



Gesundes und starkes Gehirn fürs Leben

Eine neurologisch-schlafmedizinische Perspektive

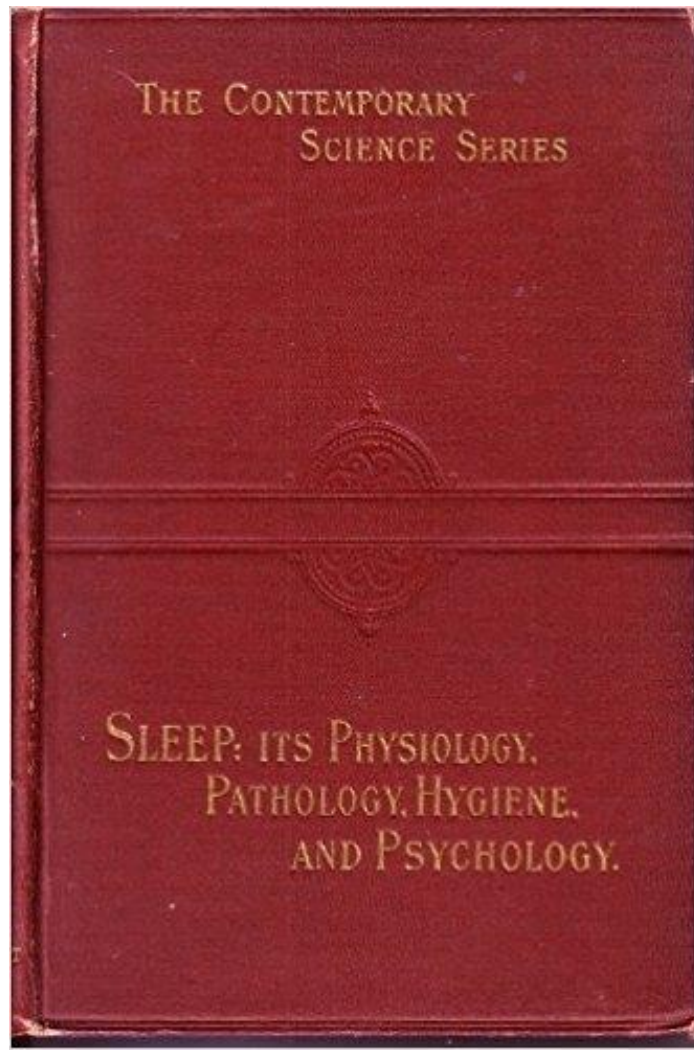
PD Dr. med. Philipp Valko
Leitender Arzt
Klinik für Neurologie Hirslanden
philipp.valko@bmg-swiss.ch

8. November 2022

Bellevue Medical Group
Neurozentrum Bellevue





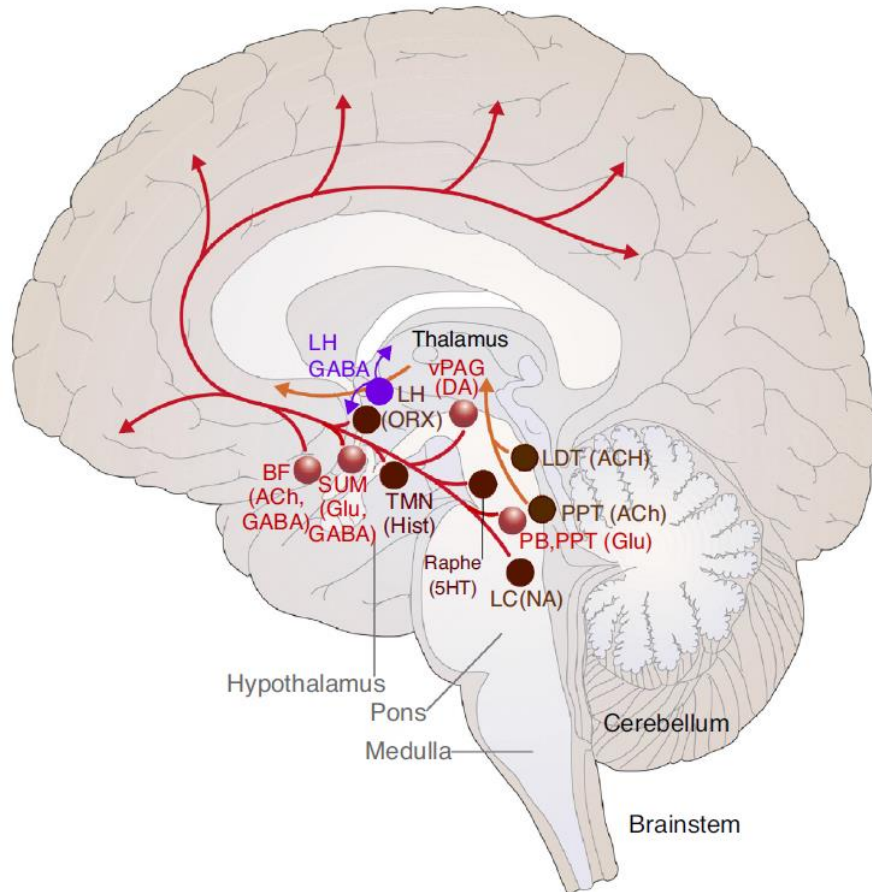


Maria Mikhailovna Manasseina
(1841 – 1903)

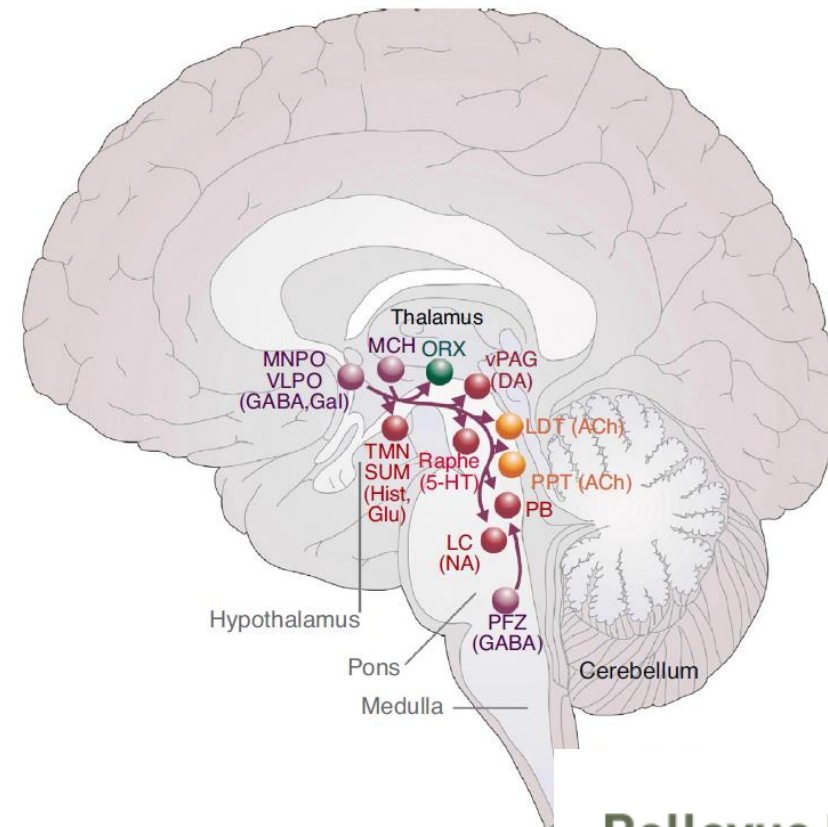
de Manacéine, M. 1894. Quelques observations expérimentales sur l'influence de l'insomnie absolue. *Archives Italiennes de Biologie*, 21: 322–325.

Schlaf-/Wach Regulation

Wachheit



Schlaf



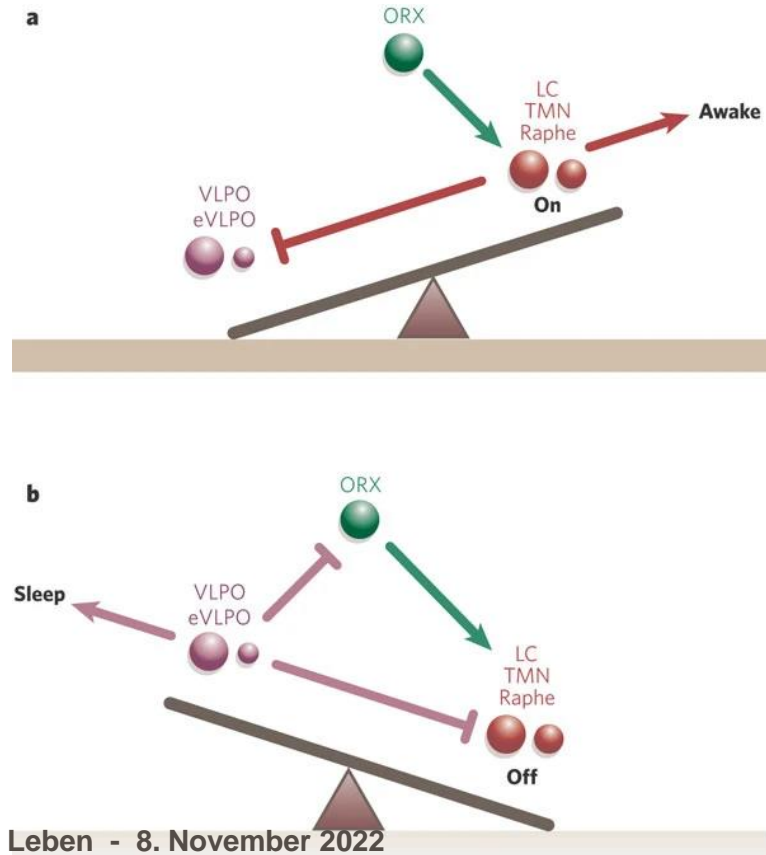
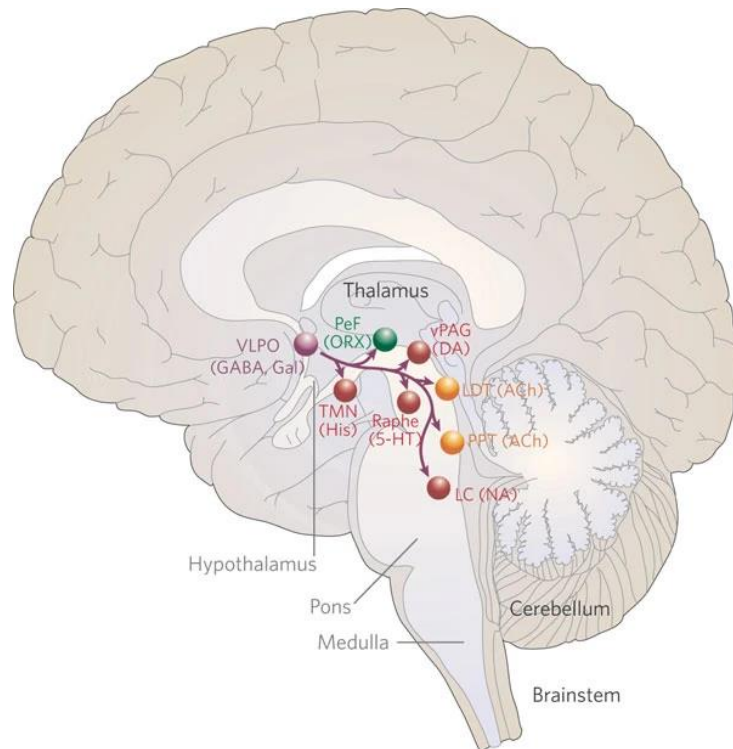
ARTICLES

A putative flip-flop switch for control of REM sleep

Jun Lu¹, David Sherman¹, Marshall Devor^{1,2} & Clifford B. Saper¹

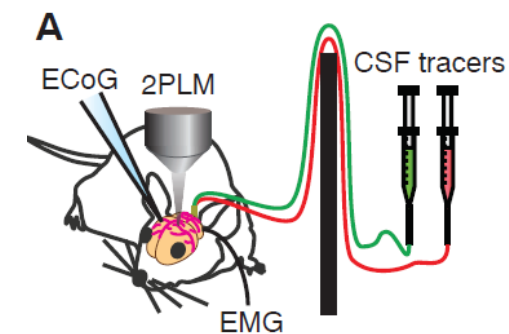
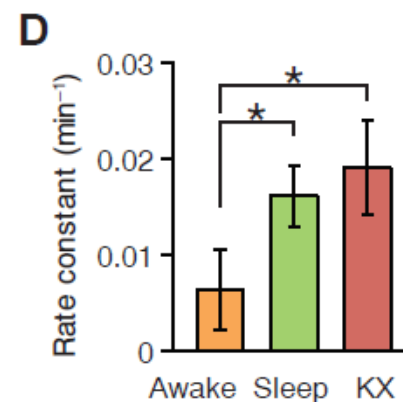
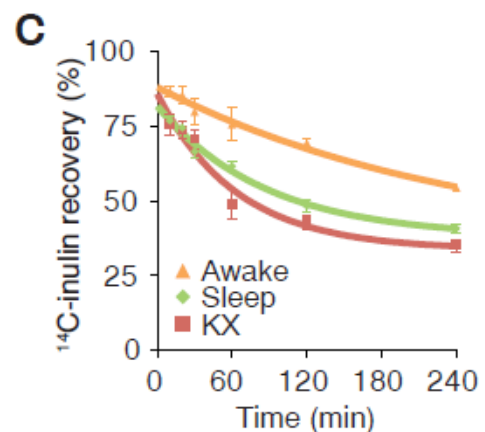
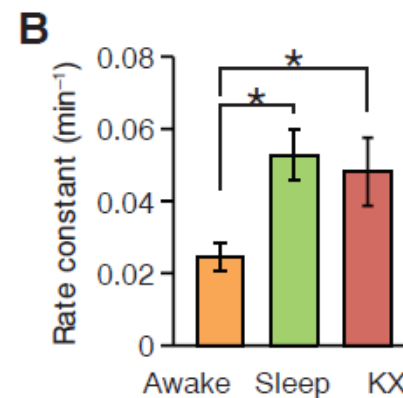
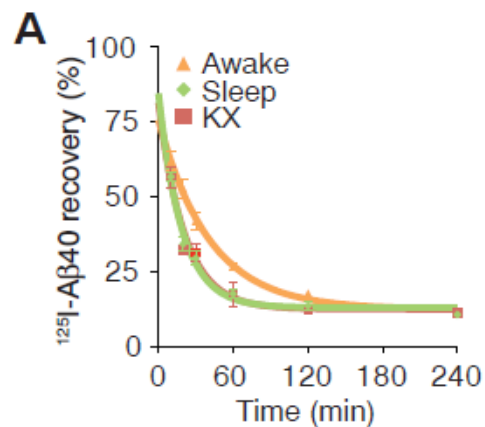
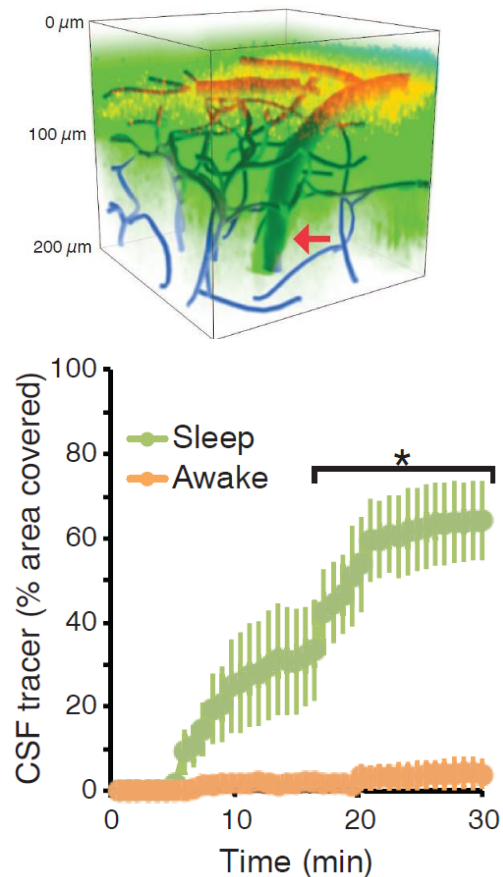
Hypothalamic regulation of sleep and circadian rhythms

Clifford B. Saper¹, Thomas E. Scammell¹ & Jun Lu¹

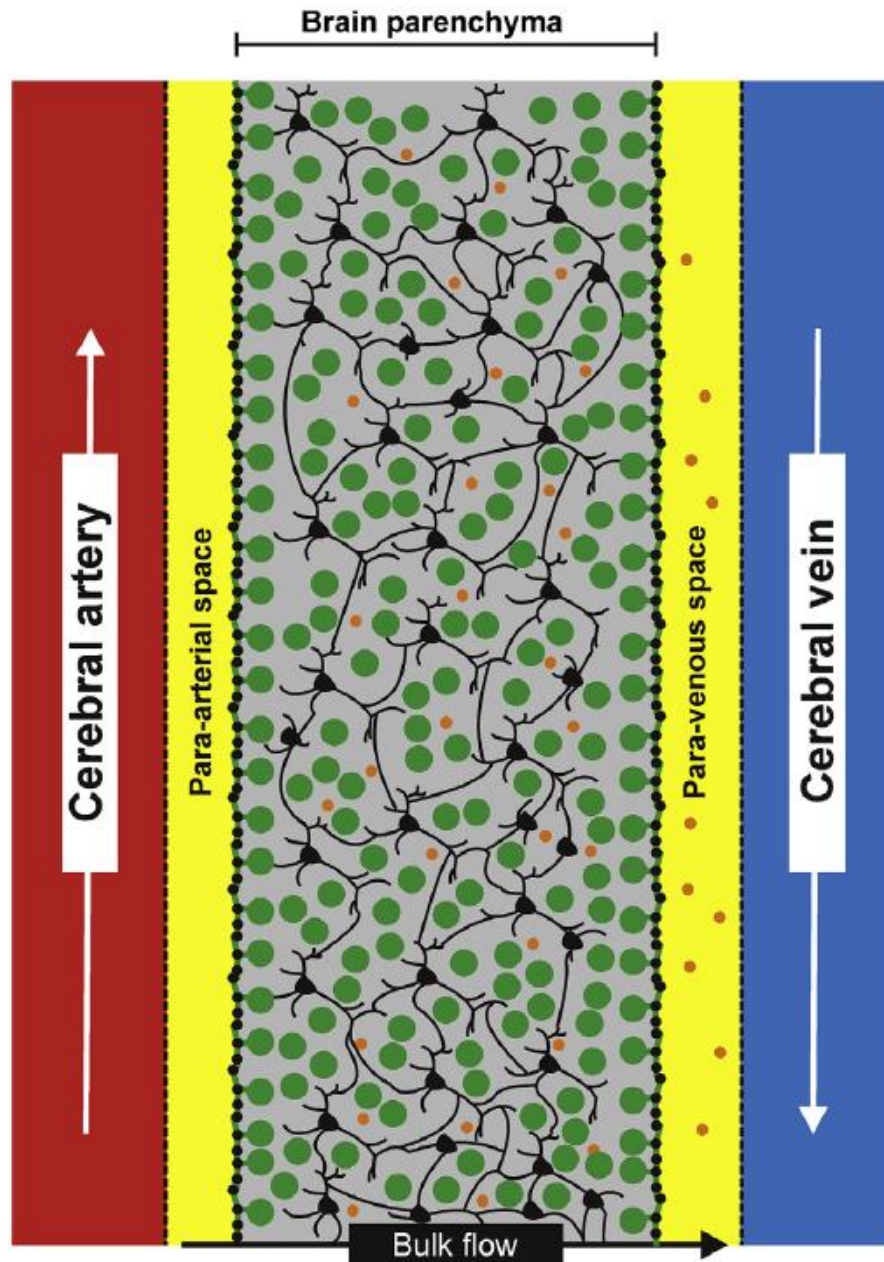


Sleep Drives Metabolite Clearance from the Adult Brain







Lulu Xie,^{1*} Hongyi Kang,^{1*} Qiwu Xu,¹ Michael J. Chen,¹ Yonghong Liao,¹ Meenakshisundaram Thiyagarajan,¹ John O'Donnell,¹ Daniel J. Christensen,¹ Charles Nicholson,² Jeffrey J. Iliff,¹ Takahiro Takano,¹ Rashid Deane,¹ Maiken Nedergaard^{1†}

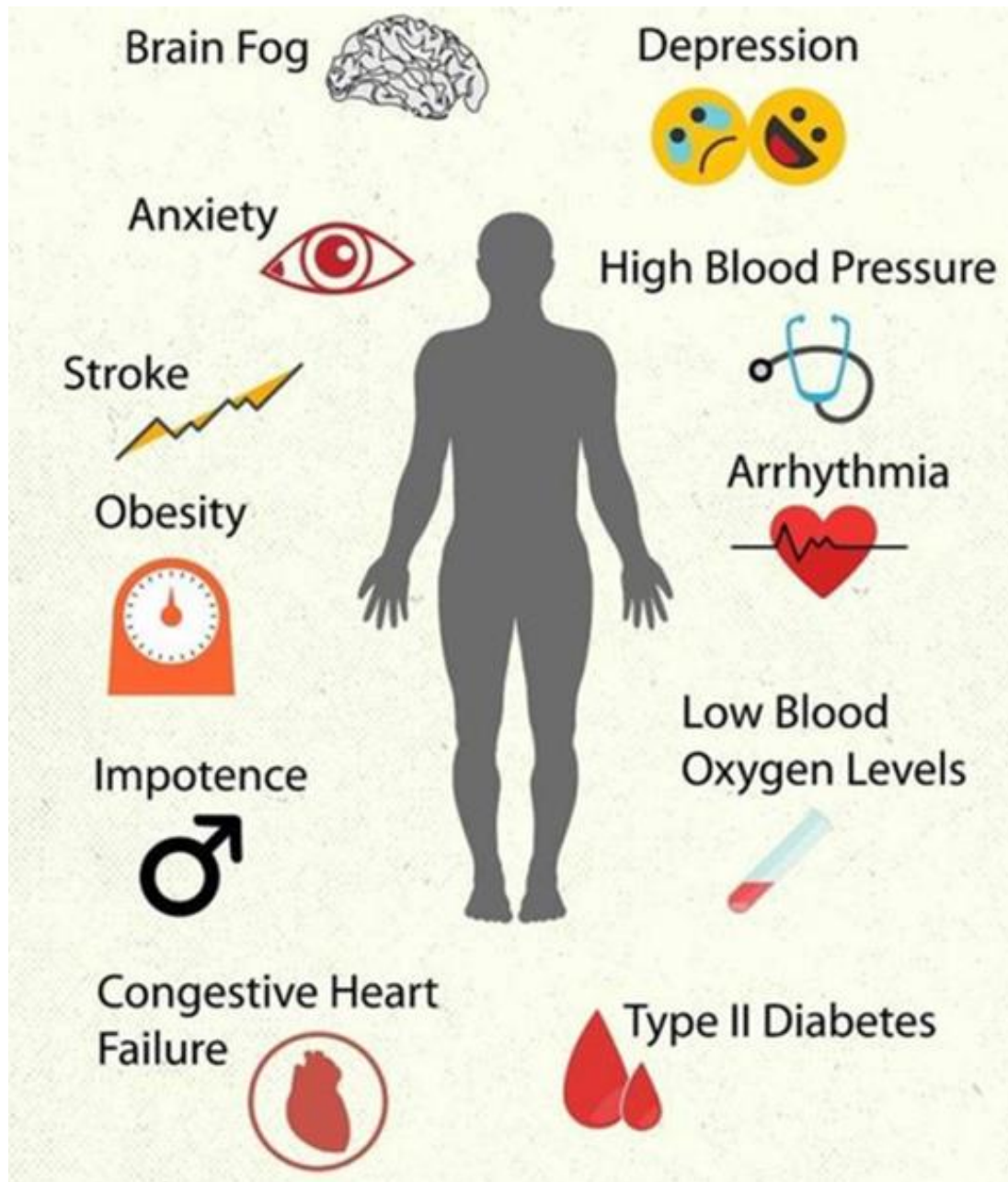


SCIENCE VOL 342 18 OCTOBER 2013



Glymphatisches System

-  Astroglial cells
-  Neurons
-  Soluble cellular waste products
-  CSF
-  ISF
-  Astrocyte endfeet expressing aquaporin-4 facilitating bulk flow of CSF and ISF

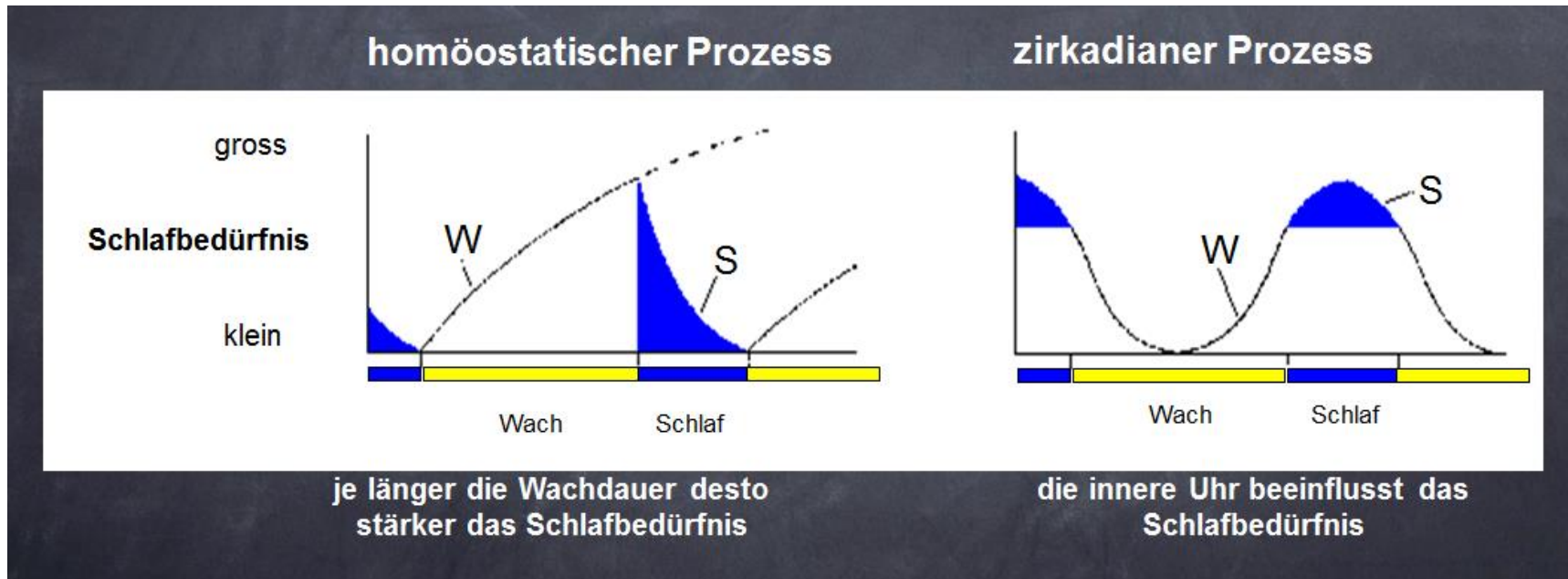


Schlafmangel: Multiple Konsequenzen



Das Zwei-Prozess-Modell der Schlaf-/Wachregulation

A. Borbély



RAPID PUBLICATION

The Cumulative Cost of Additional Wakefulness: Dose-Response Effects on Neurobehavioral Functions and Sleep Physiology From Chronic Sleep Restriction and Total Sleep Deprivation

Hans P.A. Van Dongen, PhD;¹ Greg Maislin, MS, MA;¹ Janet M. Mullington, PhD;² David F. Dinges, PhD¹

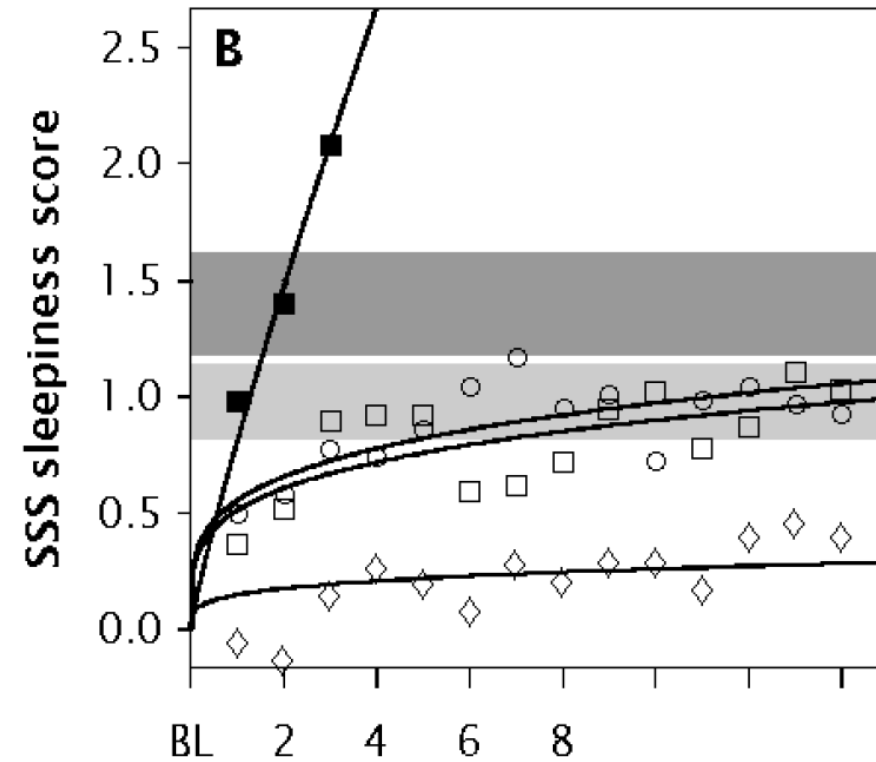
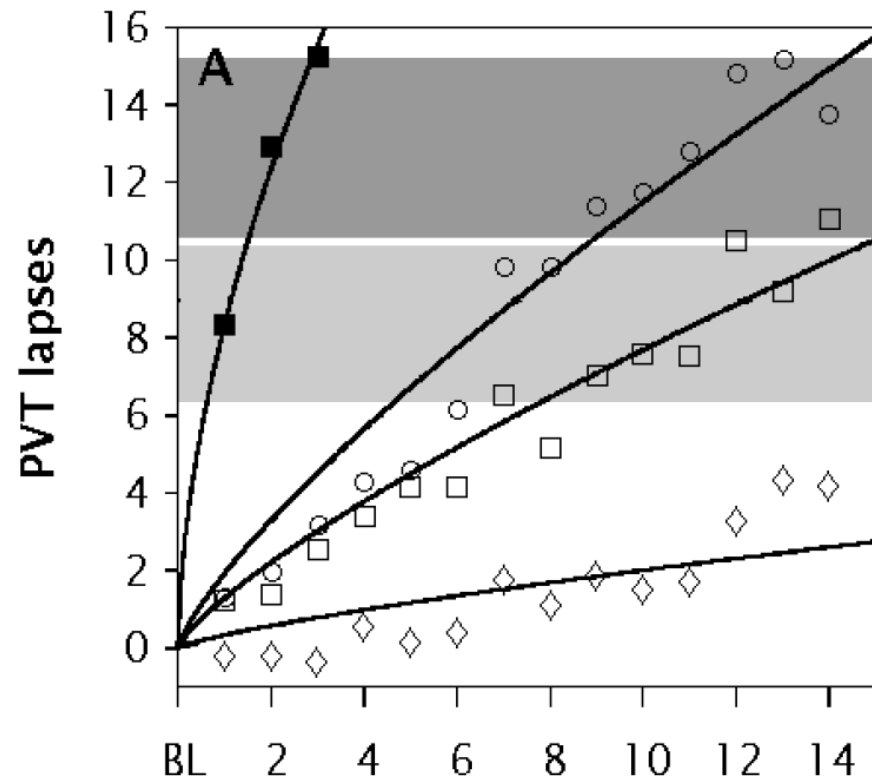
SLEEP, Vol. 26, No. 2, 2003

Design: The chronic sleep restriction experiment involved randomization to one of three sleep doses (4 h, 6 h, or 8 h time in bed per night), which were maintained for 14 consecutive days. The total sleep deprivation experiment involved 3 nights without sleep (0 h time in bed). Each study also involved 3 baseline (pre-deprivation) days and 3 recovery days.

The Cumulative Cost of Additional Wakefulness: Dose-Response Effects on Neurobehavioral Functions and Sleep Physiology From Chronic Sleep Restriction and Total Sleep Deprivation

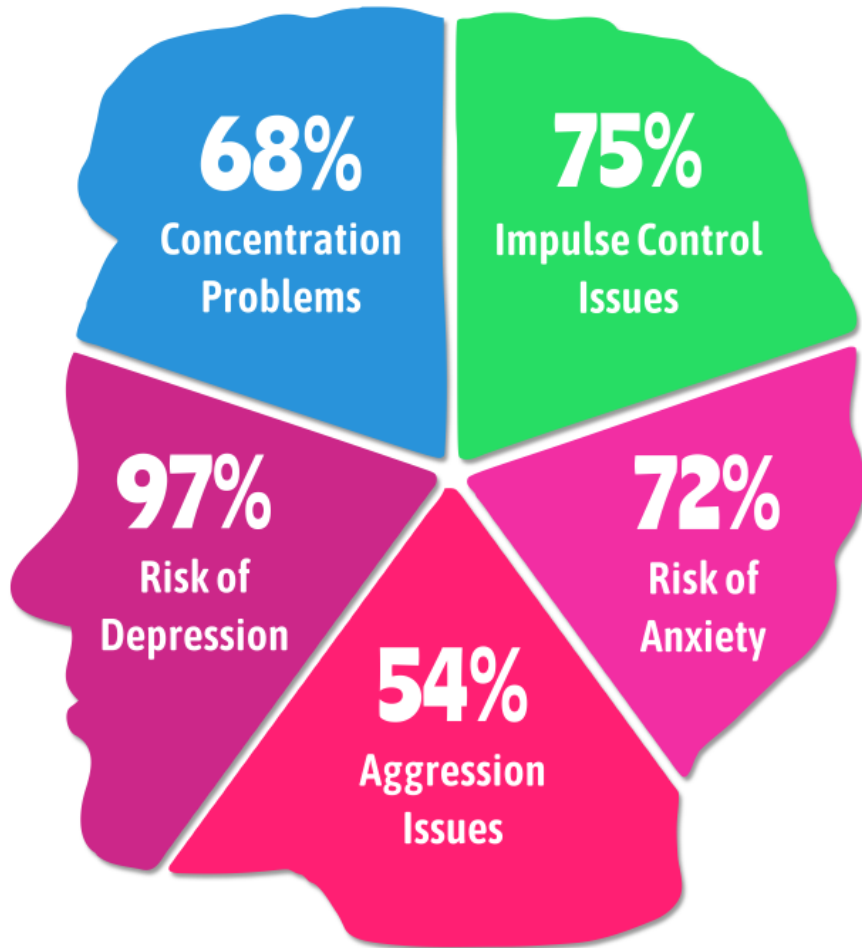
Hans P.A. Van Dongen, PhD;¹ Greg Maislin, MS, MA;¹ Janet M. Mullington, PhD;² David F. Dinges, PhD¹

SLEEP, Vol. 26, No. 2, 2003

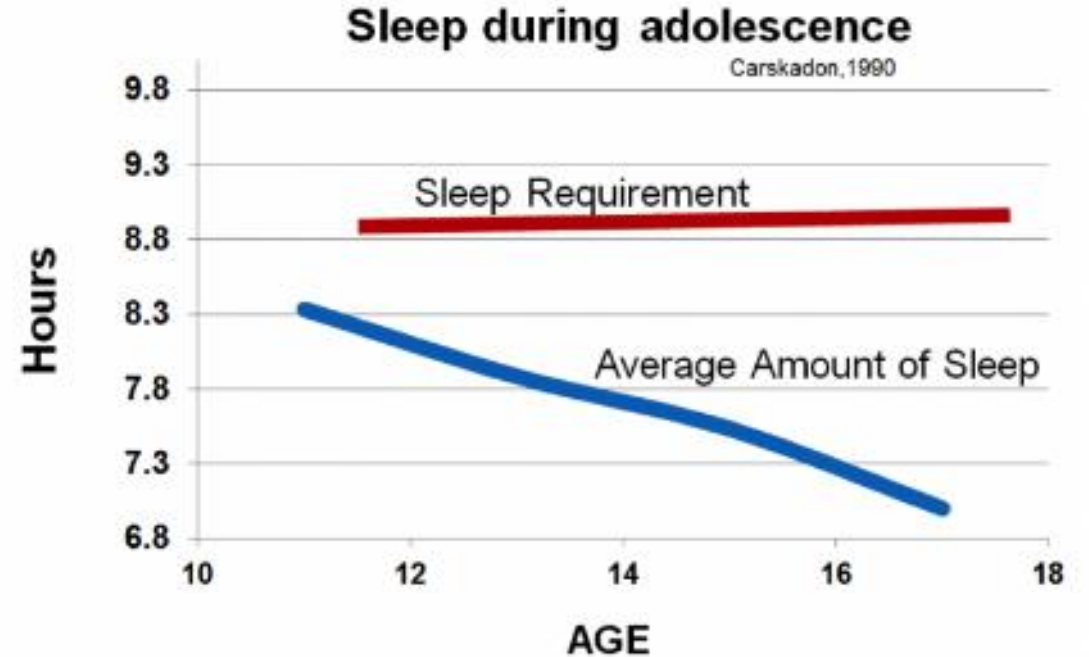


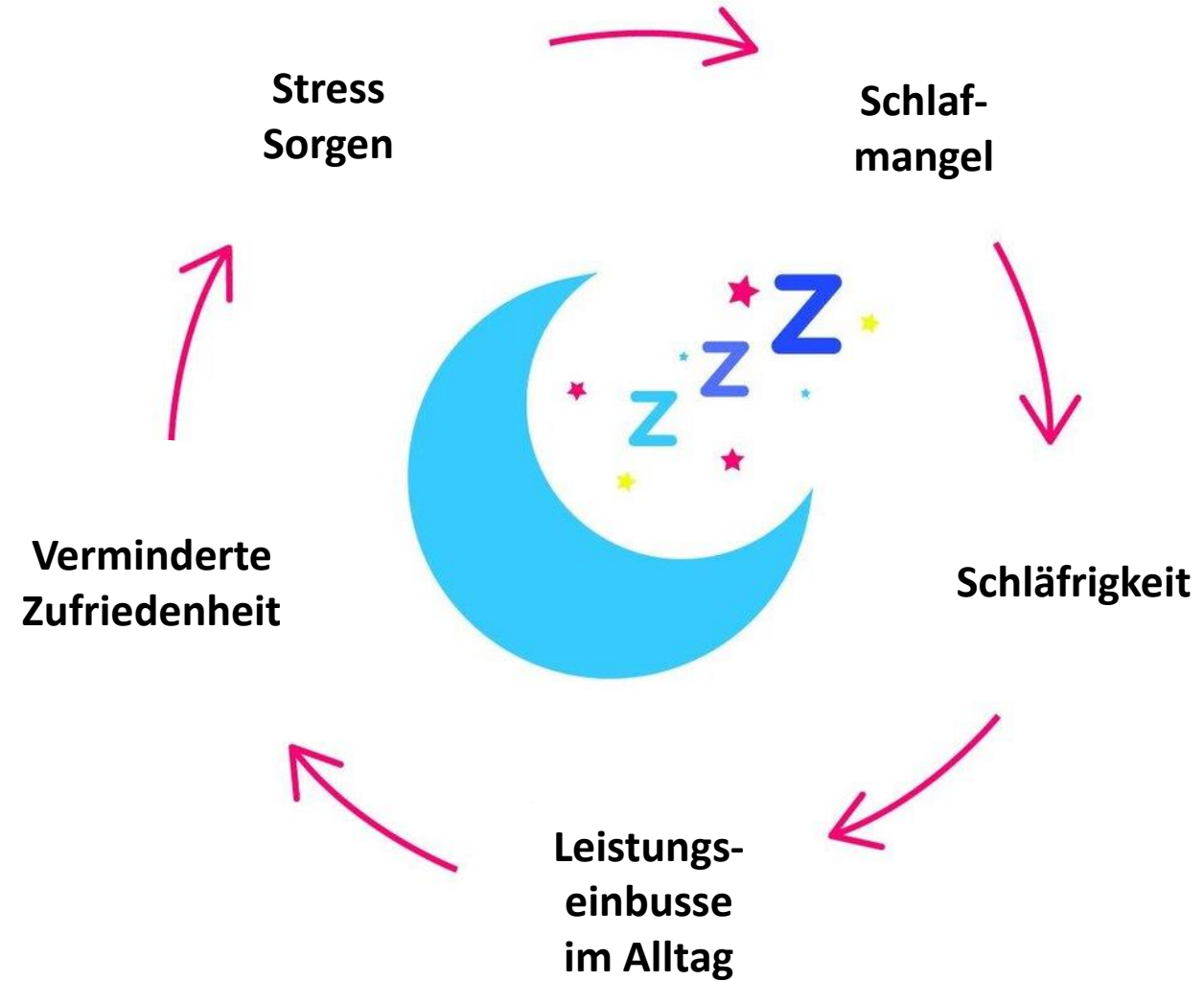
Its Official - 58% Of Children Are Not Getting Enough Sleep

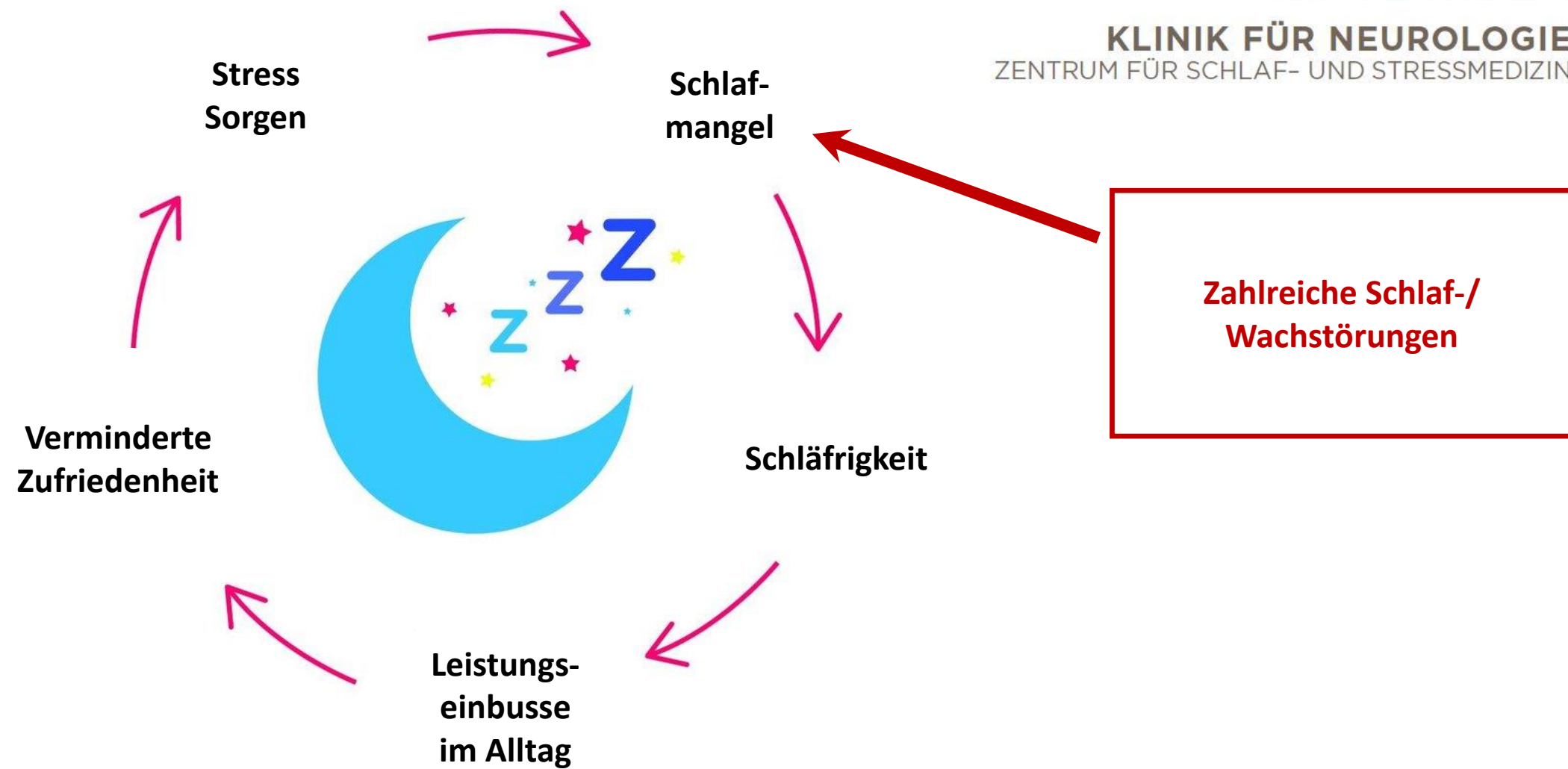
These children are at a greater risk of experiencing mental health issues.
Even mild sleep deprivation can result in the following increases:

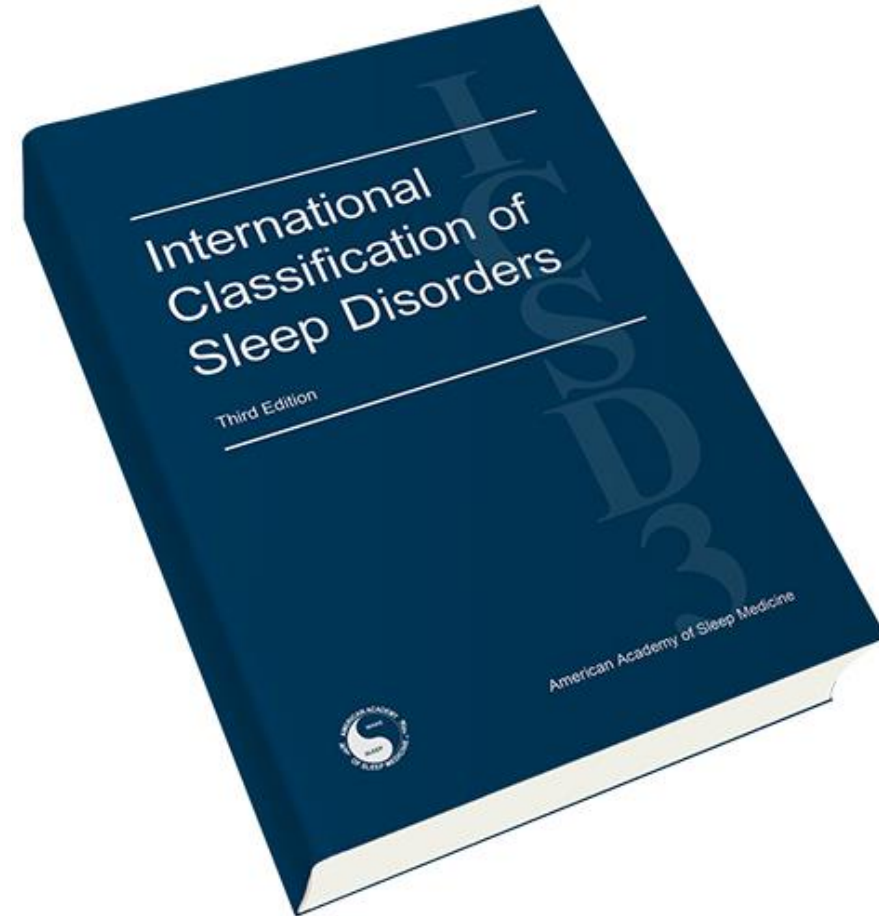
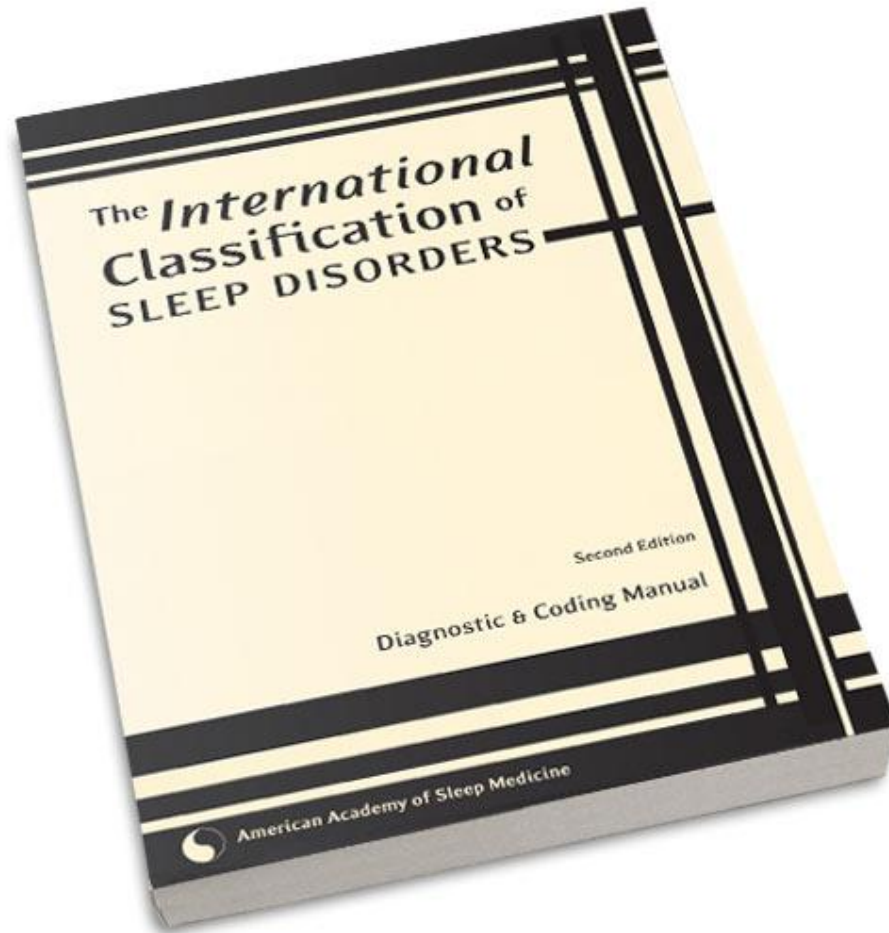


Gesundes und starkes Gehirn fürs Leben - 8. November 2022









I. Insomnie

I. INSOMNIA

ICSD-2

1. Adjustment Insomnia (*Acute Insomnia*)
2. Psychophysiological Insomnia
3. Paradoxical Insomnia
4. Idiopathic Insomnia
5. Insomnia Due to Mental Disorder
6. Inadequate Sleep Hygiene.....
7. Behavioral Insomnia of Childhood
8. Insomnia Due to Drug or Substance.....
9. Insomnia Due to Medical Condition
10. Insomnia Not Due to Substance or Known Physiological Condition,
Unspecified (*Nonorganic Insomnia, NOS*)
11. Physiological (*Organic*) Insomnia, Unspecified

Insomnia

ICSD-3

- Chronic Insomnia Disorder
- Short-Term Insomnia Disorder.....
- Other Insomnia Disorder

Isolated Symptoms and Normal Variants

- Excessive Time in Bed
- Short Sleeper.....

II. Schlafbezogene Atmungsstörungen

Sleep Related Breathing Disorders		ICSD-3
Obstructive Sleep Apnea Disorders		
Obstructive Sleep Apnea, Adult		
Obstructive Sleep Apnea, Pediatric		
Central Sleep Apnea Syndromes		
Central Sleep Apnea with Cheyne-Stokes Breathing		
Central Apnea Due to a Medical Disorder without Cheyne-Stokes Breathing.....		
Central Sleep Apnea Due to High Altitude Periodic Breathing ..		
Central Sleep Apnea Due to a Medication or Substance		
Primary Central Sleep Apnea		
Primary Central Sleep Apnea of Infancy.....		
Primary Central Sleep Apnea of Prematurity.....		
Treatment-Emergent Central Sleep Apnea		
Sleep Related Hypoventilation Disorders		
Obesity Hypoventilation Syndrome		
Congenital Central Alveolar Hypoventilation Syndrome.....		
Late-Onset Central Hypoventilation with Hypothalamic Dysfunction..		
Idiopathic Central Alveolar Hypoventilation		
Sleep Related Hypoventilation Due to a Medication or Substance		
Sleep Related Hypoventilation Due to a Medical Disorder.....		
Sleep Related Hypoxemia Disorder		
Sleep Related Hypoxemia		
Isolated Symptoms and Normal Variants		
Snoring		
Catathrenia		

III. Zentrale Störungen der Tagesschläfrigkeit (Hypersomnolenz)

Central Disorders of Hypersomnolence

- Narcolepsy Type 1
- Narcolepsy Type 2
- Idiopathic Hypersomnia
- Kleine-Levin Syndrome
- Hypersomnia Due to a Medical Disorder
- Hypersomnia Due to a Medication or Substance
- Hypersomnia Associated with a Psychiatric Disorder
- Insufficient Sleep Syndrome

- Isolated Symptoms and Normal Variants**
- Long Sleeper

IV. Störungen des zirkadianen (Schlaf-)Rhythmus

Circadian Rhythm Sleep-Wake Disorders

- Delayed Sleep-Wake Phase Disorder
- Advanced Sleep-Wake Phase Disorder
- Irregular Sleep-Wake Rhythm Disorder.....
- Non-24-Hour Sleep-Wake Rhythm Disorder
- Shift Work Disorder
- Jet Lag Disorder
- Circadian Sleep-Wake Disorder Not Otherwise Specified (NOS)

V. Parasomnien

NREM-Related Parasomnias	ICSD-3
Disorders of Arousal (From NREM Sleep).....	
Confusional Arousals.....	
Sleepwalking	
Sleep Terrors	
Sleep Related Eating Disorder	
REM-Related Parasomnias	
REM Sleep Behavior Disorder.....	
Recurrent Isolated Sleep Paralysis	
Nightmare Disorder	
Other Parasomnias	
Exploding Head Syndrome.....	
Sleep Related Hallucinations.....	
Sleep Enuresis	
Parasomnia Due to a Medical Disorder.....	
Parasomnia Due to a Medication or Substance	
Parasomnia, Unspecified	
Isolated Symptoms and Normal Variants	
Sleep Talking	

VI. Schlafbezogene Bewegungsstörungen

Restless Legs Syndrome.....	.....
Periodic Limb Movement Disorder .....	.....
Sleep Related Leg Cramps .....	.....
Sleep Related Bruxism.....	.....
Sleep Related Rhythmic Movement Disorder.....	.....
Benign Sleep Myoclonus of Infancy .....	.....
Propriospinal Myoclonus at Sleep Onset.....	.....
Sleep Related Movement Disorder Due to a Medical Disorder .....	.....
Sleep Related Movement Disorder Due to a Medication or Substance .....	.....
Sleep Related Movement Disorder, Unspecified .....	.....

Isolated Symptoms and Normal Variants

Excessive Fragmentary Myoclonus .....	.....
Hypnagogic Foot Tremor and Alternating Leg Muscle Activation .....	.....
Sleep Starts (Hypnic Jerks).....	.....

VII. Schlaf-assoziierte medizinische und neurologische Krankheiten

Sleep Related Medical and Neurological Disorders ICSD-3

- Fatal Familial Insomnia.....
- Sleep Related Epilepsy
- Sleep Related Headaches.....
- Sleep Related Laryngospasm
- Sleep Related Gastroesophageal Reflux
- Sleep Related Myocardial Ischemia

Subjektive Tagesschläfrigkeit

Epworth Sleepiness Scale (pathologisch >10)

Sitzen und Lesen	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Fernsehen	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Sitzen an einem öffentlichen Ort (z.B. Theater, Sitzung, Vortrag)	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Als Mitfahrer im Auto während 1 Stunde ohne Halt	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Abliegen um auszuruhen am Nachmittag, wenn es die Umstände erlauben	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Sitzen und mit jemandem sprechen	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Ruhig sitzen nach Mittagessen ohne Alko- hol	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Im Auto beim Stop an einer Verkehrsampel während einigen Minuten	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3

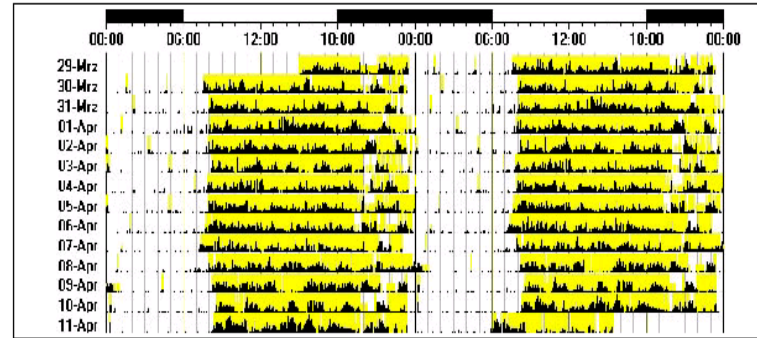
Epworth Sleepiness Score:

/24

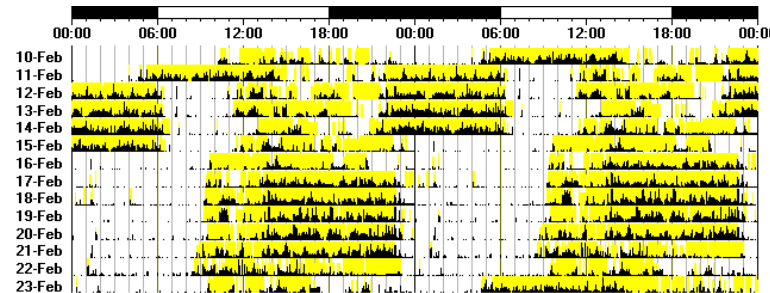
Schmitt, Schweiz Med Wschr 2000



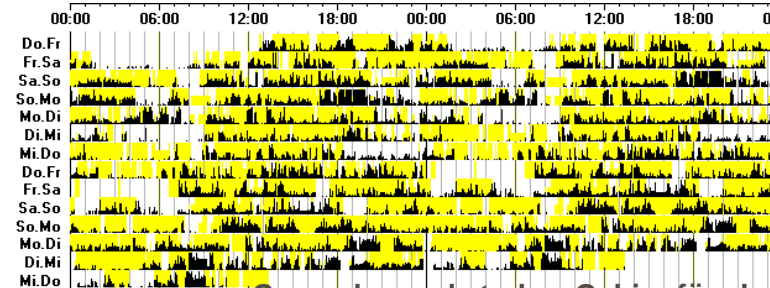
Aktigraphie



Gesunder



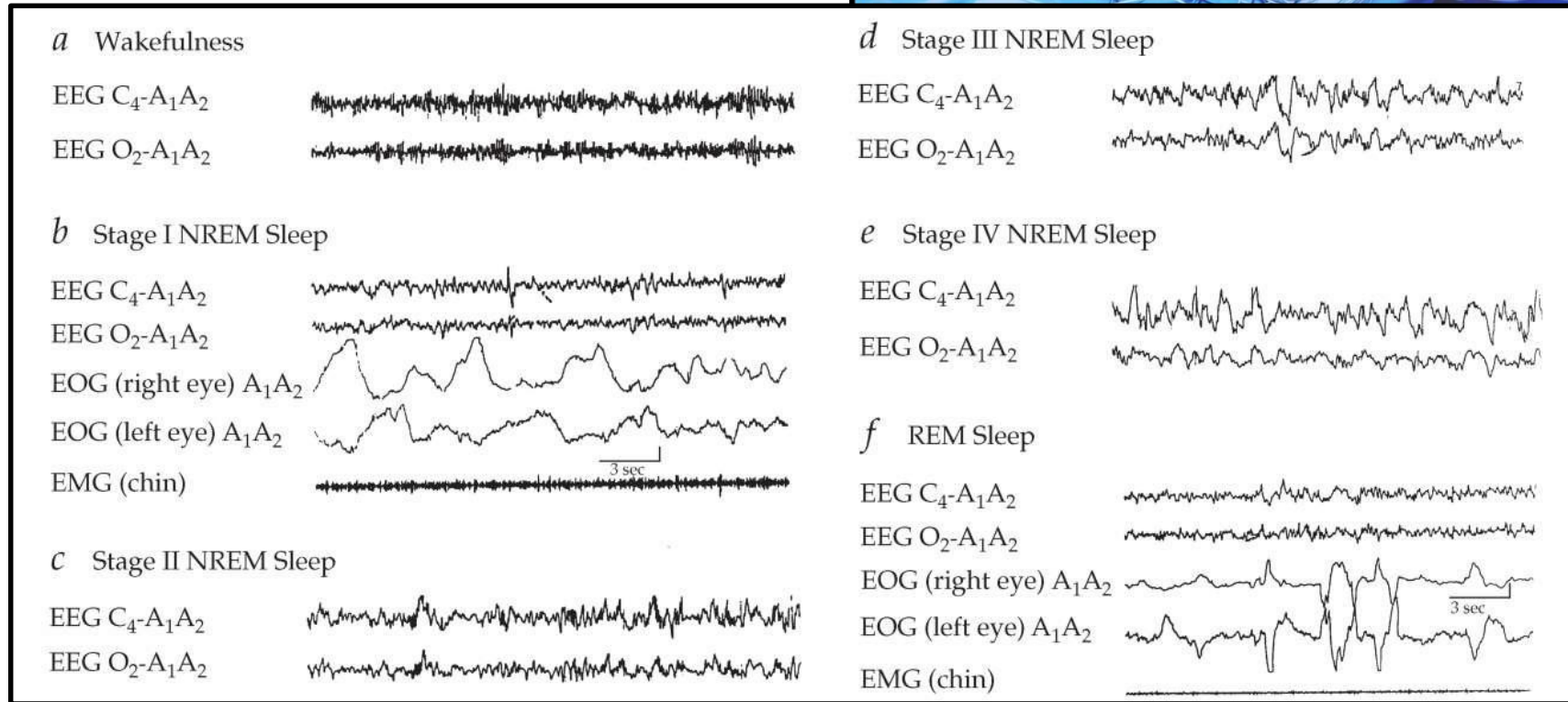
Schichtarbeit



Narkolepsie

Video-Polysomnography

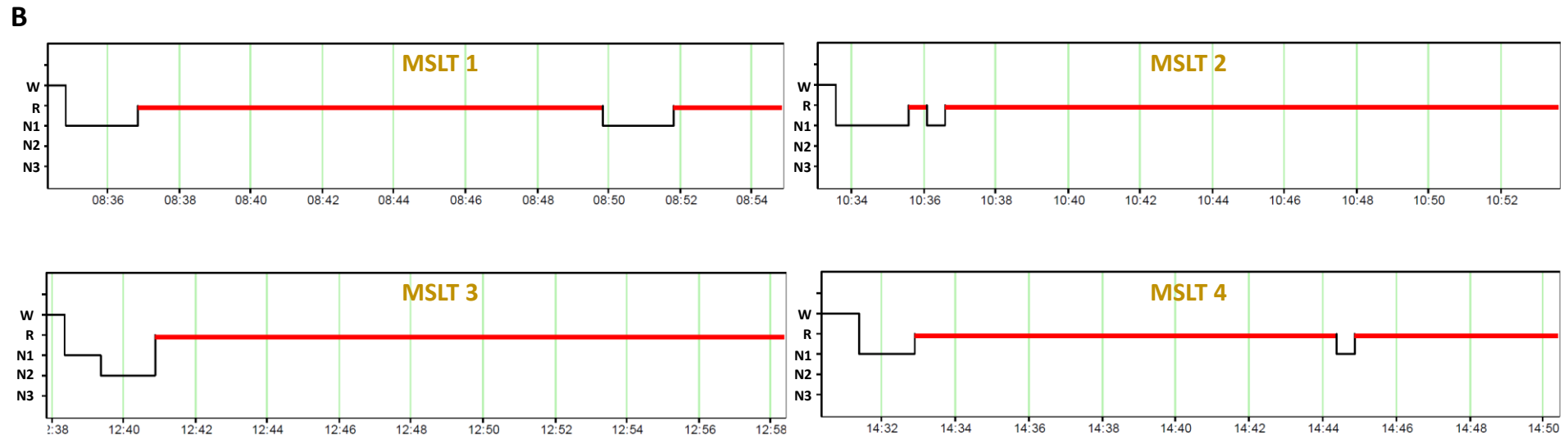
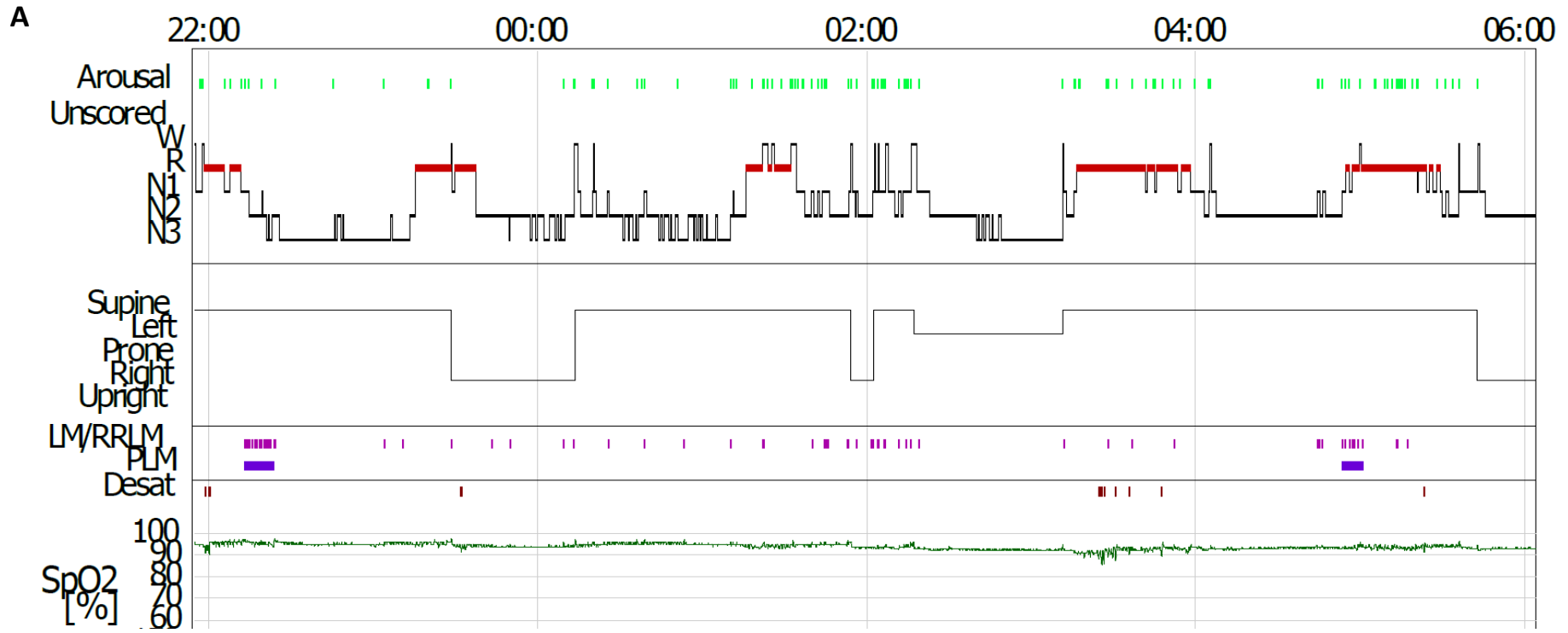
- Video
- Electroencephalography (EEG)
- **Electrooculography (EOG)**
- Electromyography (EMG)
- Electrocardiography (ECG)
- Movements of the thoracic wall and of the belly
- Breathing
- Oxygen saturation
- Body position



Objektive Tagesschläfrigkeit

Vigilanztests

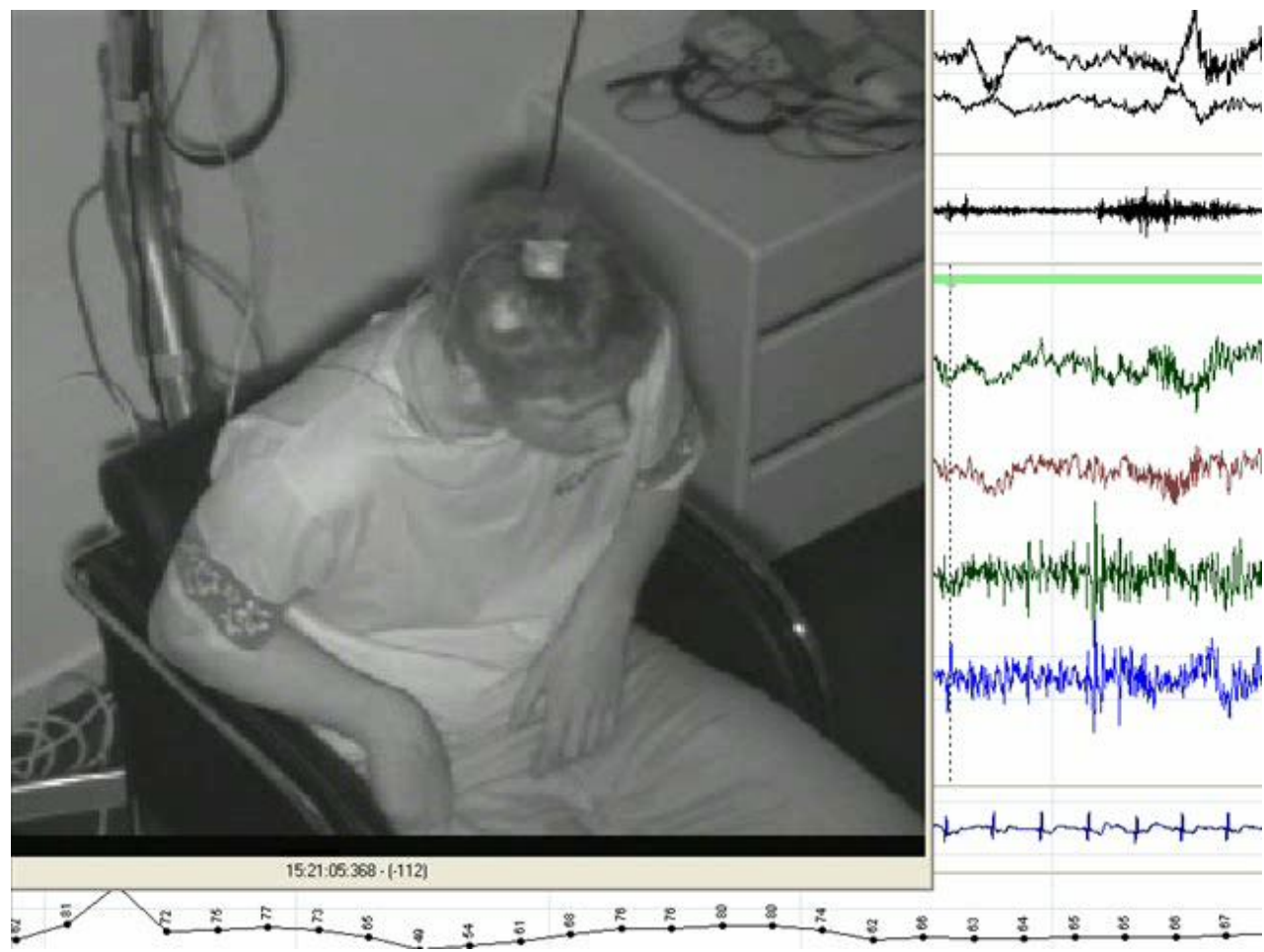






HIRSLANDEN

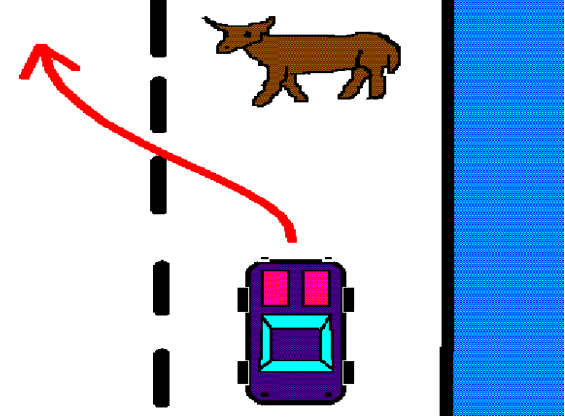
KLINIK FÜR NEUROLOGIE
ZENTRUM FÜR SCHLAF- UND STRESSMEDIZIN



Fahringsimulator



Steer Clear



Vielen Dank für Ihre Aufmerksamkeit !



Auguste Rodin (1840-1917)
Le Sommeil



Albert Anker (1831-1910)
Schlafender Knabe im Heu