

Optimizing sleep

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Sleep

Importance, challenges and recommendations on sleep hygiene to optimize performance and recovery.

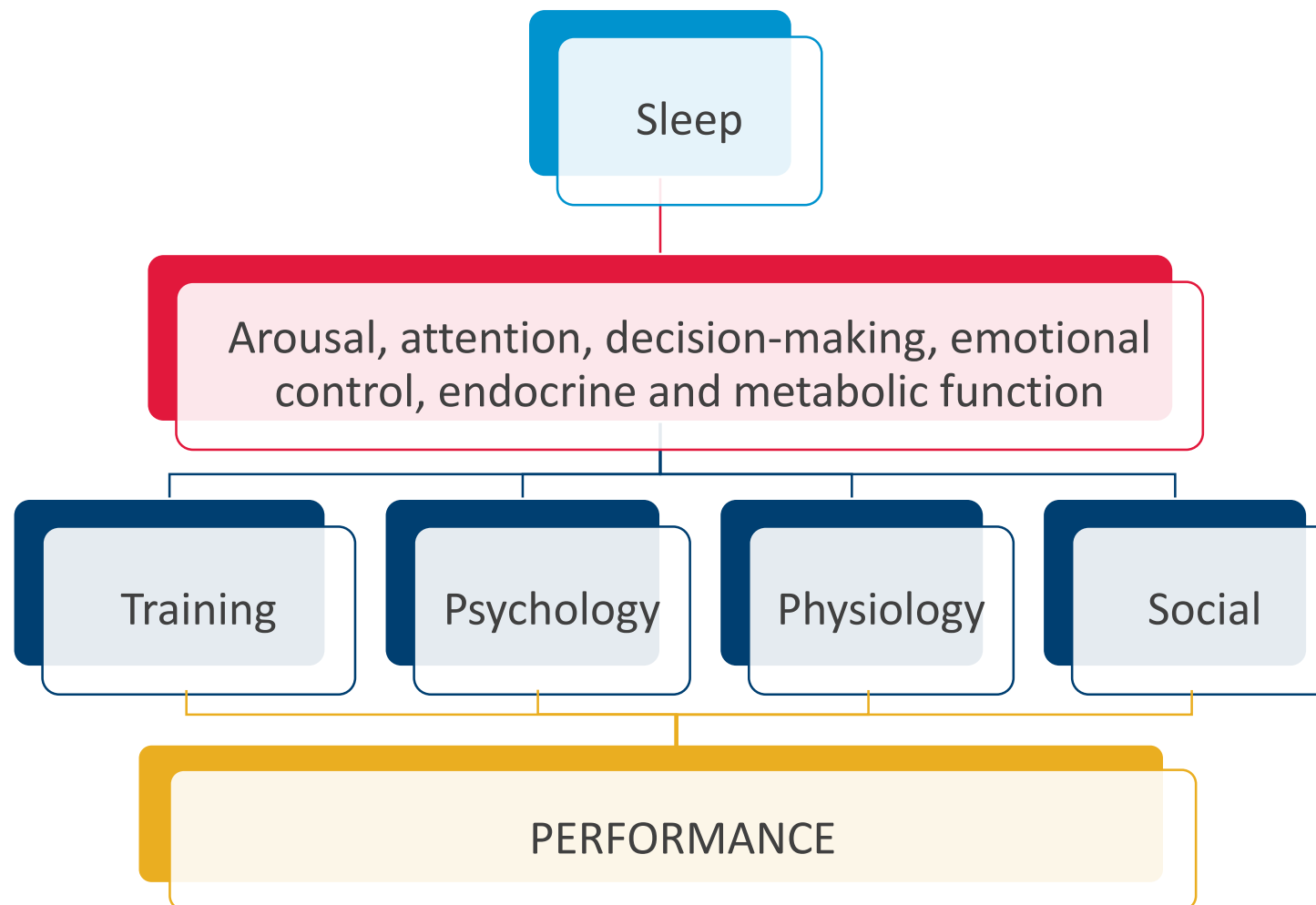


How is your sleep?



1. On a scale of 0 to 10, how would you rate your sleep hygiene (quantity, quality, sleep habits)?
2. How many hours did you sleep last night?
 - a) Would you say it's higher or lower than your average night? How many hours a night do you usually sleep?
3. Regarding sleep hygiene, what is the main challenge/obstacle that prevents you from maintaining good habits?

Relationships between sleep and performance



Which is FALSE?



1. A lack of sleep is associate to a reduction in energetic reserves resynthesis
2. Few athletes experience poor sleep quality
3. Sleeping less than 9 hours a night is associated to a higher risk of injury or illness

Athletes = Poor sleepers



By @YLMSportScience

Possible causes of poor sleep

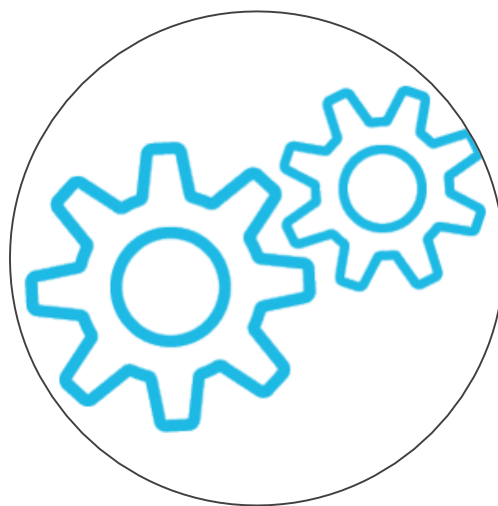


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Key points of good sleep



Quantity



Quality



Regularity/Habits

Quantity



Effects of sleep debt



By @YLMSportScience



1 A reduction in sleep quality and quantity could result in an autonomic nervous system imbalance, simulating symptoms of the overtraining syndrome

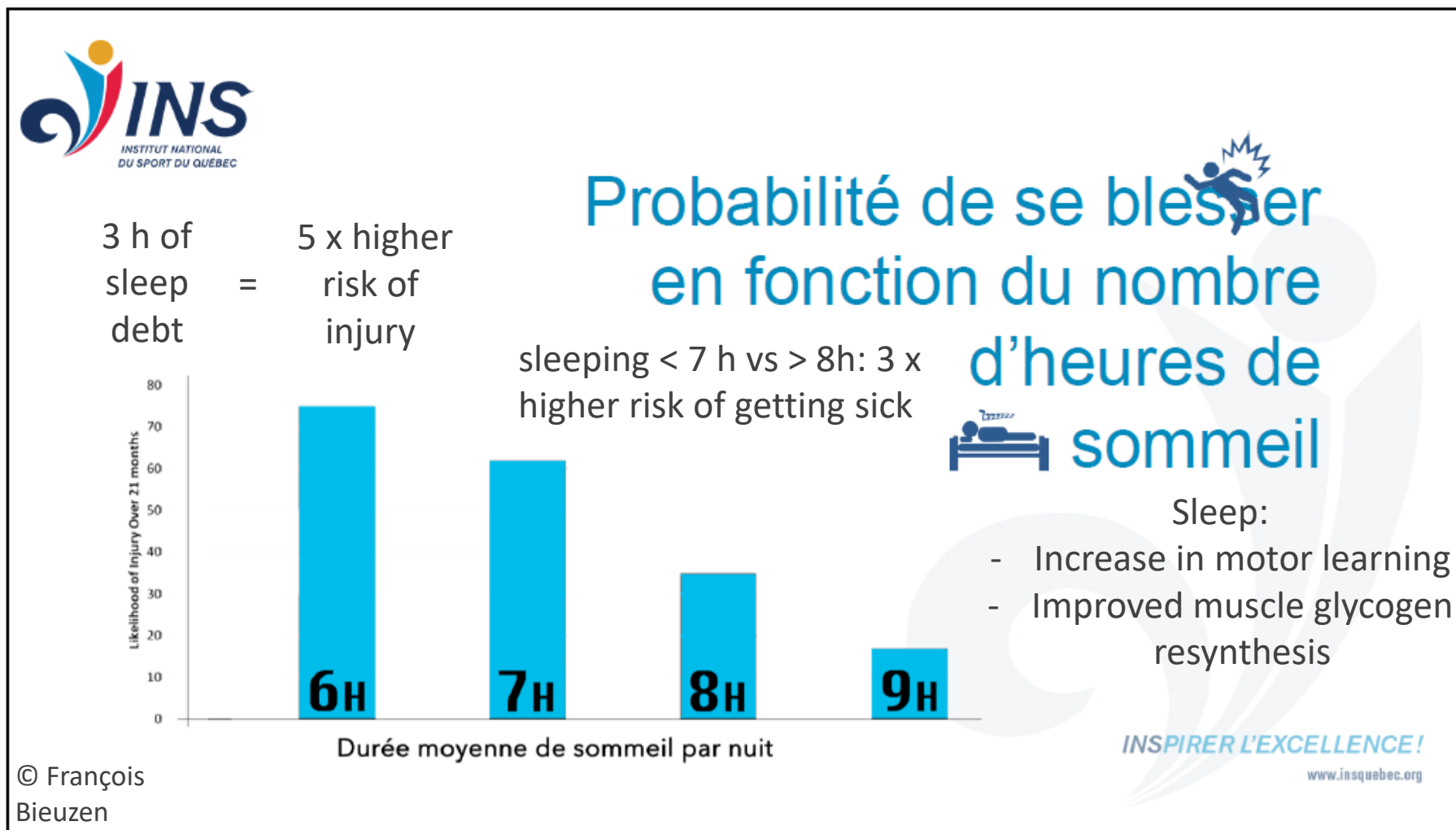


2 Growth hormone, which is fundamental to tissue regeneration and growth is released during phases of deep sleep



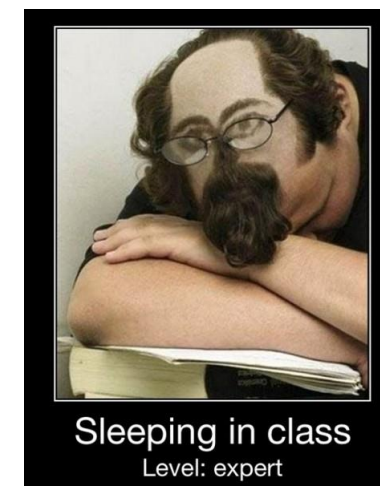
3 1.7 times greater risk of being injured in athletes who sleep <8 hours per night

Sleep and health

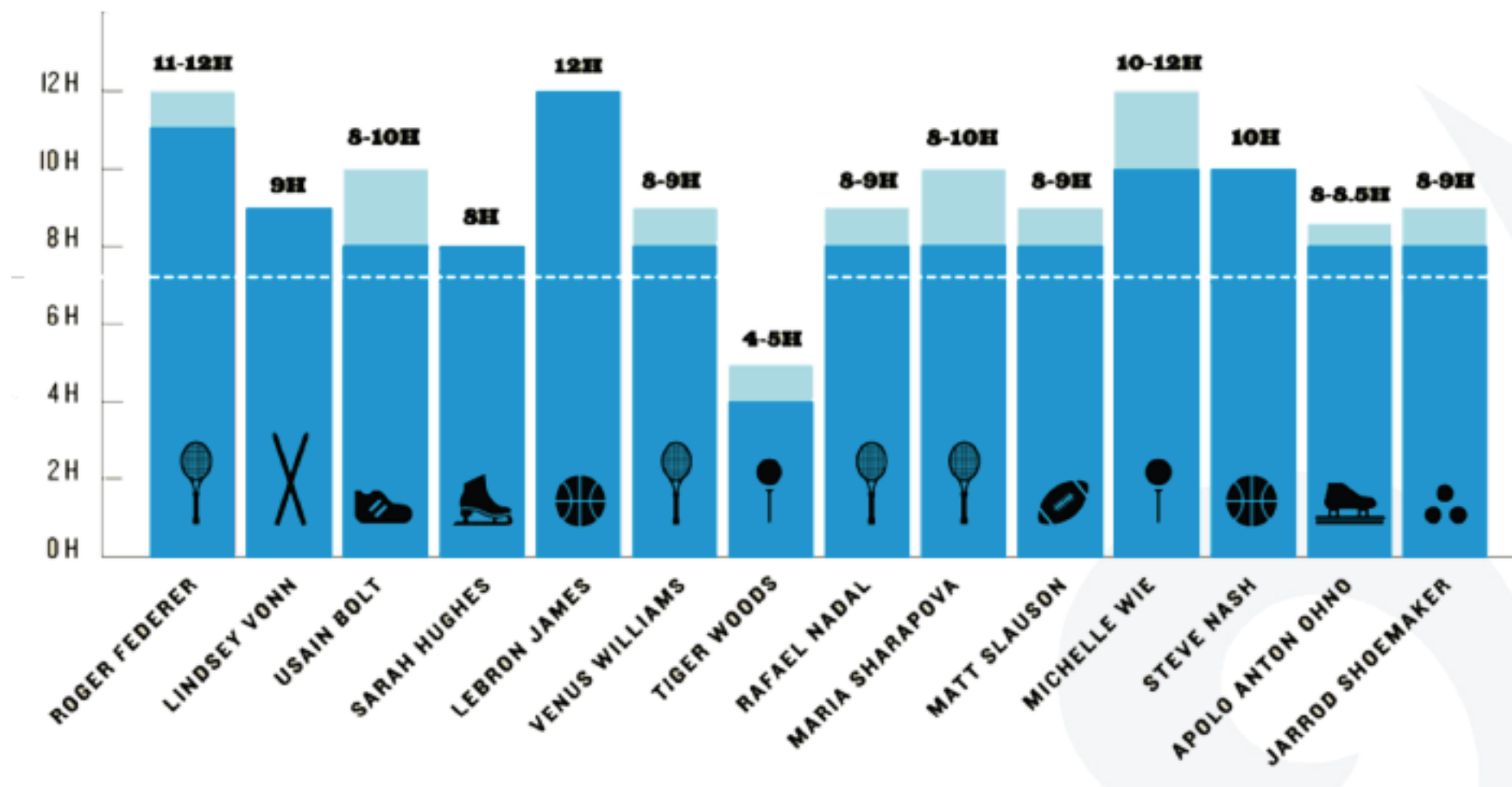


On average, how many hours do pro athletes sleep?

1. 5 to 6 hours
2. 7 to 8 hours
3. 8 to 9 hours
4. More than 9 hours



Pro athletes (2010)



Olympic athletes



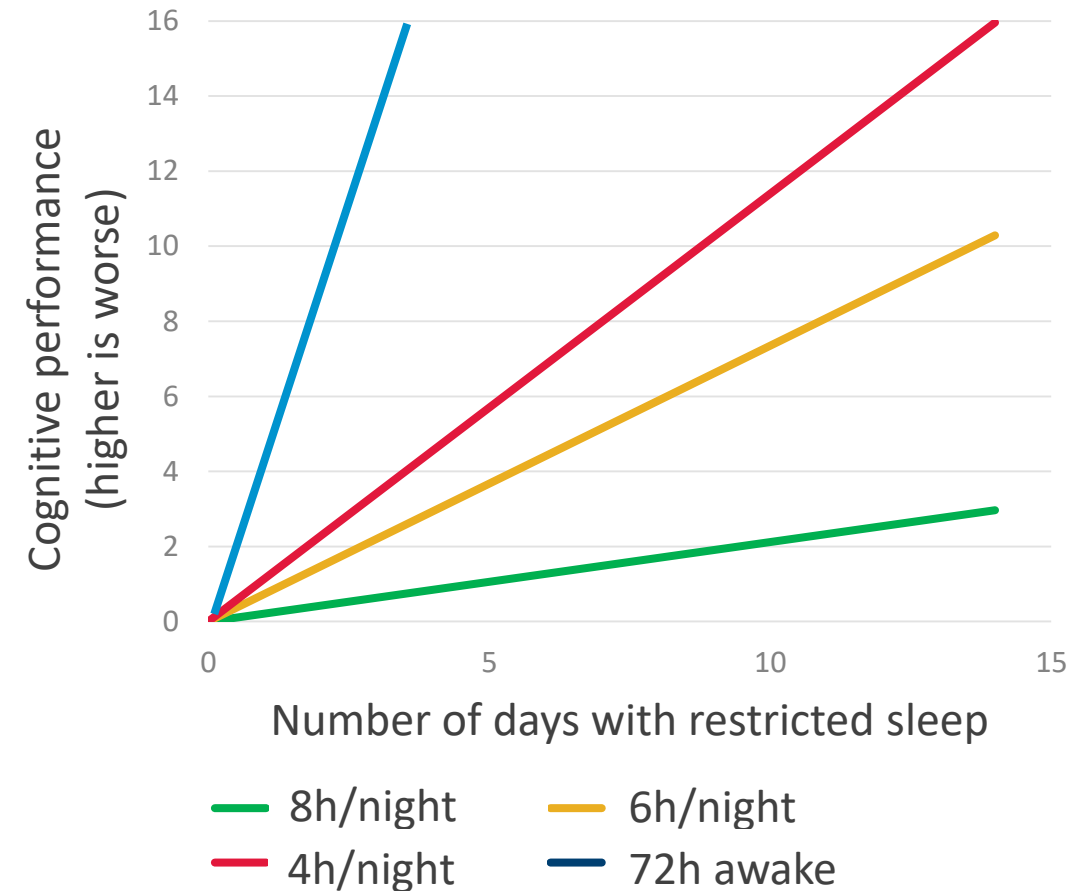
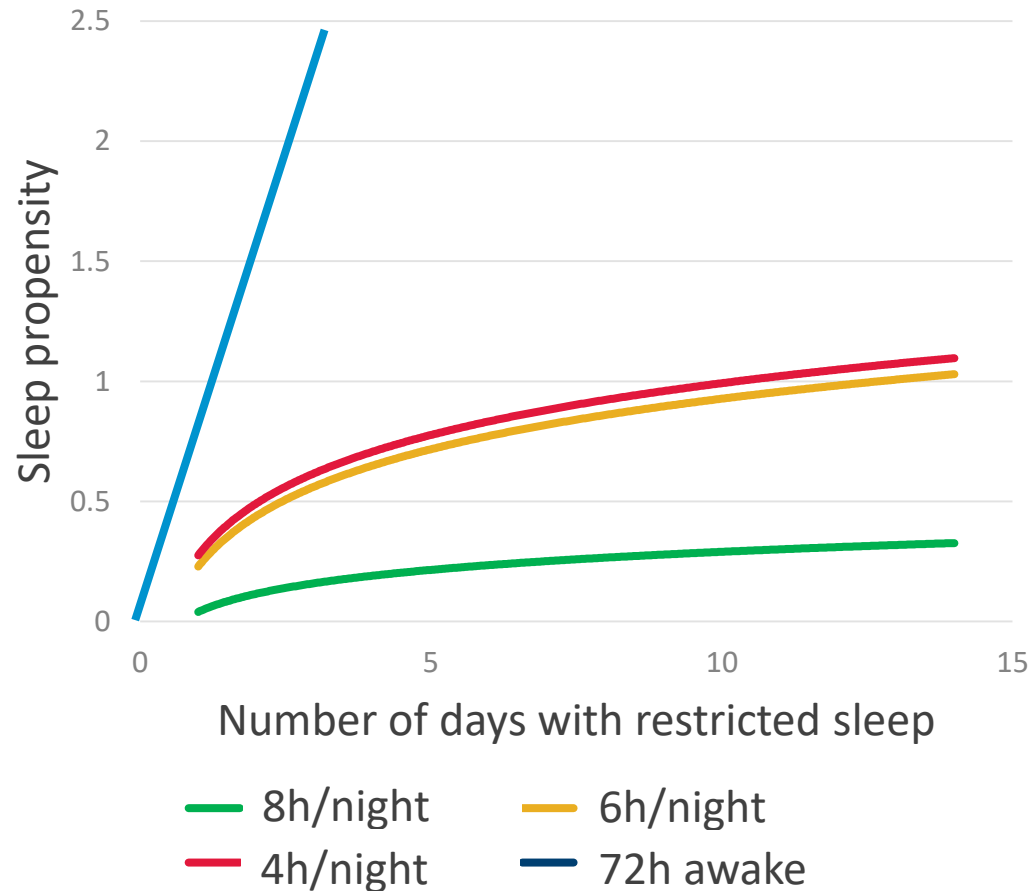
Lastella et al. 2015

- 6.8h of sleep
- Individual athletes (6.5h) < team-sport athletes (7h)

Leeder et al. 2012

- Athletes vs non-athletes : same length of sleep
- Lower sleep efficiency and longer sleep latency in athletes

Dose-response relationship



Van Dongen et al. (2003) *Sleep* 26 (2)

Extending sleep



- Stanford U basketball
- 2-4 weeks: normal sleep
- 5 to 7 weeks: extended sleep
 - In bed 10h per night
- Performance measures after each practice
- PVT 2x per day



	Pre (~ 6.7h/night)	Post (~ 8.5h/night)
Sprint (282 feet)	16.2 ± 0.6	15.5 ± 0.5 *
Free throws (/10)	7.9 ± 1.0	8.8 ± 1.0 *
3-points (/15)	10.2 ± 2.1	11.6 ± 1.5 *
PVTmoy (ms)	310.8 ± 77.1	274.5 ± 42.0 *

Mah et al. (2011) Sleep 34 (7): 943-50

Extending vs restricting sleep

	J-2	J-1	D1	D2	D3	D4	J+1
	7h	7h	7h	7h	7h	7h	7h
	7h	7h	4.8h	4.8h	4.8h	7h	7h
	7h	7h	8.4h	8.4h	8.4h	7h	7h
			TT	TT	TT	TT	

CONTROL vs EXTENDED
restricted vs control

- Mood and vigilance decreased for **restricted**
- Mood and vigilance improved for **extended**

Store sleep



- +1.5h of sleep for 6 consecutive days
- Time-to-exhaustion test
 - Sleep ++ = +3.9% after 6 days

Power naps

How to nap efficiently

Avoid napping after 4pm

Take a  just before napping to help reawakening

Calm
environnement



20
Min

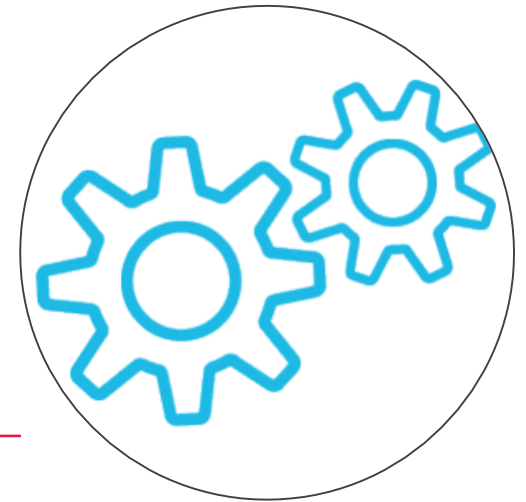
Mettre un 

- ↑ Cognitive and physical performances
- ↑ Mental fatigue
- ↑ Arousal and boosts memory
- ↓ Stress and immune system perturbations
- ↓ Negative impact of poor night sleep

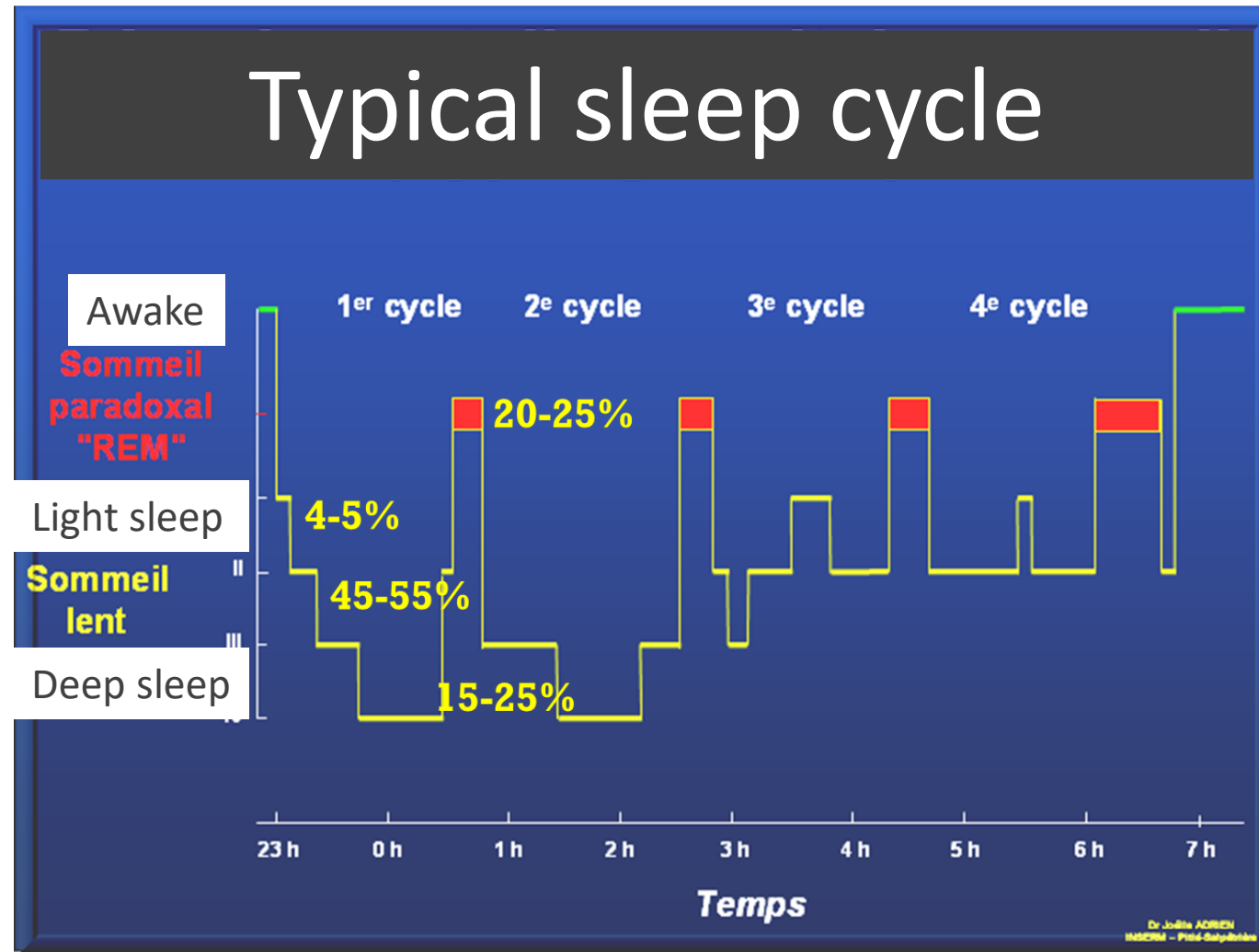
A longer nap can be planned in situation where sleep debt is important, as long as it doesn't hinder the following night



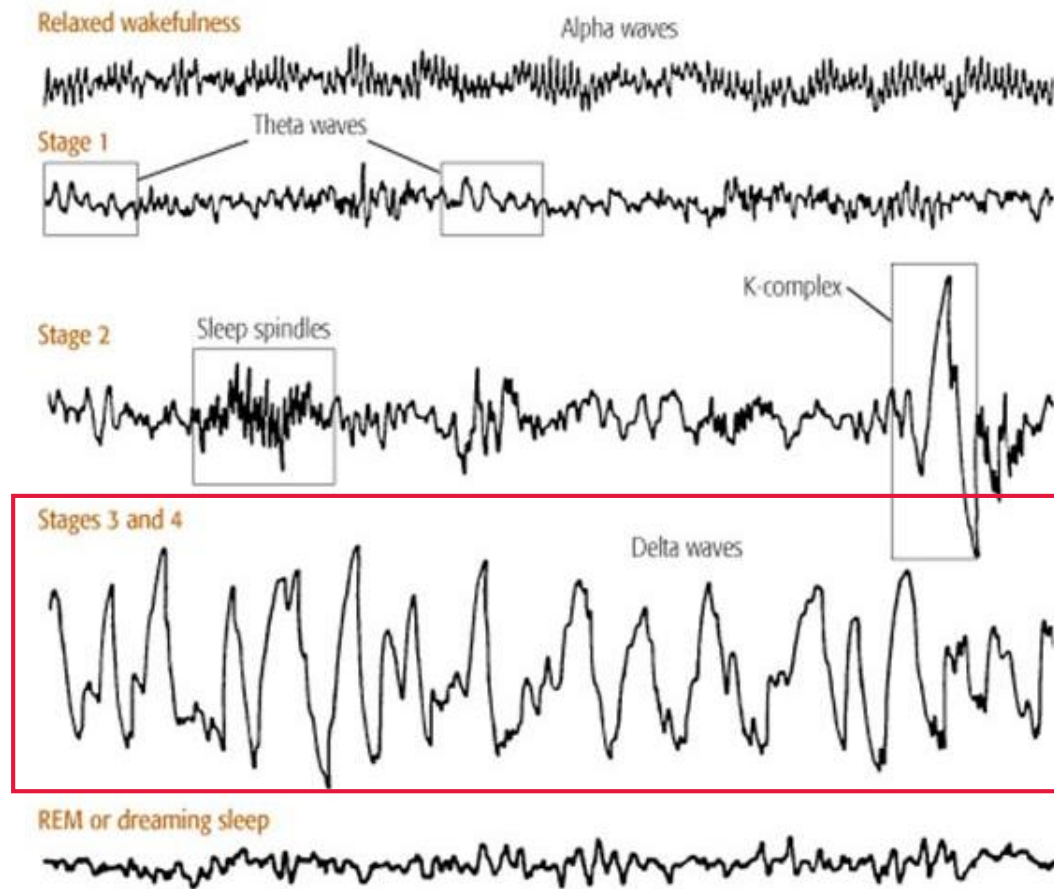
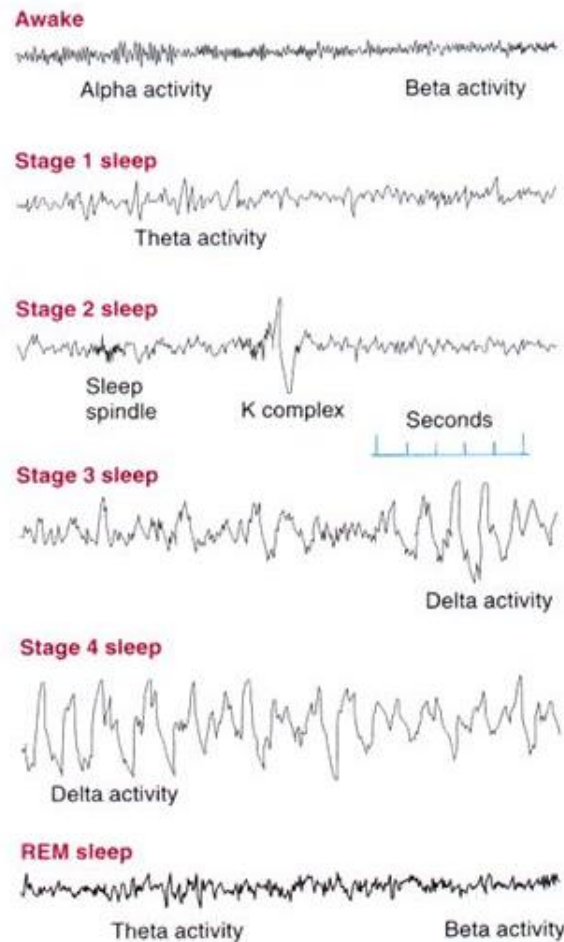
Quality



Polysomnography



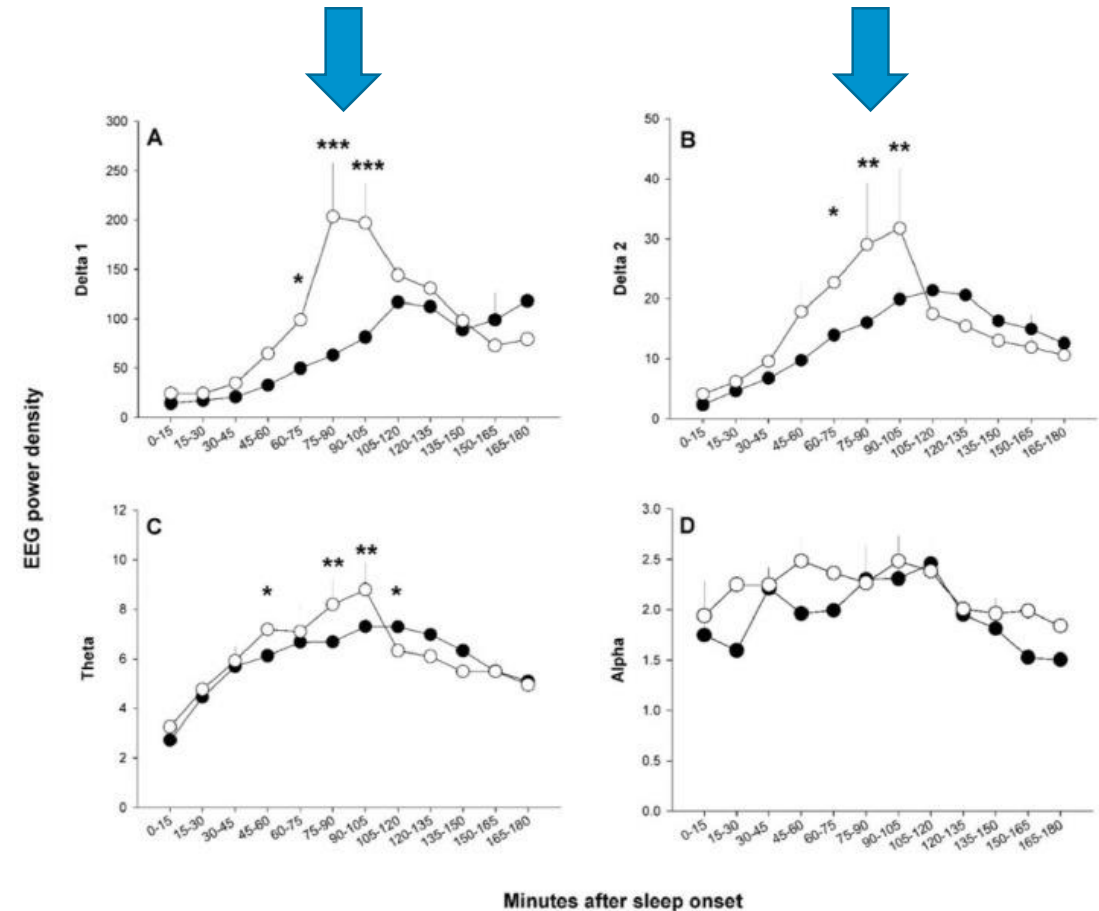
Neural activity



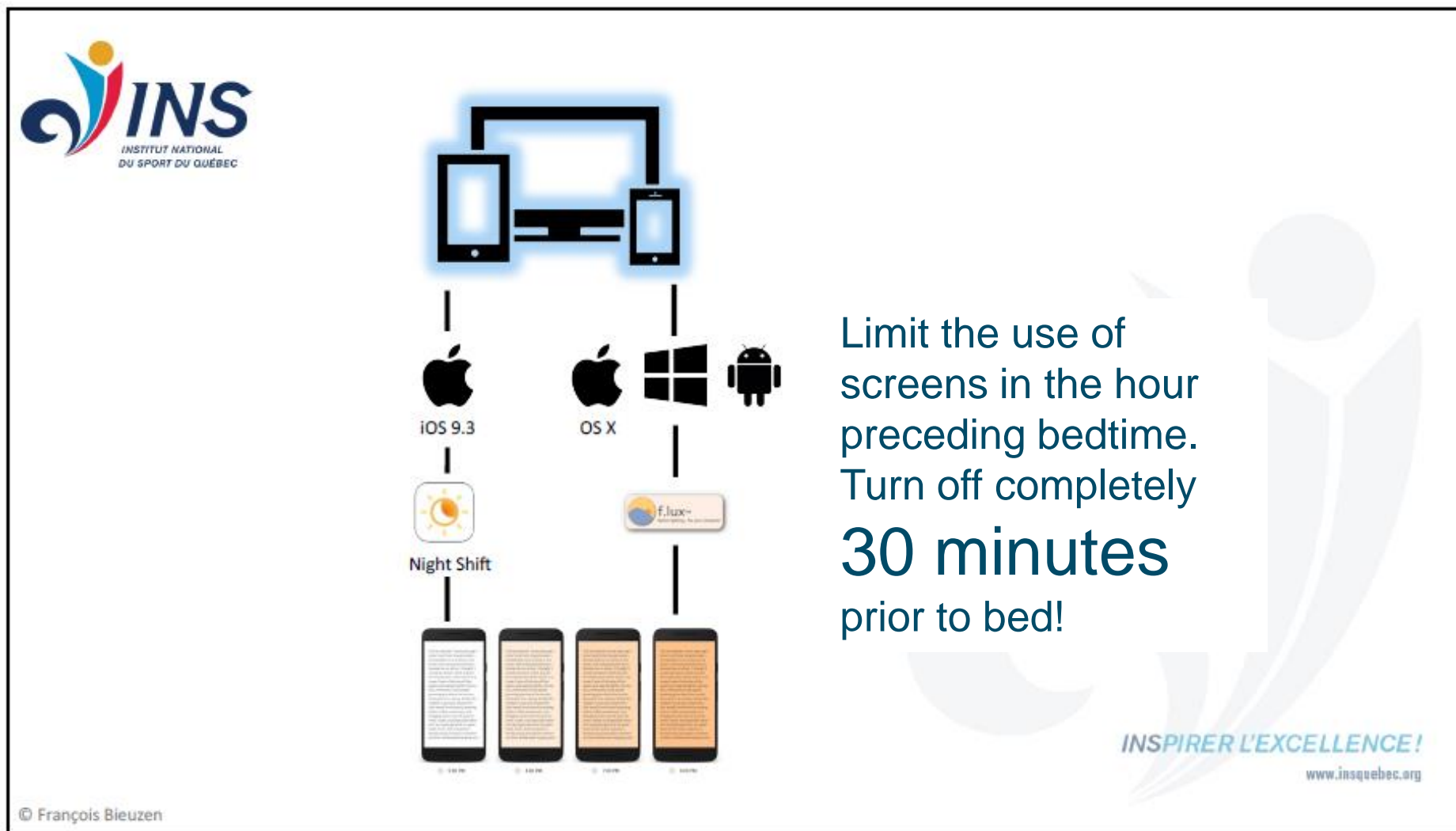
**Growth
hormone
release**

Reading a book vs on iPad

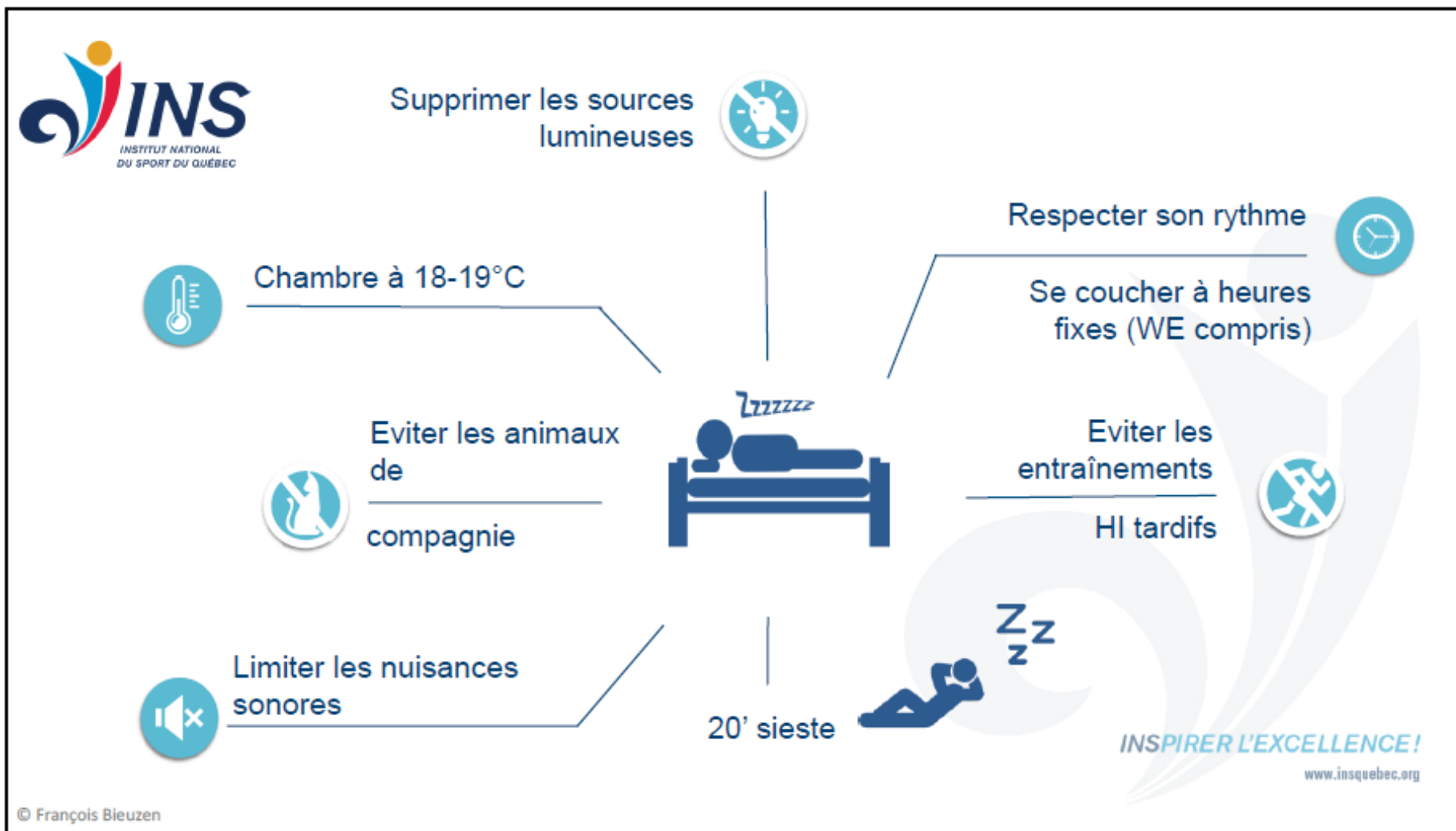
Variables	iPad	Book
Sleep time (min)	468.8 ± 15.6	462.0 ± 18.3
N1 (%)	6.4 ± 2.9	5.8 ± 2.3
N2 (%)	42.9 ± 3.8	46.6 ± 4.8
N3 (%)	20.6 ± 4.1	21.9 ± 1.9
REM (%)	19.7 ± 1.0	20.7 ± 1.5
KSS	6.9 ± 1.1	7.6 ± 1.2*
Sleep latency (min)	15.8 ± 3.2	17.8 ± 7.9



Screens and blue light



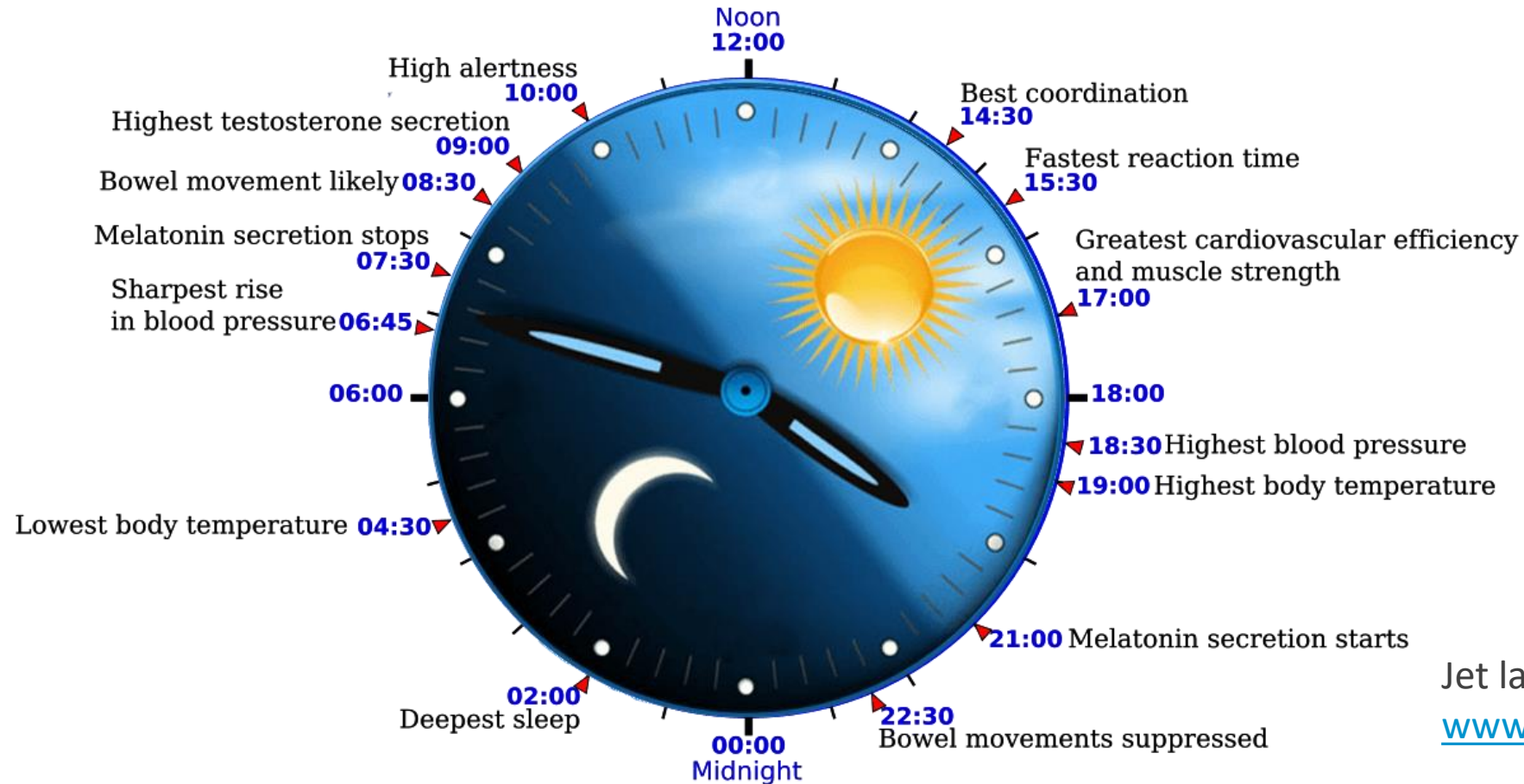
For a good night sleep



Habits



Circadian rythm



Jet lag adjustment:
www.jetlagrooster.com

Chronotype



7. Considering only your own “feeling best” rhythm, at what time would you get up if you were entirely free to plan your day?

- a. 5h00 - 6h30 (4)
- b. 6h30 - 7h45 (3)
- c. 7h45 - 9h45 (2)
- d. 9h45 - 11h00 (1)
- e. 11h00 - 12h00 (midi) (0)

8. How alert do you feel during the first half-hour after having awakened?

- a. not at all alert (0)
- b. slightly alert (1)
- c. fairly alert (2)
- d. very alert (3)

Chronotype (continued)



9. Do you consider yourself to be a morning type person or an evening type person ?

- a. definitely a morning type (3)
- b. more a morning type than an evening type (2)
- c. more an evening type than a morning type (1)
- d. definitely an evening type (0)

10. Considering your own “feeling best” rhythm, at what time would you go to bed if you were entirely free to plan your evening?

- a. 20h00 - 21h00 (4)
- b. 21h00 - 22h15 (3)
- c. 22h15 - 12h30 (2)
- d. 12h30 - 1h45 (1)
- e. 1h45 à 3h00 (0)

Score ≤ 4 you
are an *Evening*
type

Recommendations

Little tricks to improve sleep



Reduce muscle soreness



Cold bath

10 min (or 2 x 5min)

10-15°C

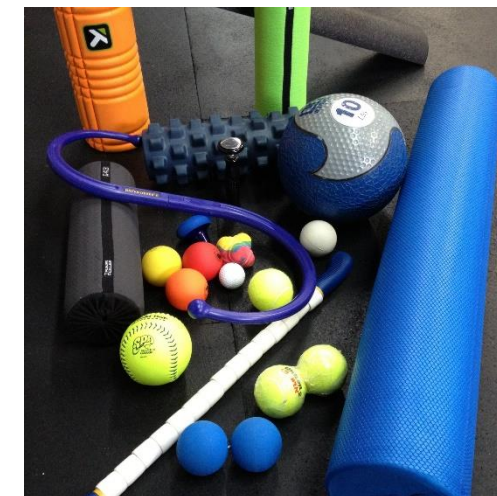
Targeted body segments



Compression

After strength training

6h+



Myofascial release

Target body parts

Effect is variable

Summary of recommendations



Quantity	Quality	Regularity
Aim for 7-9h + of sleep (the more the better)	Turn off screens 30min – 1h before bedtime	Go to bed at the same time everyday (\pm 1h)
Increase sleep time progressively (15-30 min per night)	Keep electronics out of the bedroom	Pre-bed routine
Complete sleep needs with naps if needed	Reduce luminosity	Recovery or relaxation techniques to help sleep

You action plan!



1. Identify 1 or 2 objectives about sleep hygiene that you want to improve in priority.
2. Identify 1 or 2 habits that could help you attain those objectives.

MOST IMPORTANTLY: LISTEN TO YOUR BODY

Yes, sleep is important and we need to take care of it and lengthen it when possible.

But if « forcing our self to sleep » brings other problems, we lose!



Questions ?

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