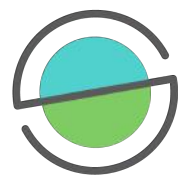


**Providing optimal performance
and sustainable employability
by optimizing the recuperative
power of sleep**



**SLEEPWELL &
STRESSLESS**

**Dr. I. Declercq, MD, Neurologist,
Sleepspecialist**

CONTEXT

The sleep paradox



- Sleep-deprived society vs sleep=hot
 - Increasing scientific evidence of
 - ➔ essential recuperative role of sleep
- VS**
- ➔ incapacitating effect of sleep deprivation

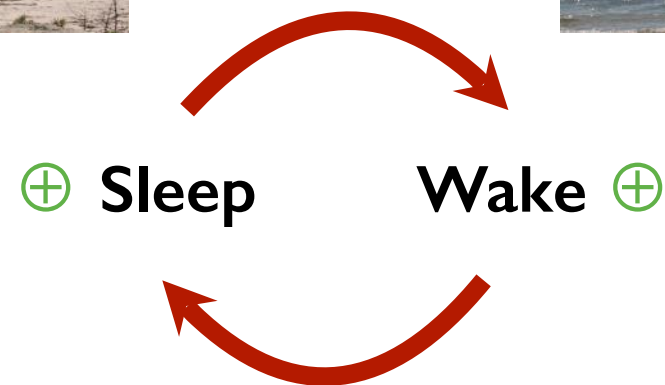




- 1. What is sleep? (+ Chronotype)**
- 2. Why does sleep matter?**
- 3. Where does it go wrong?**
- 4. What's to do?**



I. WHAT is sleep ?

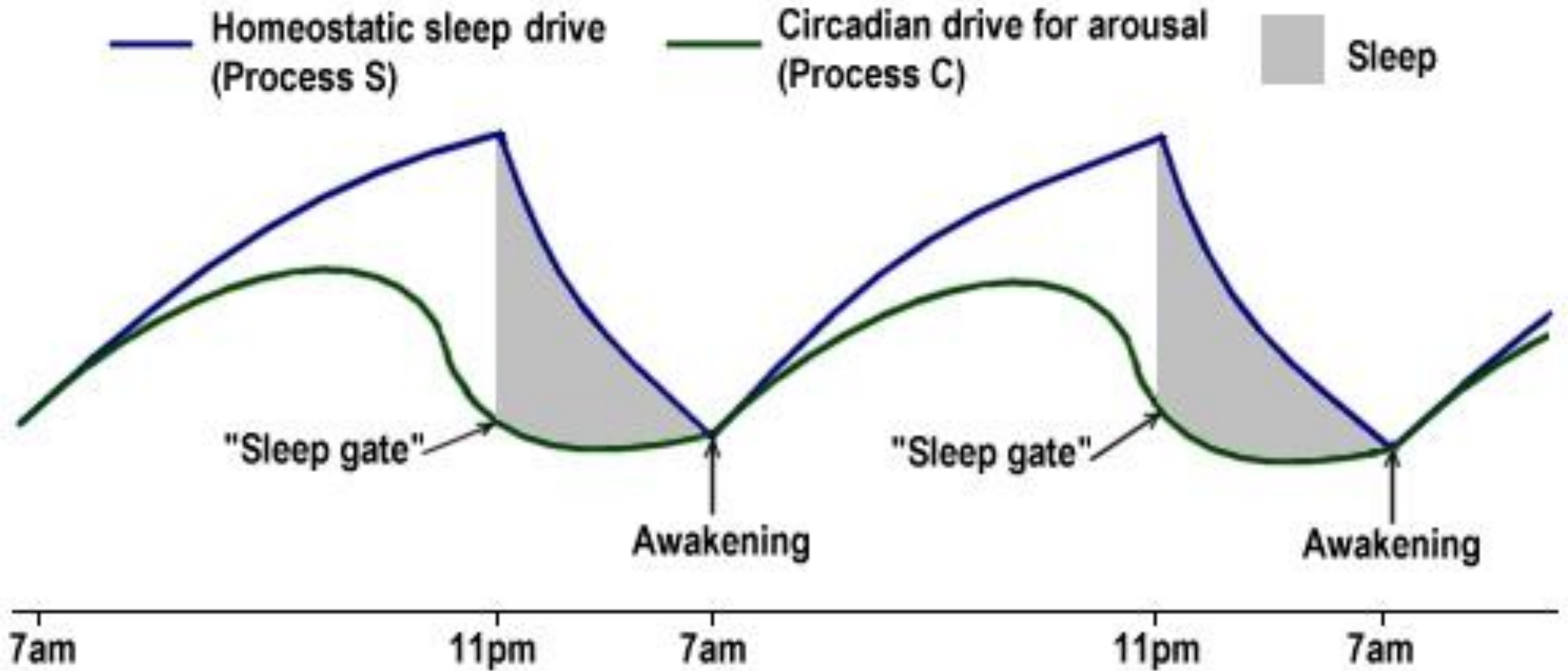


24h cycling continuum

Sleep and Wake inseparable



INTERNAL PROCESSES



C = driven by internal clock; SCN!

S = energy levels decrease/sleep need increases as a day progresses

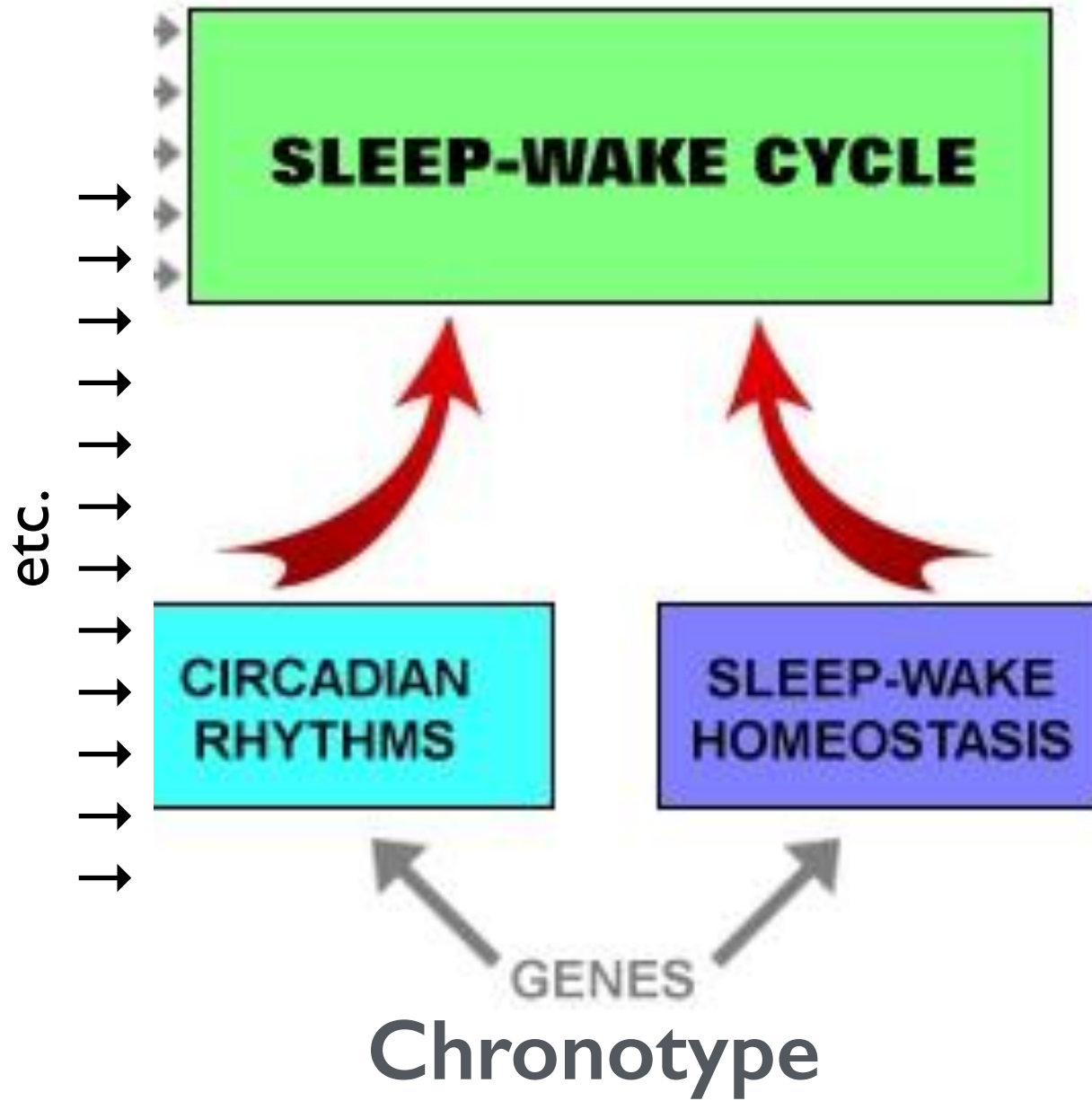
Source: A two process model of sleep regulation. Borbély, A. A Human Neurobiology, Vol 1(3), Oct 1982, 195-204.
S. Daan, 1984

Achermann P. The two-process model of sleep regulation revisited. Aviat Space Environ Med 2004; 75:(3, Suppl) A37-43.



EXTERNAL DRIVERS

light, food, work/social, stress, temperature, etc.



3 DRIVERS:

1. C Process:
timing; internal clock
2. S Process:
Sleep pressure =
homeostatic needs

} internal

3. Social time

} external



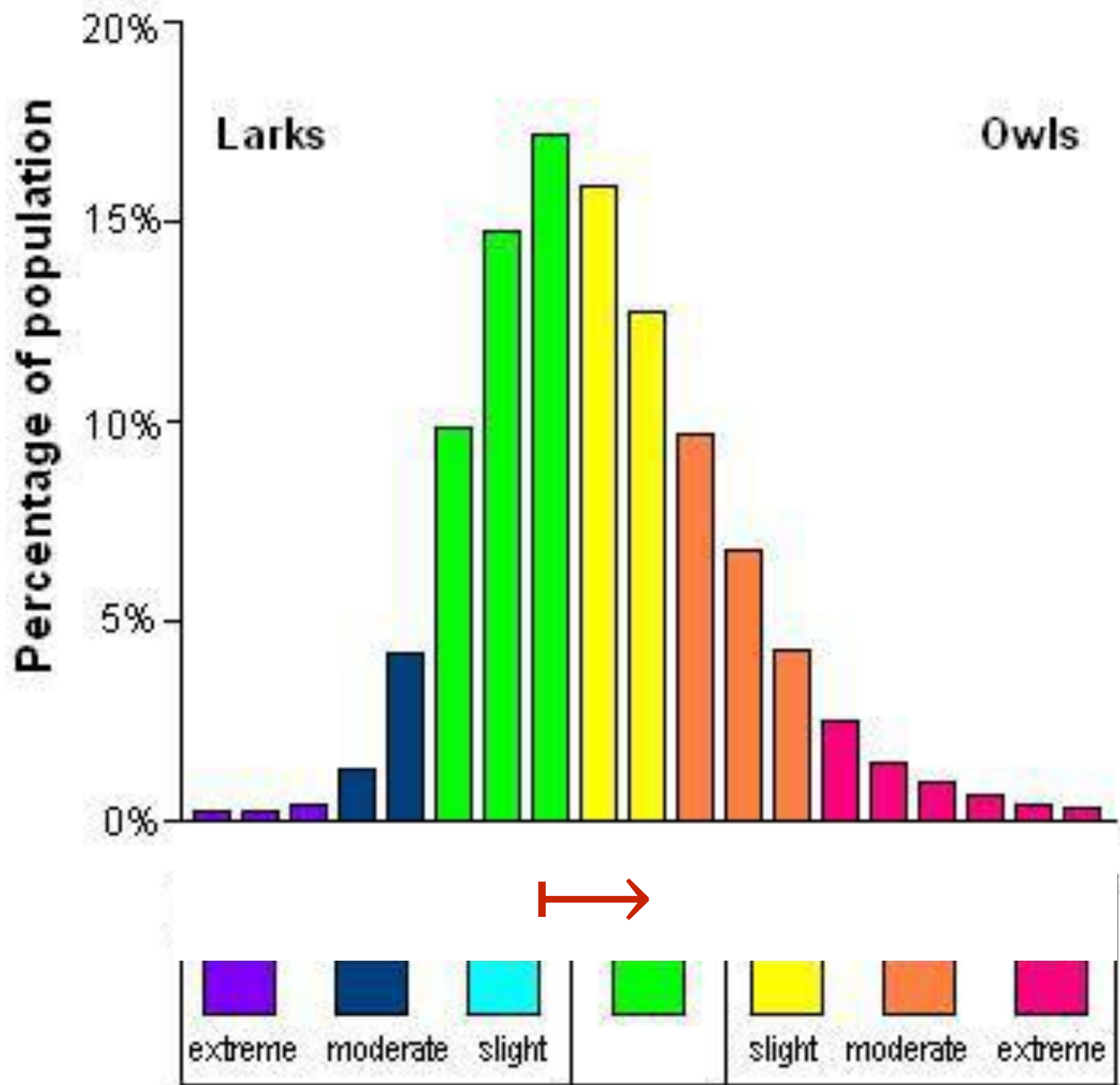
Chronotype



- Sleep-activity timing preference
- Genetically determined!!

- Differences in decision making tasks, behavior, alertness fluctuations through the day....





2. WHY does sleep matter??

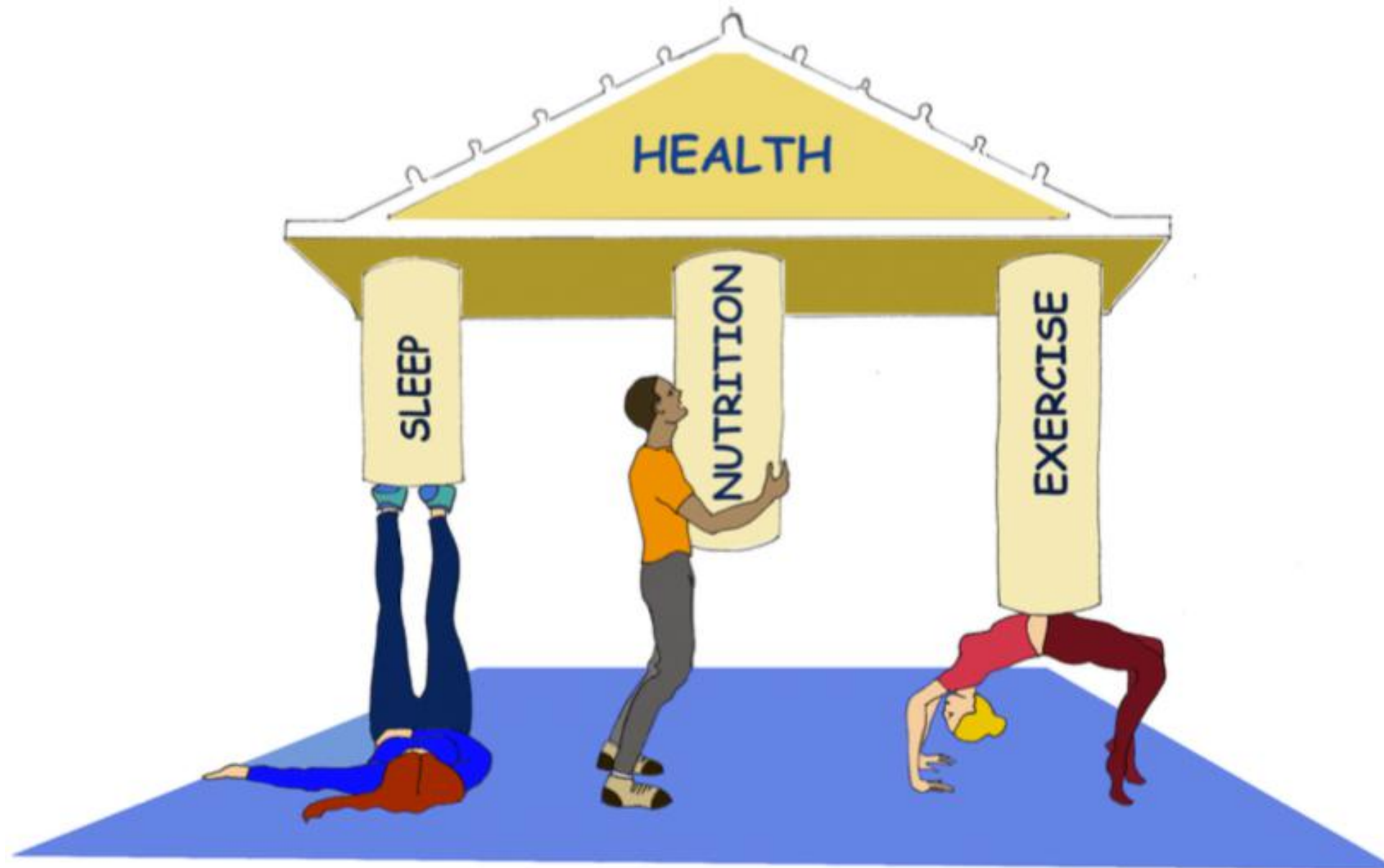
- ✓ memory - brain plasticity
- ✓ emotional regulation
- ✓ immune system
- ✓ metabolic balance

=

Essential energizer
Repair and rejuvenate



Sleep = third pillar of health



RECUPERATIVE SLEEP

=

A crucial key to optimal performance, vitality, memory, creativity, coping and resilience



What is recuperative sleep?

- 1. Quality
 - 2. Quantity
 - 3. Timing
- } =  to recuperative sleep

3 drivers: Internal clock (C), Sleep needs (S), social/
external





➔ essential recuperative role of sleep

VS

➔ incapacitating effect of sleep deprivation



When sleep is lacking



**From an sustainable
employability perspective**



1 out of 3 adults is sleep deprived

Cost of lack of sleep

- 1967 \$/employee/year
- 90 billion \$/year (= global)
- 88% of indirect cost = for Companies (France)

Consequences on work performance

↑ 40% time needed
↑ Absenteeism
↑ Health problems

↓ Innovation
↓ Memory, attention
↓ Ethical behavior

Source:

Harvard Medical School's 2013 Corporate Health Summit.

J Occup Environ Med. 2010 Jan;52(1):91-8.

Sleep. 2006 Feb;29(2):179-84.



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3. **WHERE** does it go wrong?



Mis-balance and -alignment between:

1. Quality
 2. Quantity
 3. Timing
- } =  to recuperative sleep

3 drivers: Internal clock (C), Sleep needs (S), social/
external

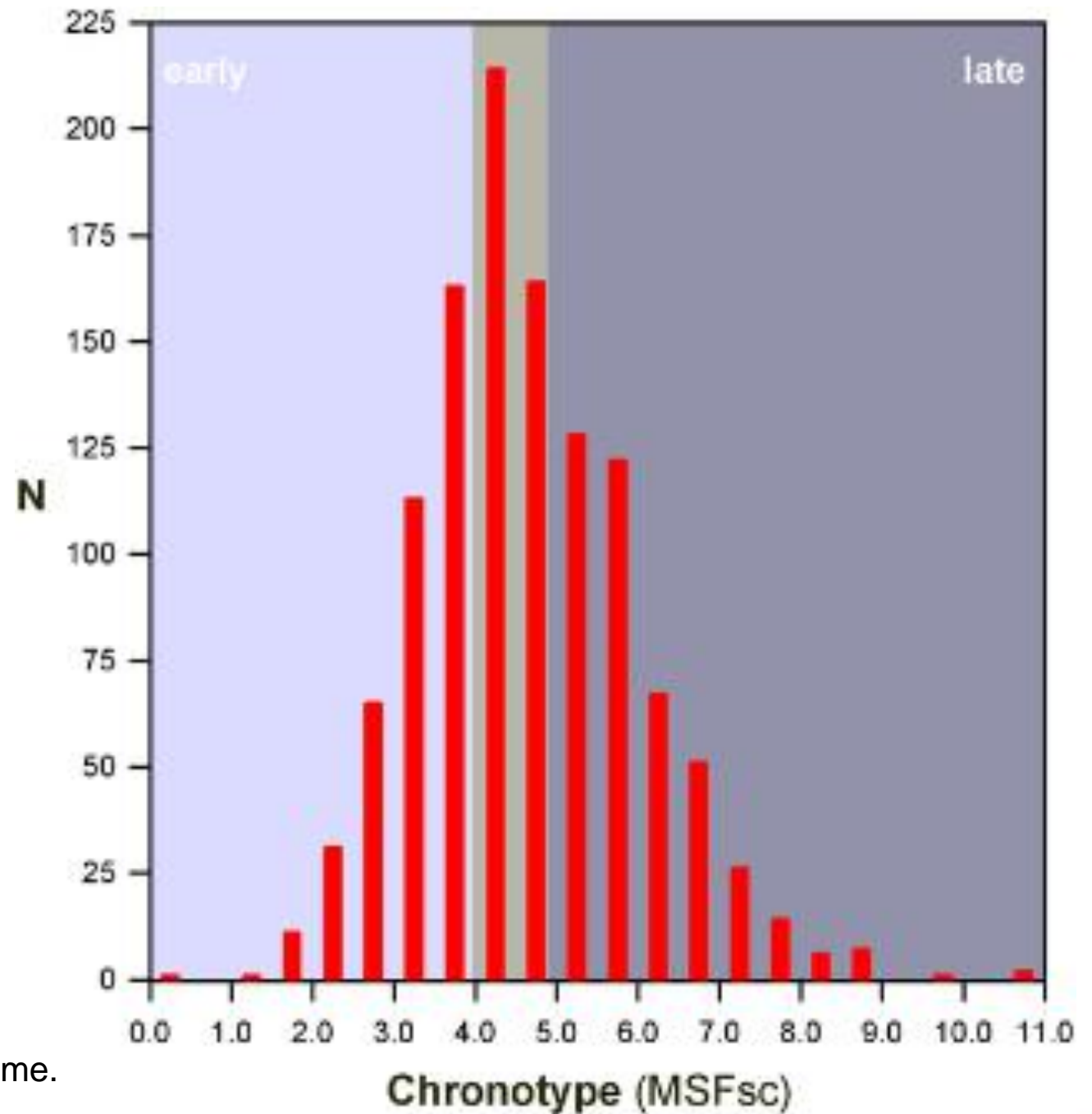


**Chronotype:
The early bird catches the
worm?**



Mis-Alignment of internal and social time

Social Jet Lag!



Source: [Chronobiol Int. 2006;23\(1-2\):497-509.](#)
Social jetlag: misalignment of biological and social time.
Witmann M, Dinich J, Marrow W, Roenneberg T



Social Jet Lag

- Societal organization misaligned with majority of chronotypes
- **Misalignment** between internal (circadian) and external (social) time
- Discrepancy between sleep on work and free days
- Sleep debt on work days, compensate on free days: $S \uparrow$
- Also: **Light stimulation** \rightarrow circadian disruption (C)

\Rightarrow Sleep deprivation!!!



Social Jet Lag

Alarm going off at 7 am
for a late bird = as 4.30
am for an early bird



+/- 30% of
working
population



4. So what is to do?

**How to obtain this recuperative
sleep for sustainable
performance?**

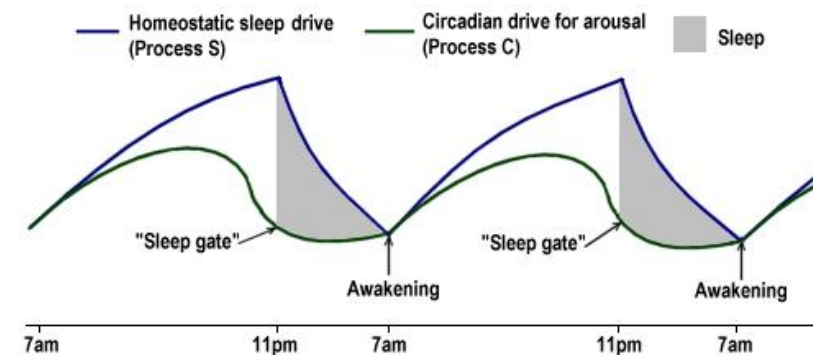


Balance and -alignment between:

1. Quality
2. Quantity
3. Timing



=  to recuperative sleep



3 drivers: Internal clock (C), Sleep needs (S), social/
external



Keys to recuperative sleep

- **Quantity:** 7-9h/night
- **Quality:** Balance between NREM - REM
- **Timing:** Balance between C and S
- **Alignment** of social and internal time



What is to do?

Work schedules should be designed to

- incorporate a sufficient time interval after every work period to promote sleep recovery
- optimize for safety AND productivity
- adjust to **Chronotype**
- respect balance between C and S



How?



Audit workplace for:

- individual chronotyping (MCTQ, MST, MTN)
- food habits and -timing
- light exposure
- work schedules

New Ways of Working (New WOW)



NEWWOW[®]
New Ways of Working



How?

- Create awareness by **informative seminars**
- Organise **workshops intra-muros** to create knowledge, acknowledgment, change



Take home

- Sleep is a crucial key to vitality and optimal performance; third pillar of health!
- Sleep is a biological process, interacting with external factors and physiological needs; 3 drivers
- Quality, Quantity, Timing of Sleep-Wake Cycle are the key to recuperative sleep
- Importance of alignment of internal processes with external factors



Take home

- Sleep paradox
- 24/7 society : sleep deprivation
- Early bird based society: social jet lag, sleep debt
- Solutions do exist and are likely to lead to sustainable employability, improved performance and well-being



Take home

- Every small step is a winning one
- Audits are cost-effective and have preventive value
- New WOW already being implemented
- Crucial importance of creating awareness on the high prevalence and consequences of social jet lag and of sleep deprivation in general



?The truth?

The early bird catches the worm

But the night owl gets the rat



Contact



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