European Society of Sleep Technologists
Meeting Programme

Tuesday 14th September 2010, ESRS Conference, Lisbon

European Society of Sleep Technologists
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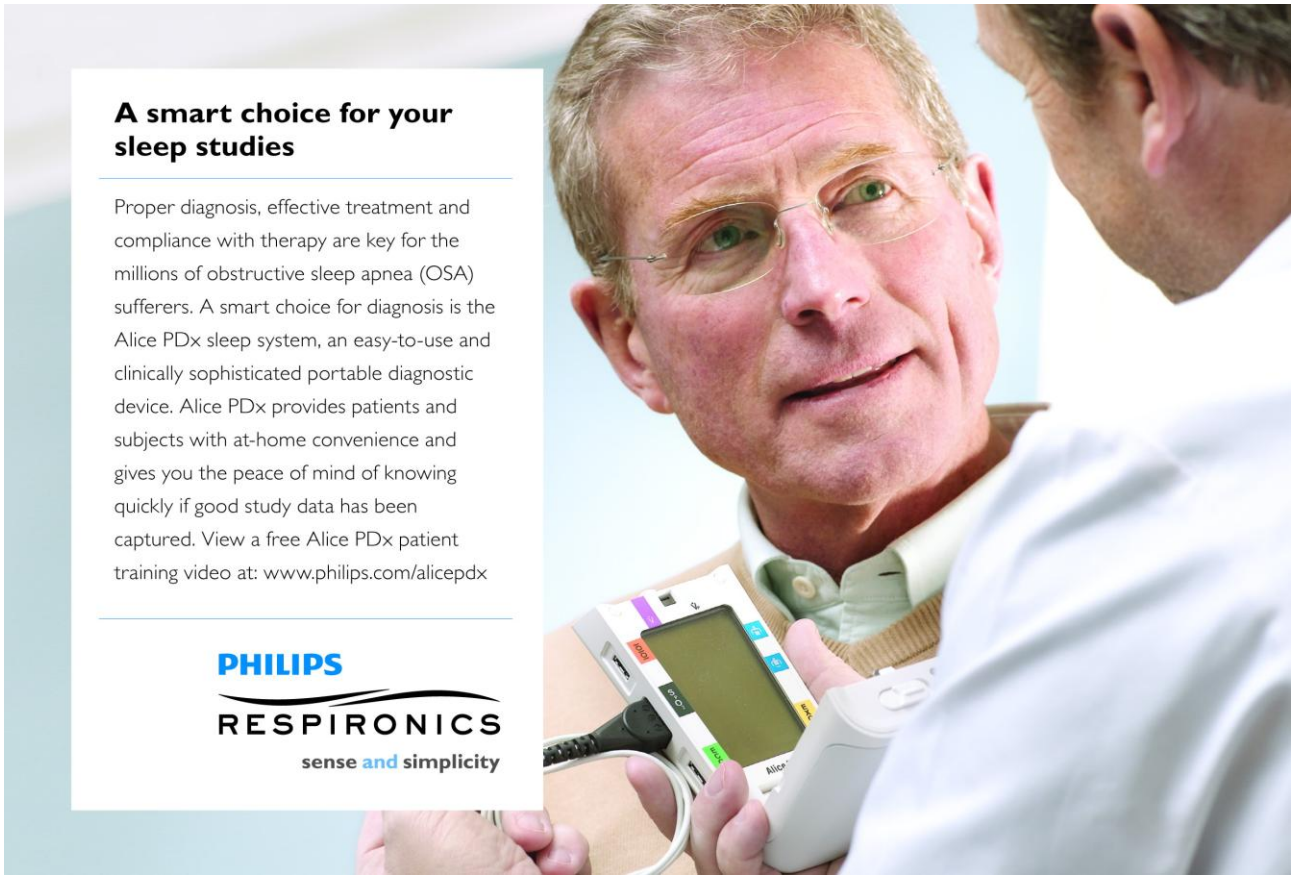

Dear ESST Members and other esteemed colleagues,

Welcome to the 2010 meeting of the European Society of Sleep Technologists here in Lisbon, Portugal. We hope you will find this meeting informative and enjoyable and that you will take this opportunity to spark up new liaisons and network with your fellow sleep colleagues across Europe and beyond. The topics will definitely provide food for thought and hopefully influence and develop your practice back home.

We are delighted and very grateful to have some excellent speakers and experts in their fields. The chosen topics should give insight into clinical practice, diagnostics and treatments across a broad range of ages and sleep disorders. Of particular interest may be the ESRS's plans for the accreditation of sleep professionals across Europe in the talk presented by Professor Pevernagie. The role of the sleep technologist and nurse is paramount to the delivery of care and your contribution should not be under-estimated.

Please also consider taking a more active role in this society and come and join us at our **ESST Board and National Delegate meeting today**. We will be looking to identify new National Delegate Representatives so please consider putting yourself forward.

Of course no meeting is possible without the generous support of our colleagues in industry and I would like to take this opportunity to sincerely thank our sponsors:

Compumedics
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&
Magners Irish Cider!

Which leads me to cordially invite you all to our:

ESST social event on Wednesday 15th September
8pm - midnight at Hotel do Chiado, Lisbon

Come and sample some free Magners and enjoy a light buffet whilst you wrack you brains for the answers in our Sleep Quizzzzz-Prize for the winning team! Or you can just chill out with a drink from the pay bar to fantastic views over our host city.

With a final thank you to the ESST board members: Irma van Velzen, José Vis and Jo Tiete for helping to organise what we hope will be the best ESST meeting yet!

Muita Obrigada

Simone de Lacy
President, ESST

PROGRAMME of ESST meeting on Tuesday 14th September 2010

9:00-9:30 *Registration and Coffee*

9:30-9:40 **Welcome:** *Simone de Lacy, President ESST*

Chair:	Simone de Lacy
9:40-10:10	**A Consultant Technologist Sleep Apnoea Service:** *Simone de Lacy, London, UK*
10:10-10:40	**Portuguese Sleep Medicine Tests:** Ana *Brito, Coimbra, PT*
10:40-11:10	**Cardiovascular Consequences of OSA:** *Dr Denise O'Driscoll, Melbourne, AU*

11:10-11:45 *Coffee Break*

Chair:	José Vis
11:45-12:30	**Parasomnias: Video Case Studies:** *Irma van Velzen, The Hague, NL*
12:30-13:00	**Diagnosis and DD of Restless Legs Syndrome:** P*rof. Claudio Bassetti, Zurich, CH*

13:00-14:00 *Lunch: 4 x 10 minute industry-sponsored presentations:*

13.00-13.20 Distribution of lunch boxes

13.20-13.30 **Philips-Respironics** 13.30-13.40 **Compumedics**

13.40-13.50 **UCB** 13.50-14.00 **OSG**

Chair:	Jo Tiete
14:00-14:30	ESRS: **Accreditation of Sleep Technologists & Education Centers:** *Prof. Dirk Pevernagie, Gent, BE*
14:30-15:00	**R&K or AASM 07- Have we decided yet?** *Paul Murphy, Gothenburg, SE*

15:00-15:30 *Tea break*

Chair:	Irma Van Velzen
15:30-16:00	**Sleep and Cognition in Childhood**: *Dr Rebecca Schutte, Amsterdam, NL*
16:00-16:30	**Microstructure and dynamics of sleep in children aged 10-12 years:** *José Vis, Berg en Dal, NL*

17:00-18:00 ESST Board and National Delegate meeting

A Consultant Technologist Sleep Apnoea Service

Simone de Lacy BSc RPSGT

Consultant Technologist

Guy's & St. Thomas NHS Foundation Trust, London, UK

Introduction:

There is a significant and increasing demand for sleep diagnostic services driven by the prevalence and incidence of sleep-related breathing disorders in the population [1]. Population-based epidemiologic studies have disclosed a wide severity spectrum of undiagnosed obstructive sleep apnoea [OSA] and have consistently found that even mild OSA is associated with significant morbidity [2]. The impact of this disorder in a climate of increasing economic constraints means that sleep centres have to provide rapid access to cost effective diagnostics and treatment. Overnight pulse oximetry is a widely used and economical means of detecting the presence of OSA and to determine severity [3].

Method:

The 5-bedded Sleep Disorders Centre at Guy's & St. Thomas' NHS Foundation Trust receives more than 50 new referrals weekly, approximately 60% of which are for the evaluation of patients with suspected OSA. The latter are invited to collect an oximeter and receive instruction on its usage for a 2 night home recording with concurrent completion of a sleep questionnaire and log. The patient returns with the oximeter for a consultation with the Consultant Technologist. Assessment of the referral letter, questionnaire, sleep log and patient casenotes takes place immediately prior to consultation. A clinical history is then taken along with a simple examination of the upper airway. The oximetry results are then considered in the context of the symptoms and a treatment plan is formulated. Treatment will include attention to sleep hygiene and lifestyle modification as well as simple and more complex treatments for snoring and OSA as appropriate. All patients are seen by a sleep physician during their care pathway to assess response to treatment or discuss results of more detailed sleep investigations requested (see below).

Results:

Over a 9 month period (Sept 09-May 10) 657 consecutive patients (464 Male) were assessed by the consultant technologist. 436 (66%) were deemed to be primary snorers or have mild OSA (4%ODI <20). Moderate or severe OSA (4% ODI ≥20, ≥30) was shown in 205 (31%) and central sleep apnoea in 4 (0.006 %). 12 (0.02%) patients had normal oxygen saturation traces but increased heart rate variability of indeterminate cause. Confirmation of severity of OSA or probability of additional sleep disorders resulted in 203 (31%) patients requiring more detailed sleep studies: Polygraphy 80 (13%); Polysomnography 89 (14%); Polysomnography and Multiple Sleep Latency Test 25 (4%) and actigraphy 9 (1%).

Conclusion:

This model for evaluation of patients with suspected OSA allows rapid access, investigation and treatment planning for patients referred with suspected OSA. Resources for more complex sleep studies can then be utilised for the evaluation of non-sleep related breathing disorders or confirmation of severity of OSA where oximetry and clinical history are in question.

References:

1. Transforming Respiratory and Sleep Diagnostic Services, UK Department of Health Feb 2009.
2. Young T, Peppard P, Gottlieb D. Epidemiology of Obstructive Sleep Apnoea. Am J Respir Crit Care Med 2002 Vol 165. pp 1217-1239
3. Netzer N, Eliasson A, Netzer C, Kristo D. Overnight Pulse Oximetry for Sleep-Disordered Breathing in Adults. Chest 2001:120;625-633

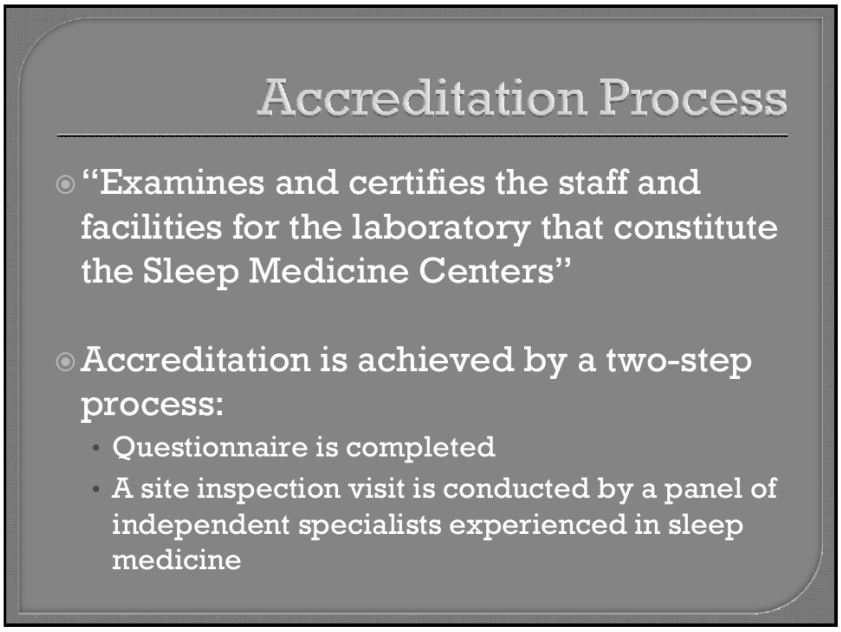
Portuguese Sleep Medicine Tests

Ana *Brito, Coimbra, PT*

Historical overview of sleep medicine in Portugal. The demographics of sleep medicine and the constitutions of the Portuguese Sleep Association.

Sleep lab staffing, equipment and structural requirements overview. Accreditation process of technical staff and sleep labs.

Practical outline of PSG and treatment in Portugal and as example a description of our own sleep lab with possibilities of different interventions and therapeutics.



Cardiovascular Consequences of Obstructive Sleep Apnea

Dr Denise M O'Driscoll

The Ritchie Centre, Monash University, Australia

Obstructive sleep apnea syndrome (OSA) is a common disorder affecting more than 4% men and 2% women, and is strongly associated with central obesity. Apnea induces acute hemodynamic effects including brady-tachycardia, and large surges in blood pressure (BP) and acute sympathetic nervous system activation mediated by frequent arousal and hypoxia. The physiological effects of these disturbances are long-lasting and persist through the day. Long-term physiological effects include endothelial dysfunction, systemic inflammation, and metabolic dysregulation.

Chronic exposure to OSA is well-recognised as a risk factor for the development of hypertension and other cardiovascular disorders, including ischemic heart disease, arrhythmias, stroke and heart failure. Furthermore evidence suggests that adequate CPAP treatment may decrease the incidence of these adverse cardiovascular consequences. However, whilst the data for an independent association between OSA and hypertension are strong, evidence of a causative role for OSA in the development of other cardiovascular disorders is still required from randomized controlled trials demonstrating a clear cardiovascular benefit from treating OSA.

Paediatric OSA, although different in pathophysiology appears to have similar cardiovascular consequences with emerging reports of acute hypertension, increased BP variability, as well as structural cardiac changes and remodelling. Given the emerging evidence that increased BP levels during childhood strongly predict hypertension in young adults, the acute autonomic disturbances elicited by OSA in the child may adversely impact the cardiovascular system in a sustained fashion into adulthood.

Funding Support: Thoracic Society of Australia and New Zealand, National Health and Medical Research Council of Australia, CASS Foundation.

Parasomnias: Video Case Studies

Irma van Velzen, MCH Sleep Center, The Hague, the Netherlands

Parasomnias are undesirable physical events or experiences that can occur at the beginning or during sleep or during arousals while we sleep[1].

Parasomnias are intriguing phenomena!
We all know a bit about parasomnias either from are own experience or from stories told by our friends and relatives. Parasomnias also appear in the media. Stories told about strange behaviour during sleep, can be hilarious, frightening, and sometimes incredible.

But what do we record in a sleep laboratory….

In this presentation several videos will be shown of "strange behaviour" during polysomnography and we encourage audience participation to suggest: **What kind of parasomnia is this?**

The answers are not always obvious as we want them to be….

Parasomnia	Sleep stage	Part of the night	Amnesia	Eyes	In or out of the bed	Dreaming
Pavor nocturnus or Night terror	NonREM N3 (exception N2)	First part	Most of the time	Open, fear, not responding (adequate)	Out of bed	Sometimes
Sleepwalking	NonREM N3 (exception N2)	First part	Most of the time	Open, staring, not responding (adequate)	Out of bed	Sometimes
Confusional arousal	NonREM N3 (exception N2)	First part	Most of the time	Open, staring, not responding (adequate)	In bed, sometimes out of bed	Sometimes
Nightmare	REM (exception N2-->W)	Last part	No	Open, responding (adequate)	Awake, chooses to stay or go out of bed	Yes
REM Sleep Behaviour Disorder	REM, with muscle acitvity	Last part	Most of the time	Closed, sometimes shift to wake, than open.	In bed, sometimes out of bed	Yes, not always known
Sleep paralysis	REM/Wake without muscle acitvity	Into sleep or awakening	No	Closed, not capable to respond	In bed	No

Figure 1: Simplified model to help determine different parasomnias[2]

[1] Chapter 5 in "The international classification of sleep disorders" 2005
[2] Note: Epileptic seizures during sleep

- Duration is short
- Beginning is typically identical
- Often clustered
- Abnormal EEG (exception frontal seizures)

Restless Legs Syndrome (RLS): Differential Diagnosis

Prof. Claudio L. Bassetti
Neurocenter of Southern Switzerland, Lugano
Department of Neurology, University Hospital, Zürich

In patients with a typical history the diagnosis of RLS is unproblematic. In addition, more then 50% of these patients have a positive family history for RLS, 70-80% of them present frequent periodic limb movements during sleep (PLMS) on polysomnography, and most of them have a good/rapid response to dopaminergic treatment.

In a 10-30% of patients referred to sleep clinics because of „RLS“ history is non conclusive or atypical. In these patients family history for RLS, presence of PLMS and a response to dopaminergic drugs is important for diagnosis.

The main differential diagnosis of RLS based on history and clinical examination can be divided in the following 3 main categories:

1. **Disorders presenting with limb discomfort, paresthesias, pain**

- sensory polyneuropathies/radiculopathies
- myelopathies
- burning feet syndrome
- venous/arterial insufficiency of the lower limbs
- muscle cramps
- „growing pains“ (children)

2. **Disorders presenting with involuntary limb movements/jerking**

- painful legs/moving toes syndrome
- hypnic jerks, propriospinal myoclonus
- hypnagogic foot tremor
- fasciculation-cramps syndrome

3. **Disorders presenting with restlessness/urge to move**

- akathisia
- Morbus Parkinson (wearing off)
- Tic disorders
- anxiety disorders/agitated depression
- attention deficit/hyperactivity disorder

In some patients these disorders can co-exist with typical/unequivocal RLS (with/without positive family history and PLMS on polysomnogarphay) and respond well to dopaminergic agents.

In others, these disorders present as RLS-like syndromes („mimics“) which are not improved by dopaminergic drugs and require other interventions.

ESRS Sleep Medicine Committee Update:

Accreditation of Sleep Technologists & Education Centres

Dirk Pevernagie, MD PhD

Sleep Medicine Centre Kempenhaeghe, Heeze, NL

Dpt. Internal Medicine, Ghent University, BE

Abstract

In recent years, sleep medicine has evolved into a full-grown discipline, featuring a multidisciplinary approach to diagnosis and treatment of patients with sleep disorders. Sleep medicine cuts across the boundaries of different conventional disciplines, and is therefore open to medical and non-medical professionals with different specialty backgrounds. In the multidisciplinary management of patients with sleep disorders, the sleep technologists (STs) play a pivotal role.

While Sleep Medicine is being developed in different scientific societies around the world, only limited scientific associations focus on the thriving of sleep technology. Yet, the adequate education of STs is of primary importance for the appropriate functioning of sleep medicine centres. The ESRS has made efforts to design guidelines on certification and to make a conceptual framework for education and training of sleep professionals. Currently, a catalogue of knowledge and skills for the education of sleep professionals is being elaborated by the ESRS Sleep Medicine Committee.

The CK&S is based on ECTS, a European educational standard, allowing students to achieve credit points in different teaching institutions. Training/education of ST's amounts to one year of workload (1600-1800 hours), corresponding to 60 ECTS credit points. Completion of this training/education may span up to three years. The CK&S has 8 chapters on sleep medicine and sleep technology with several sections in each chapter. The learning objectives are comprehensively detailed and associated with different qualifications: 'importance', 'level of knowledge', 'level of skills', 'credits', 'format' and 'platform'. The CK&S may be used as a blueprint by different educational authorities.

An important challenge for both ESRS and ESST will be the implementation of the educational directives outlined in the CK&S. National language differences and local legal issues prevent a uniform European approach. Concerted action with the National Sleep Societies is desirable and will be necessary to achieve this goal.

References:

(1) Pevernagie D, Stanley N, Berg S, Krieger J, Amici R, Bassetti C et al. European guidelines for the certification of professionals in sleep medicine: report of the task force of the European Sleep Research Society. J Sleep Res 2009; 18(1):136-141.

(2) Pevernagie D, Stanley N, Berg S, Krieger J, Fischer J. European guidelines for the accreditation of Sleep Medicine Centres. J Sleep Res 2006; 15(2):231-238.

(3) ESRS Sleep Medicine Committee. Catalogue of knowledge and skills for the education of sleep professionals (in preparation).

R&K or AASM 07- Have we decided yet?

Paul Murphy, Götenburg, SE

An informal survey among ESST members:

At your facility which scoring rules do you use now?

- R&K
- Modified R&K
- AASM
- Modified AASM
- We use our own rules

Do you intend to change the above practice within the next three years and if so to what scoring rules?

Notes:

Sleep and Cognition in Childhood

Dr Rebecca Schutte, Amsterdam, NL

Netherlands Institute for Neuroscience, an Institute of the Royal Netherlands Academy of Arts and Sciences, Dept. Sleep & Cognition, Meibergdreef 47, 1105 BA Amsterdam, The Netherlands.

Over the past years an increasing interest has arisen in the topic of sleep and cognition in children. However, as yet the results of past research have appeared inconclusive in regards to the existence of a relationship between sleep and daytime cognitive-behavioural functioning in childhood. It appeared timely to aggregate all previous findings by meta-analysis to determine the status of, and gaps in, our current knowledge. The first part of the presentation will cover the methods and findings of this meta-analysis. In short, the meta-analysis revealed a positive relationship between overall cognition and sleep duration ($r = 0.06$, $p < 0.001$), and sleep efficiency ($r = 0.14$, $p < 0.01$). In particular, significant relationships were found between sleep duration and declarative memory ($r = 0.10$, $p < 0.05$), general cognitive functioning ($r = 0.10$, $p < 0.001$), and school performance ($r = 0.08$, $p < 0.001$), but not vigilant attention, executive functioning and non-declarative memory.

The remainder of the talk will cover empirical data obtained during the Great Sleep Experiment, a large-scale project on the relationship between children's sleep and their cognitive performance. These data presented concern a sequential finger tapping motor skill task. Thirty-two subjects (10.8 + 0.9 years; mean + SD) performed three versions of the task in balanced order, each containing a different consolidation period: 12 hours containing Wake, 12 hours including Sleep, and 24 hours containing both Wake and Sleep. Throughout the 12-hour Sleep period, polysomnographic recordings were performed. Besides standard visual sleep scoring, algorithms were used for automated detection of spindles and slow oscillations. Interestingly, the behavioural data revealed enormous sleep-dependent improvements, but only for performance accuracy: +49% in the Sleep condition and +47% in the Wake & Sleep condition (both $p<0.001$). Performance speed showed large improvements with time, regardless of condition: +32% in the Wake condition, +45% in the Sleep condition, and +33% in the Wake & Sleep condition. Preliminary results of the spindle analyses revealed that baseline performance levels were positively correlated to the density of fast frontal spindles ($r=0.42$, $p=0.01$), and negatively correlated to the density of slow frontal spindles ($r=-0.45$, $p<0.01$). In conclusion, children - comparable to adults – show a sleep-dependent accuracy improvement on a motor skill, but - unlike adults – they also display speed enhancement over a period of wakefulness. The thalamo-cortical spindle oscillations apparent during preadolescent sleep appear to relate to general motor skill ability, and may provide an indication of neuronal maturation.

Microstructure and dynamics of sleep in children aged 10-12 years

José Vis, RPSGT

Sleepvision, Berg en Dal, the Netherlands

Dept. Sleep & Cognition, Netherlands Institute for Neuroscience, Amsterdam, the Netherlands

Sleep is important in life, and especially children need a good night of sleep after an intense day of learning at school. In general, sleep architecture and sleep homeostasis follow certain rules that apply to both adults and children. As a person falls asleep and sleep deepens, the brain wave patterns slow down, which can be staged in sleep cycles of subsequently light, deep and rapid eye movement (REM) sleep. Slow wave activity (SWA) consisting of 0.5-4 Hz brain waves is a marker of non-REM sleep intensity, and may serve as an indicator of sleep homeostasis. This homeostatic process is reflected by the exponential decline of the slow delta (< 2Hz) EEG power band across the sleep episode, which is predominantly present in the first sleep cycles. Of more interest is that this steep decay in slow wave EEG activity across the night is a prominent feature of late brain maturation occurring in late childhood and adolescence. Especially, the low frequency delta waves (<1 Hz) or slow oscillations in sleep may be important for sleep, learning and memory.

In a unique teaching event called “The Great Sleep Experiment”, we recorded sleep EEG in 32 school children aged 10-12 years simultaneously for one night. Furthermore, in a number of these children their night sleep was partially disturbed by presenting acoustic stimuli triggered by online quantified slow wave activity and aimed at its selective suppression. During this experiment, all school children also underwent several cognition and motor tasks before and after the overnight polysomnography.

In this presentation, I will present preliminary results of analyses aimed to explore whether acoustic stimulation affects the structure and dynamics of sleep in school children. For this purpose, sleep stages according to Rechtschaffen and Kales were scored, spectral power analysis of EEG activities in sleep were performed to model SWA dissipation and cyclic alternation pattern (CAP)-analysis was applied to detect arousal complexes and possible differences in the microstructure of sleep.

Notes:

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ESST Social Event

Sponsored by COMPUMEDICS & MAGNERS

Wednesday 15th September, 8pm-midnight

Bar Entretanto, Hotel do Chiado

No. 114 Rua Nova do Almada, Lisboa

Come and join us for some Magners Irish Cider,
Buffet & Sleep Quiz with prize for winning team!
There is also a cash bar service.

Entrance strictly by ticket only
Non-members €10, ESST members free!