Department of Human Physiology
Vision and mission

Prof. Viliam Donic, MD, PhD.

Department of Human Physiology and sleep laboratory

School of Medicine, Safarik University, Slovakia

donic.viliam@upjs.sk

- University
- Faculty of Medicine
- Theoretical Departments
- Department of Medical Physiology
- Teaching
- Teaching subjects

Teaching subjects

General Medicine

Physiology 1 - compulsory (2nd year of study)
Schedule, Study program, Sylabus, Criteria, Protocol of PL.

Physiology 2 - compulsory (2nd year of study)
Sylabus, Criteria, Protocol of PL.

Sleep Medicine - compulsory elective (5th year of study)
Sylabus, Announcement

Dental Medicine

General and Oral Physiology 1 - compulsory (2nd year of study)
Schedule, Study program, Sylabus, Criteria, Protocol of PL.
Lecture 1st week, Lecture 2nd week, Lecture 3nd week, Lecure 4th week, Lecture 5th week , Lecture 6th week

General and Oral Physiology 2 - compulsory (2nd year of study)
Sylabus, Criteria, Protocol of PL.

Study materials

Questions for oral exam
Question for exam from practical lession
Study materials CNS
Guyton and Hall. Textbook of Medical Physiology (OnLine) (Virtual Private Network)

Pedagogic texts I.:
History of Physiology, HELSINKI CONVENTION, Theheart, Circulation (Vessels)

About us:

The primary task of our department had been to ensure the proper content and organisation of teaching process of Medical physiology for students of General and Dental medicine of Medical faculty since 1949. The Medical physiology as a discipline about functioning of the healthy organism had a very important position in the teaching process because it had been integrating theoretical subjects and it was the basis for the pre-clinical and all clinical subjects, too. This is the reason why physiology teaching was orientated from the very beginning on complex approach to the human organism respecting the processes dynamics influenced by the internal and external factors. To reach this goal the method of problem orientated teaching process was used, it was continually developing, modernised and enriched by up to date foreign and home knowledge. The lectures, practical lessons and seminars were upgraded due to the development of teaching techniques such as teaching movies, slides, magnetic tape records, bio-telemetric transfer of specific experiment and examinations. The content of practical lessons was a result of the clinical medicine request to apply physiological knowledge, the necessity to use technical equipment and to approve manual laboratory skills. There were used the most modern examinational methods and experimental demonstrations during the practical lessons (X-ray sciascopy of thorax during the respiratory cycle, angiography, heart catheterisation and the measurement of heart volumes etc.).


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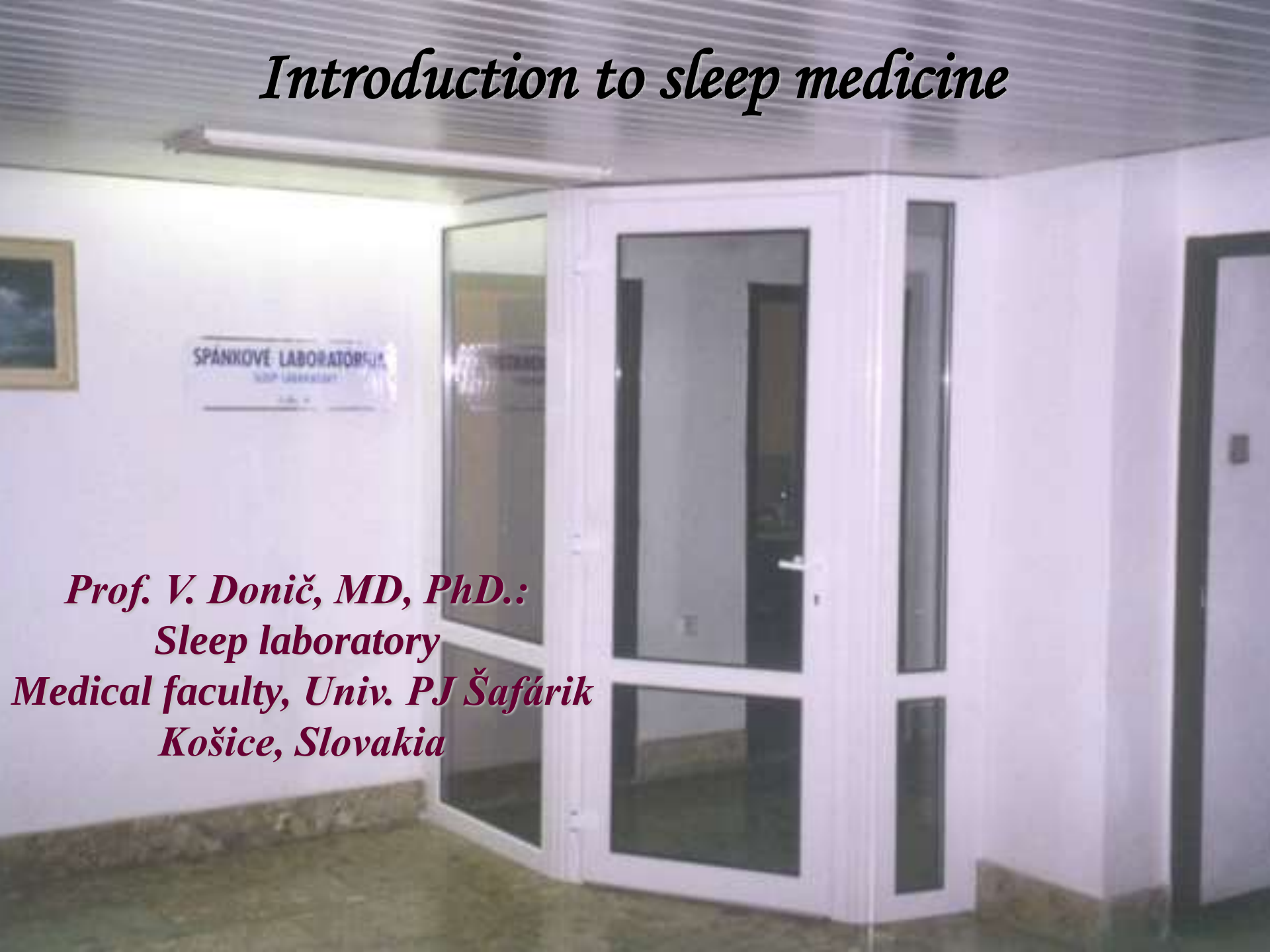
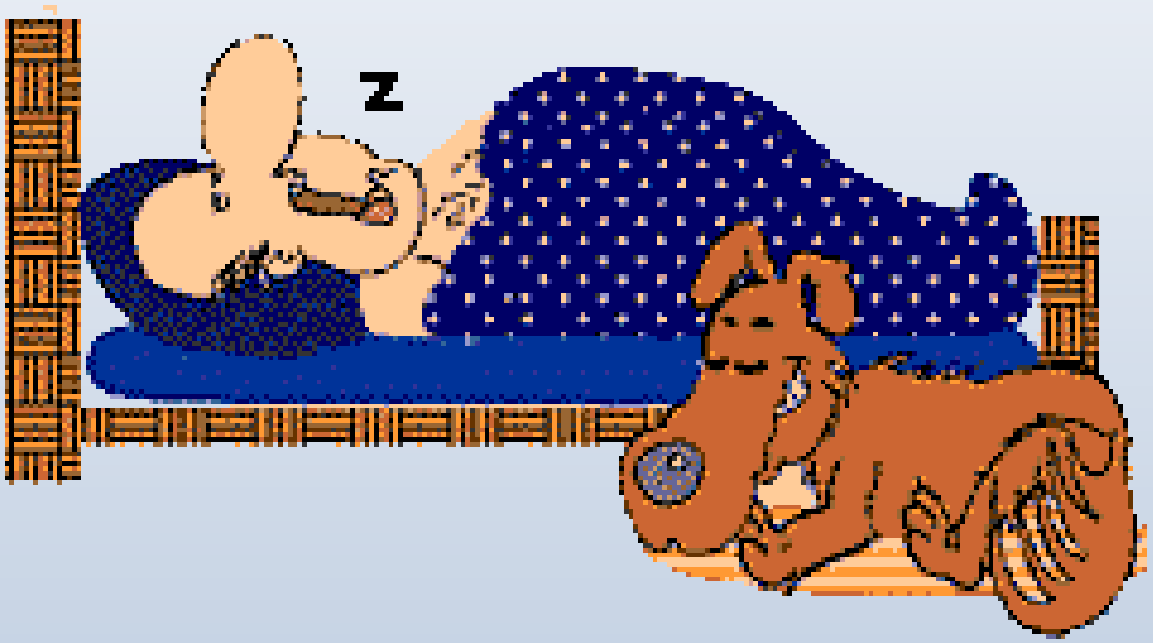
Introduction to sleep medicine



Prof. V. Donič, MD, PhD.:
Sleep laboratory
Medical faculty, Univ. PJ Šafárik
Košice, Slovakia

SLEEP LABORATORY

LF UPJS - KOSICE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2011, 2014

Problems decreasing the life quality of patients with SDB during sleep

snoring

frequent arousal

cardiac arrhythmias

morning headache

hypertension

loss of memory

sleepiness

social problems

obesity

sexual impotence

sweatenings

many others

Thanks to my fellow worker

Maria Pallayova, MD, PhD.

Johns Hopkins, School of Medicine
Baltimore, USA.


JOHNS HOPKINS
MEDICINE
Asthma & Allergy
Center
5501 Hopkins Bayview Circle

Basics of sleep medicine, Z. Tomori, R, Redhammer, V, Donič, eds.

Disorders of sleep and many vital functions

BIOLOGICKÉ HODINY ORGANIZMU regulujú striedanie bdenia a rôznych fáz a štádií spánku.
Ich poruchy častým prebúdzaním zo spánku spôsobujú vážne zmeny duševných a telesných funkcií, ktoré zas **spätne vplývajú na kvalitu spánku.**
Vzájomným vplyvom nekvalitného spánku a porúch životných funkcií vzniká **bludný kruh, ktorý ale možno prerušiť...**

Z PREDSLOVU

Kniha "**Základy spánkovej medicíny**" patrí svojím obsahom, ale aj rozsahom k prvým publikáciám svojho druhu nielen na Slovensku, ale aj v krajinách východnej Európy. **Podáva základné informácie o veľmi aktuálnych problémoch súčasnej medicíny, a to o poruchách spánku, ktoré má každý tretí človek, a o poruchách rôznych životných funkcií, ktoré nejakým spôsobom súvisia so spánkom.** Veď polovica ľudí nepríjemne chrápe, čím jednak strpčuje život ostatným, jednak si ľahostajne poškodzuje svoje zdravie, pričom ani nevie ako.

Vedúci autorského kolektívu, **prof. MUDr. Z. Tomori, DrSc.,** je členom viacerých zahraničných odborných spoločností, napr. Európskej respiračnej spoločnosti a New Yorkskej akadémie vied a uznávaným odborníkom v oblasti výskumu reflexov z dýchacích ciest. **Je spoluautorom monografie "J. Korpáš, Z. Tomori: Cough and other respiratory reflexes", vydanej v roku 1979 nakladateľstvom Karger, Basel.** V r. 1994, po návrate zo študijného pobytu v USA, spolu so svojím ašpirantom a blízkym spolupracovníkom **MUDr. V. Doničom, CSc., založili prvé Spánkové laboratórium na pôde Lekárskej fakulty UPJŠ v Košiciach, vybavené polysomnografom-** prístrojom na zaznamenávanie fyziologických funkcií počas spánku **a začali aj úspešnú liečbu prvého slovenského pacienta s ťažkým stupňom obštrukčného spánkového apnoe neinvazívnou ventiláciou pomocou prístroja (nCPAP) cez nazálnu masku.** Otvorili tým cestu k rozšíreniu tejto perspektívnej liečebnej metódy OSAS aj u nás.

Pre multidisciplinárny charakter spánkovej medicíny je táto **kniha určená nielen poslucháčom medicínskeho štúdia, ale aj pre postgraduálne vzdelávanie rôznych špecialistov,** a to pneumológov, kardiológov a pracovníkov ďalších internistických odborov, neurológov, psychiatrov, i psychológov, ale aj otorinolaryngológov, pediatrov i geriatrov, ako aj praktických i závodných lekárov.

V knihe **nájdu užitočné informácie aj strední zdravotnícki pracovníci, ale aj** pacienti. A zvlášť **všetci tí, ktorí hľadajú možnosť, ako sa zbaviť nepríjemného chrápania, či nadmernej dennej** únavy, ospalosti, nekvalitným spánkom. V tomto majú prispieť najnovšie informácie z celosvetovej literatúry, ale i vlastné skúsenosti prezentované v tejto knihe.

Želám si, aby táto monografia - učebnica priniesla čitateľom nielen nové poznatky o uvedenej problematike, ale podnecovala ich k ďalšiemu experimentálnemu štúdiu a prakticko-terapeutickému i preventívnemu využitiu.

Rkorec

prof. MUDr. Rudolf KOREC, DrSc.,
zakladateľ a čestný predseda Slov. diabetol. spoločnosti,
čestný člen IDF,EASD, Ass. Physiol., ČLS JEP,
SLS, SSBMB, SBS etc.

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Slovenská lekárska spoločnosť
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Slovenská neurologická spoločnosť
Slovenská pneumologická a ftizeologická spoločnosť
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Neurologická klinika LF UPJŠ a Univerzitnej nemocnice L. Pasteura Košice
Klinika pneumológie a ftizeológie LF UPJŠ a Univerzitnej nemocnice L. Pasteura Košice
Ústav lekárskej fyziológie LF UPJŠ
Slovenská Fyziologická Spoločnosť (SFyS)

X. Slovensko - Český a XV. Český zjazd

SPÁNKOVEJ MEDICÍNY

s medzinárodnou účasťou

11. - 12. októbra 2013 Hotel Yasmin, Košice

PROGRAM A ABSTRAKTY

COST B26

Eur Respir J. 2007 Jan;29(1):156-78.

Sleep apnoea as an independent risk factor for cardiovascular disease: current evidence, basic mechanisms and research priorities.

McNicholas WT[1], Bonsigore MR; Management Committee of EU COST ACTION B26.

Author information

Erratum in

Eur Respir J. 2007 Mar;29(3):614. Bonsignore, M R [corrected to Bonsigore, M R].

Abstract

Considerable evidence is available in support of an independent association between obstructive sleep apnoea syndrome (OSAS) and cardiovascular disease, which is particularly strong for systemic arterial hypertension and growing for ischaemic heart disease, stroke, heart failure, atrial fibrillation and cardiac sudden death. The pathogenesis of cardiovascular disease in OSAS is not completely understood but likely to be multifactorial, involving a diverse range of mechanisms including sympathetic nervous system overactivity, selective activation of inflammatory molecular pathways, endothelial dysfunction, abnormal coagulation and metabolic dysregulation, the latter particularly involving insulin resistance and disordered lipid metabolism. The present report, which arose out of a European Union Cooperation in the field of Scientific and Technical Research (COST) action on OSAS (COST B26), reviews the current evidence for an independent association and proposes research priorities to identify the underlying mechanisms involved, with a view to identifying novel therapeutic strategies. Large-scale collaborative studies of carefully defined patient populations with obstructive sleep apnoea syndrome, adequately controlled for potential confounders, are needed. Such studies carry the prospect of evaluating potential interactions between different basic mechanisms operating in obstructive sleep apnoea syndrome and cardiovascular disease, and interactions with other related disorders, such as obesity, diabetes and dyslipidaemia. Furthermore, translational studies involving cell culture and animal models linked to studies of obstructive sleep apnoea syndrome patients are necessary to integrate basic mechanisms with the clinical disorder.

PMID: 17197482 DOI: 10.1183/09031936.00027406

[PubMed - indexed for MEDLINE] **Free full text**

Medico-legal implications of sleep apnoea syndrome: driving license regulations in Europe.
Alonderis A, Barbé F, Bonsignore M, Calverley P, De Backer W, Diefenbach K, Donic V, Fanfulla F, Fietze I, Franklin K, Grote L, Hedner J, Jennum P, Krieger J, Levy P, McNicholas W, Montserrat J, Parati G, Pascu M, Penzel T, Riha R, Rodenstein D, Sanna A, Schulz R, Sforza E, Sliwinski P, Tomori Z, Tonnesen P, Varoneckas G, Zielinski J, Kostelidou K; COST Action B-26.
Sleep Med. 2008 May;9(4):362-75. Epub 2007 Aug 31.

Rodenstein D; Cost-B26 Action on Sleep Apnoea Syndrome. Driving in Europe: the need of a common policy for drivers with obstructive sleep apnoea syndrome. J Sleep Res. 2008 Sep;17(3):281-4. doi: 10.1111/j.1365-2869.2008.00669.x. Epub 2008 Jul 22. PubMed PMID: 18651866.

Fietze I, Penzel T, Alonderis A, Barbe F, Bonsignore MR, Calverly P, De Backer W, Diefenbach K, Donic V, Eijsvogel MM, Franklin KA, Gislason T, Grote L, Hedner J, Jennum P, Lavie L, Lavie P, Levy P, Lombardi C, Mallin W, Marrone O, Montserrat JM, Papathanasiou ES, Parati G, Plywaczewski R, Pretl M, Riha RL, Rodenstein D, Saaresranta T, Schulz R, Sliwinski P, Steiropoulos P, Svaza J, Tomori Z, Tonnesen P, Varoneckas G, Verbraecken J, Vesely J, Vitols A, Zielinski
J, McNicholas WT; COST Action B26 Group. Management of obstructive sleep apnea in Europe. Sleep Med. 2011 Feb;12(2):190-7. doi: 10.1016/j.sleep.2010.10.003. Epub 2010 Dec 16. PubMed PMID: 21167776.

Parati G, Lombardi C, Hedner J, Bonsignore MR, Grote L, Tkacova R, Levy P, Riha R, Bassetti C, Narkiewicz K, Mancia G, McNicholas WT; European Respiratory Society; EU COST ACTION B26 members. Position paper on the management of patients with obstructive sleep apnea and hypertension: joint recommendations by the European Society of Hypertension, by the European Respiratory Society and by the members of European COST (COoperation in Scientific and Technological research) ACTION B26 on obstructive sleep apnea. J Hypertens. 2012 Apr;30(4):633-46. doi: 10.1097/HJH.0b013e328350e53b. PubMed PMID: 22406463.

J. Sleep Res. (2008) 17, 281–284 Sleep disordered breathing

doi: 10.1111/j.1365-2869.2008.00669.x

Driving in Europe: the need of a common policy for drivers with obstructive sleep apnoea syndrome

DANIEL RODENSTEIN ON BEHALF OF COST-B26 ACTION ON SLEEP APNOEA SYNDROME

Center for Sleep Medicine and Pneumology Department Cliniques universitaires Saint-Luc Université catholique de Louvain, Brussels, Belgium

Accepted in revised form 21 April 2008; received 9 April 2008

SUMMARY Obstructive sleep apnoea syndrome (OSA) increases the risk of motor vehicle crashes, and of all medical disorders, has greatest risk in this respect. There is no consistency in the way OSA is considered by the national 'Physical Fitness to Drive' legislations within the 27 member countries of the European Union (EU), and most ignore OSA. This is further reflected by the absence of any reference to OSA in Annex III of the Directive 91/439/EEC, harmonizing Driving License regulations in the EU. A recent meeting brought together experts from several European and other countries, together with a representative of the European Commission. They discussed the best way to design and implement a uniform policy within Europe, for OSA and driving. It was agreed that: (i) other forms of pathological sleepiness be included, (ii) it covers both private and professional drivers, (iii) police accident report forms should explicitly consider sleepiness as a potential cause, (iv) sleep–wake education should be incorporated into the mandatory program of continuous education for professional drivers, ideally from 2010, (v) driver screening methods should contain questions on sleepiness at the wheel, habitual snoring and witnessed apneas during sleep, as well as the Epworth Sleepiness Score and Body Mass Index and (vi) following effective and efficient treatment, patients should be permitted to drive. In the light of medical, scientific and technical progress, EU procedures exist to enable the rapid modification of existing legislation. If such a procedure could be enacted for these aspects of driver sleepiness, then roads would be safer for 400 million people.

KEYWORDS driving license regulations, fitness to drive, motor vehicle crashes, obstructive sleep apnea syndrome, sleepiness at the wheel

Falling asleep at the wheel is one of the most striking non-medical consequences of obstructive sleep apnea (OSA), a disorder 'active' only during sleep. Research conducted in countries such as Spain, the United States, Switzerland, Germany, France, Canada, Japan or Australia have all found a significant excess of road traffic accidents caused by patients suffering from OSA, compared with healthy control subjects (Barbé *et al.*, 1998; Cassel *et al.*, 1996; Findley *et al.*, 2000; George, 2001; Horstmann *et al.*, 2000; Howard *et al.*, 2004; Masa *et al.*, 2000; Teran-Santos *et al.*, 1999; Yamamoto *et al.*, 2000; Young *et al.*, 1997). This finding is present irrespective of different cultures, traffic densities and national topographies. The excess risk for motor vehicle crashes associated with OSA is greater than for any other medical disorder (Vaa, 2003).

Driving under the influence of alcohol (Borkenstein *et al.*, 1964), long hours after a short sleep night (Perez-Chada *et al.*, 2005) or night driving by shift workers, also carry a high risk for these accidents. Various medical disorders also put road users at serious risk of injury, and are well-recognized hazards, to the point that all countries have taken legislative actions to deal with drivers having these disorders. Obtaining and retaining a driving license requires drivers to declare that they have no medical condition considered to impair driving ability,

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APPENDIX

List of participants to the October Brussels meeting

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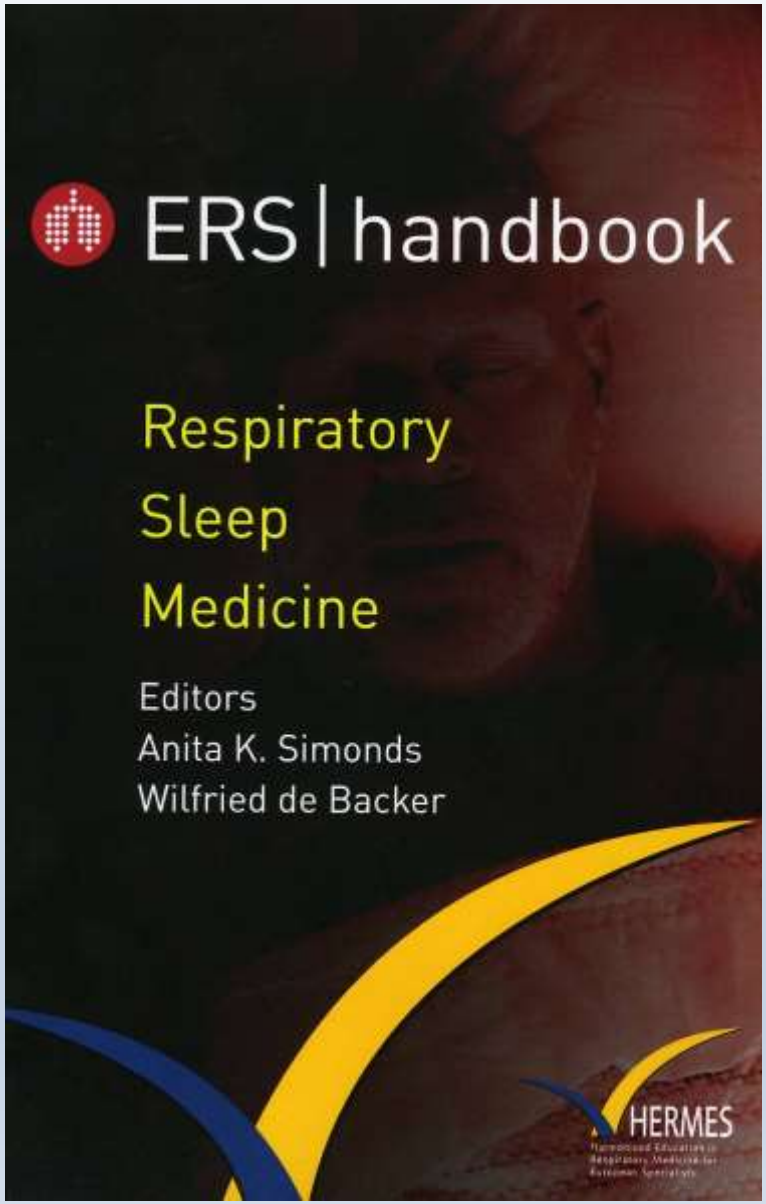
Auwaerts, Gilbert	Brussels, Belgium
Debacker, Wilfried	Antwerp, Belgium
Derek Eder	Göteborg, Sweden
Dinges, David	Pennsylvania, USA
Donic, Viliam	Kosice, Slovakia
Duran, Joaquin	Vitoria, Spain
Fanfulla, Franco	Pavia, Italy
Garbarino, Sergio	Genoa, Italy
George, Charles	Ontario, Canada
Grunstein, Ron	Sydney, Australia
Hedner, Jan	Göteborg, Sweden
Horne Jim A	Leicestershire, UK
Jennum, Poul	Glostrup, Denmark
Marrone, Oreste	Palermo, Italy
Masa, Juan Fernando	Caceres, Spain
McNicholas, Walter	Dublin, Ireland
Montserrat, Josep	Barcelona, Spain
Parati, Gianfranco	Milan, Italy
Philip, Pierre	Bordeaux, France
Pitidis, Alessio	Rome, Italy
Pretl Martin	Prague, Czech Republic
Przybylowski, Tadeusz	Warsaw, Poland
Reyner Louise	Leicestershire, UK
Rodenstein Daniel	Brussels, Belgium
Sanna, Antonio	Pistoia, Italy
Valmain, Joel	European Commission, Brussels, Belgium
Vennelle Marjorie	Edinburgh, UK
Verster, Joris	NL Utrecht, the Netherlands
Zielinski, Jan	Warsaw, Poland
Zou Ding	China



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every breath counts

The 8 chapters of the *ERS Handbook of Respiratory Sleep Medicine* cover all aspects of adult and paediatric sleep medicine, from physiology and anatomy to diagnosis and treatment. Editors Wilfried de Backer and Anita Simonds have brought together leading pulmonologists to produce a thorough yet easy-to-read reference to this important area of respiratory medicine. The *Handbook* is a valuable reference and an essential training resource for any practitioner of sleep medicine, whether they come from a respiratory, neurology, cardiology, dental or ENT background.

Anita K. Simonds is a consultant in respiratory medicine at the NIHR Respiratory Biomedical Research Unit, Royal Brompton & Harefield NHS Foundation Trust, London, and is ERS School Chair.

Wilfried de Backer is Professor of Respiratory Medicine of the Faculty of Medicine, University of Antwerp, and is head of the ERS Clinical Physiology and Integrative Biology Assembly.

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COMMISSION DIRECTIVE 2014/85/EU

of 1 July 2014

amending Directive 2006/126/EC of the European Parliament and of the Council on driving licences

Annex 4

General Recommendations Regarding OSAS

1. OSAS diagnosis precludes unconditional certification.

2. A driver with an OSAS diagnosis may be authorized to drive if the following conditions are met:

   2A. The driver has untreated mild OSAS with an apnoea-hypopnoea index (AHI) of less than or equal to 15 (mild-moderate OSA), and

   2B. The driver does not admit to experiencing invalidating excess sleepiness during the major wake period (ESS < 15); denies motor vehicle accidents; does not suffer from hypertension requiring two or more agents to control it and BMI is less than 35 kg/m^2)

3. The driver's OSAS is being effectively treated

   3A. A driver with a moderate to severe OSAS diagnosis may be authorized to drive, based on demonstrating compliance with treatment. Minimally acceptable compliance with Positive Airway Pressure (PAP) treatment consists of at least 4 hours per day on 70% of days. The need for, and the compliance with, treatment should be subject to periodic medical review. The periodicity may differ in drivers from Group 1 and Group 2.

Electrical auricle stimulation novel treatment for obstructive and central sleep apnoea

Prof. Dr Viliam Donic[1], MD; RN. Sona Gresova[1]; RN. Judita Stimmelova[1]; Dr. Ivana Bacova[1], MD;Prof. Dr Zoltan Tomori[1], MD; Prof. Dr Johan Verbraecken[2], Drs. Boudewijn de Kerf[3], and Drs. Gerrit J de Vos[3].

[1]Dept. of Physiology and Sleep laboratory, University PJ Safarik, Kosice, Slovakia; [2]Multidisciplinary Sleep Disorders Centre, Antwerp University Hospital, Antwerp, Belgium; [3]NasoPhlex, NasoPhlex BV, Zaandijk, Netherlands

THE LANCET Respiratory Medicine

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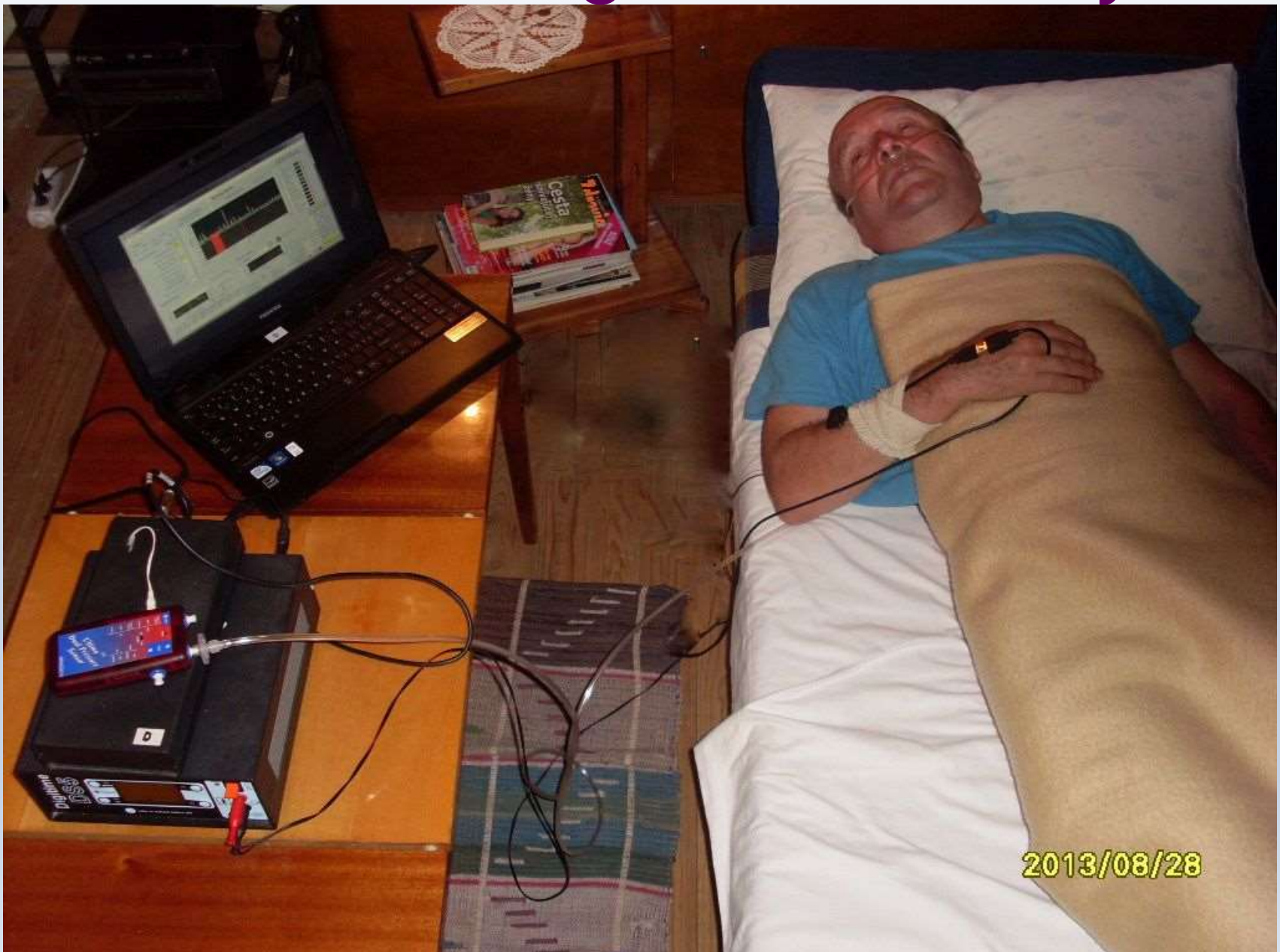
2014 annual congress of the European Respiratory Society

Treatment of sleep apnoea syndrome with electrical auricle stimulation

In a proof of principle study, researchers at University PJ Safarik (Kosice, Slovak Republic) have developed a way to treat sleep apnoea syndrome by using electrical auricle stimulation to activate the brainstem's inspiratory generator. Viliam Donic and collaborators at Nasophlex BV (Zaandijk, The Netherlands) and the Multidisciplinary Sleep Disorders Centre at University IA Antwerp, Belgium) used an electrode embedded in a removable earplug to interrupt not only obstructive, but also central and mixed, apnoeic episodes in three men with sleep apnoea syndrome. Data obtained from the use of the electrode earplug during a total of 711 nights showed a 66·3% reduction in apnoeic index. In addition, the time without breathing decreased by 53·3%.

EAS, a single case study




2013/08/28

OXYGEN ION 3000
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Высокочастотная струйная вентиляция легких
Экспулсный и инпульсный эффекты

Prof. Viliam Donic, MD, PhD.

Department of Human Physiology and sleep laboratory

PJ Safarik University, Slovakia

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Skyrail
Rainforest Cableway


Ďakujem za pozornosť

- Greator sleepenes before use CPAP and lesser sleepenes after CPAP treatment
- CPAP value therapy in heavy snoorers disease or upper airway resistence syndrome, as well as SAHS
- MSLT does not reflect sleepenes decreasing in CPAP treatment
- The access risk for motor vehycle crasses asociated with OSA is greater than for eny other medical disorders (Vaa 2003).