen tragen)? Falls ja, beim Nahesehen? beim Weitsehen?	<input type="checkbox"/>	<input type="checkbox"/>
2. Sind Ihre Augen oft ermüdet oder „brennen“ Sie häufig?	<input type="checkbox"/>	<input type="checkbox"/>
3. Haben Sie oft Kopfschmerzen?	<input type="checkbox"/>	<input type="checkbox"/>
4. Haben Sie Probleme mit stereoskopischem - mit beiden Augen - Sehen?	<input type="checkbox"/>	<input type="checkbox"/>
5. Haben Sie ein „müdes Auge“?	<input type="checkbox"/>	<input type="checkbox"/>
6. Sind Sie wegen Schielen operiert worden?	<input type="checkbox"/>	<input type="checkbox"/>
7. Haben Sie sich je eine andere Augenoperation oder Laserbehandlung unterzogen?	<input type="checkbox"/>	<input type="checkbox"/>



- Less movement
- passive bend back
- incompetent to sit upright
- Visus problems
- Problems with body length and -imension
- Ignorance towards contact sport risks

OBLIGED ERGONOMIC EDUCATION & TRAINING

ADEE: Profile and Competences for the graduating European Dentist (2009)



DOMAIN I: PROFESSIONALISM


Major Competence: Professional Attitude and Behaviour

On graduation, a dentist must be competent in a wide range of skills, including investigative, analytical, problem solving, planning, communication, and presentation skills and has to demonstrate a contemporary knowledge and understanding of the broader issues of dental practice. The dentist should understand the relevance of these issues, including research, team building and leadership skills in clinical dental practice.



Supporting Competences

On graduation, a dentist must:

be competent at:

- (1.1) displaying an appropriate caring behaviour towards patients.
- (1.2) displaying appropriate professional behaviour towards all members of the dental team.
- (1.3) seeking continuing professional development (CPD) allied to the process of continuing education on an annual basis, in order to ensure that high levels of clinical competence and evidence-based knowledge are maintained. This should be readily demonstrated through the use of a CPD logbook/portfolio.
-  (1.4) managing and maintaining a safe working environment, working with other members of the dental team with regard to health and safety and clinical risk management. In particular, with reference to working posture, visual perception, instrument handling, use of equipment, dealing with mental aspects and stress, and all aspects of cross-infection control.
- (1.5) social and psychological issues relevant to the care of patients.

have knowledge of:

-  (1.6) and awareness of the importance of his/her own health in relation to occupational hazards and its impact on the ability to practice as a dentist.
-  (1.7) the management of a dental practice by planning, organizing and leading the practice team.

Major Competence: Ethics and Jurisprudence

On graduation a dentist must display knowledge of the content and have a thorough understanding of the moral and ethical responsibilities involved in the provision of care to individual patients, to populations and communities. The dentist must display knowledge of contemporary laws applicable to the practice of dentistry.



European Society of Dental Ergonomics

ESDE: Curriculum and Timetable

Physical, cognitive and organisational ergonomics

Romania: National Ergonomic University Network (2004)

NKLZ: National Competence-based Catalogue of Learning Objectives in Dentistry (2014)

RWTH Aachen University:

Lecture cycle „Labour Medicine for Dentists“
(2010)

**Needed: Teacher training
with career perspectives!**

SYSTEMATIC ERGONOMIC RESEARCH

A lot has been performed

- Schön, Wagner, Hilger, Rohmert, Neddermeier, Reitemeier, Hokwerda, usw.
- Dissertations (questionnaires)

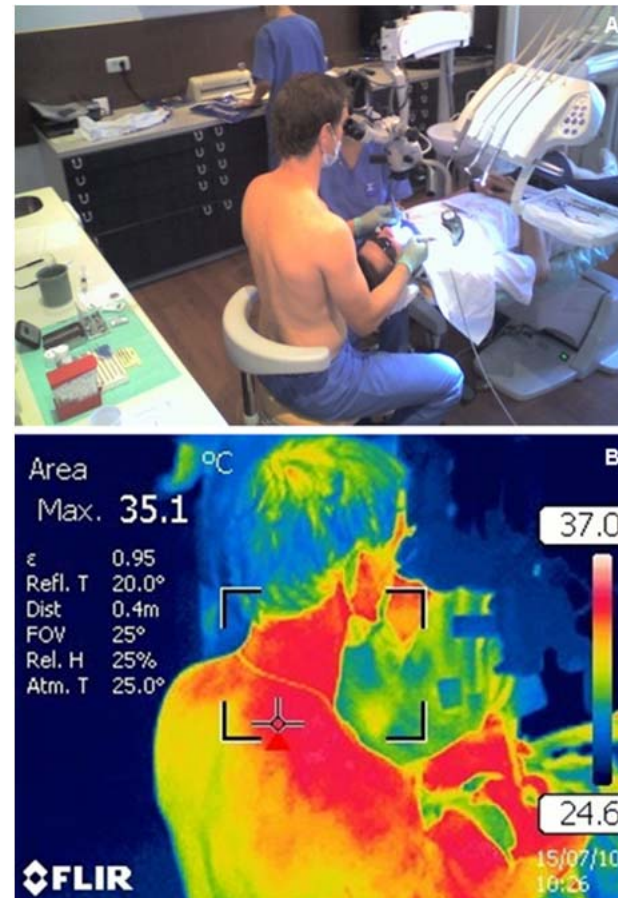
Evidence-based, reliable, valid?

Needed: Academisation

in university research facilities to initiate research like, for example,



Virtual Reality Group/RWTH Aachen
 Technical University Timisoara/RO



Medical Faculty RWTH Aachen
 Medical University Bucarest/RO

INDIVIDUALLY FITTING ORGANISATION MODELS FOR THE DENTAL PROFESSION

- Patient care
- Management

Quality management (ISO 9000 and 9001/x)
in terms of ergonomic demands

(physical, cognitive and organisational ergonomics)

➔ that is: a biopsychosocial work load model
to avoid the typical occupational risks

to secure „egoistically“

- the health of our dental team
- the joy of our profession and its future
- the time for ourself, our partner, family
- wellness

→ Work Life Balance

→ Conclusion: Dentistry and Back Pain are as little linked like Coal Mining and Silicosis!



Be aware!

If you are still dominated by the “machine” there are supports!

NO SLOUCHING!

'This is brilliant!' exclaimed my husband when he tried the Lumoback, a slim sensor waistband that monitors your posture. Slouch and it vibrates to remind you to straighten up. It connects wirelessly to an app, which tracks your movements, calories burnt and time spent sitting and standing. Change small bad habits and you should improve health generally. Buy the sensor waistband, £129.95, from store.apple.com/uk, then download the app.

Email your questions to sarah@sarahstacey.com



19 JANUARY 2014 YOU.CO.UK 93



Axia Smart Chair
bma products

Can this T-shirt stop you hunching? £105 top with secret elastic strips promises to relieve back pain and improve posture



best suitable for dental practise use ?



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Thank you!

www.dgzmk.de/dgzmk/fachgruppierungen/arbeitswissenschaft-und-zahnheilkunde
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