Amazing Athletes with Ordinary Habits: Why is Changing Behaviour so Difficult?

Shona Halson, PhD
Associate Professor
School of Behavioural and Health Sciences
Australian Catholic University

Ordinary Habits

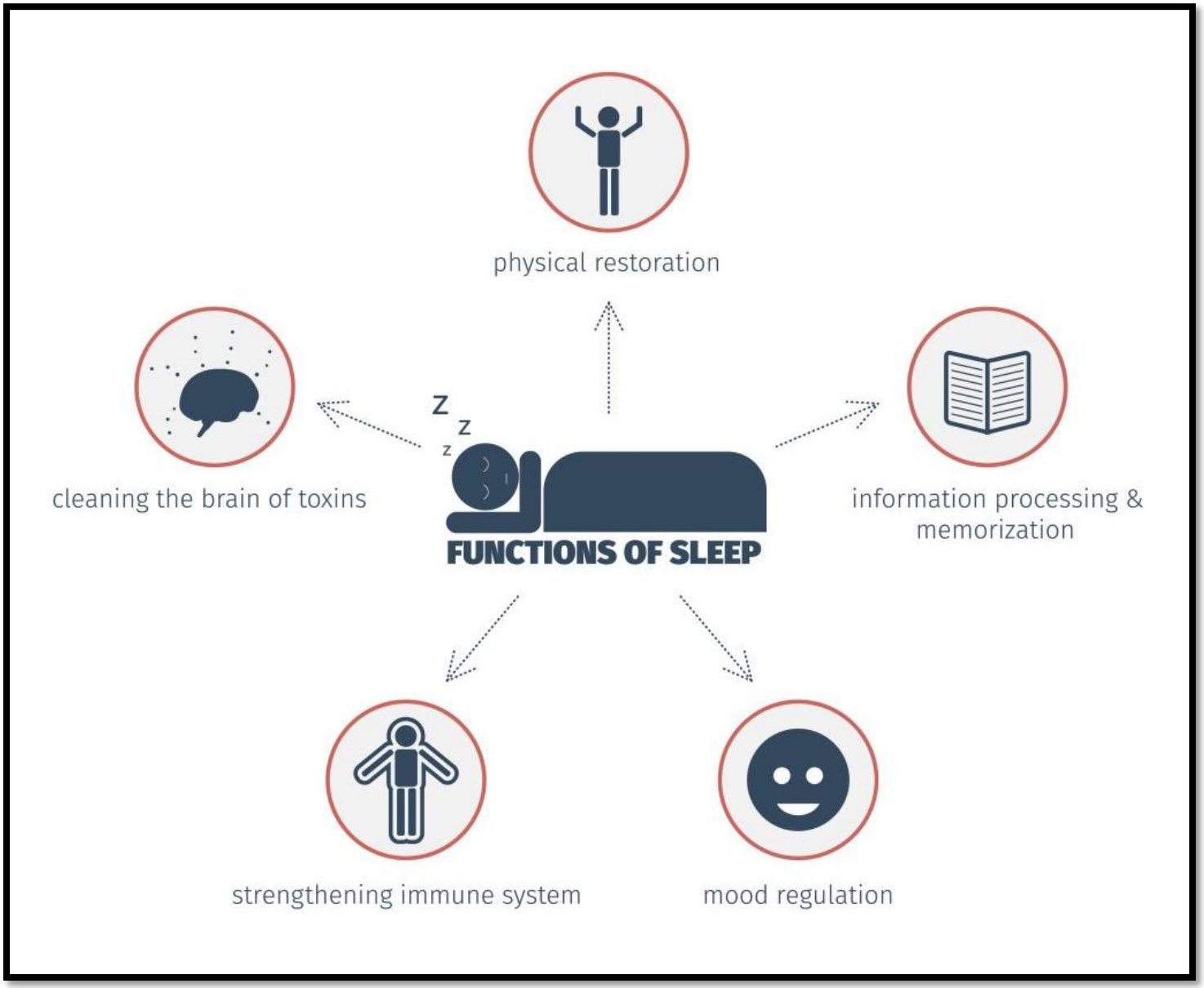
International Journal of Sports Physiology and Performance, 2017, 12, 1273-1274
https://doi.org/10.1123/ijspp.2017-0632

Human Kinetics
EDITORIAL

Amazing Athletes With Ordinary Habits: Why Is Changing Behavior So Difficult?

While our job as sport scientists may always have elements of education, monitoring, and research, we should never underestimate the value of understanding how to best modify behavior in athletes. With encouragement, support, and motivation for change in an evidence-based environment, we just might provide the most beneficial platform for athlete success.

Sleep- Why is it important?



Sleep (Acute)- 3000 nights

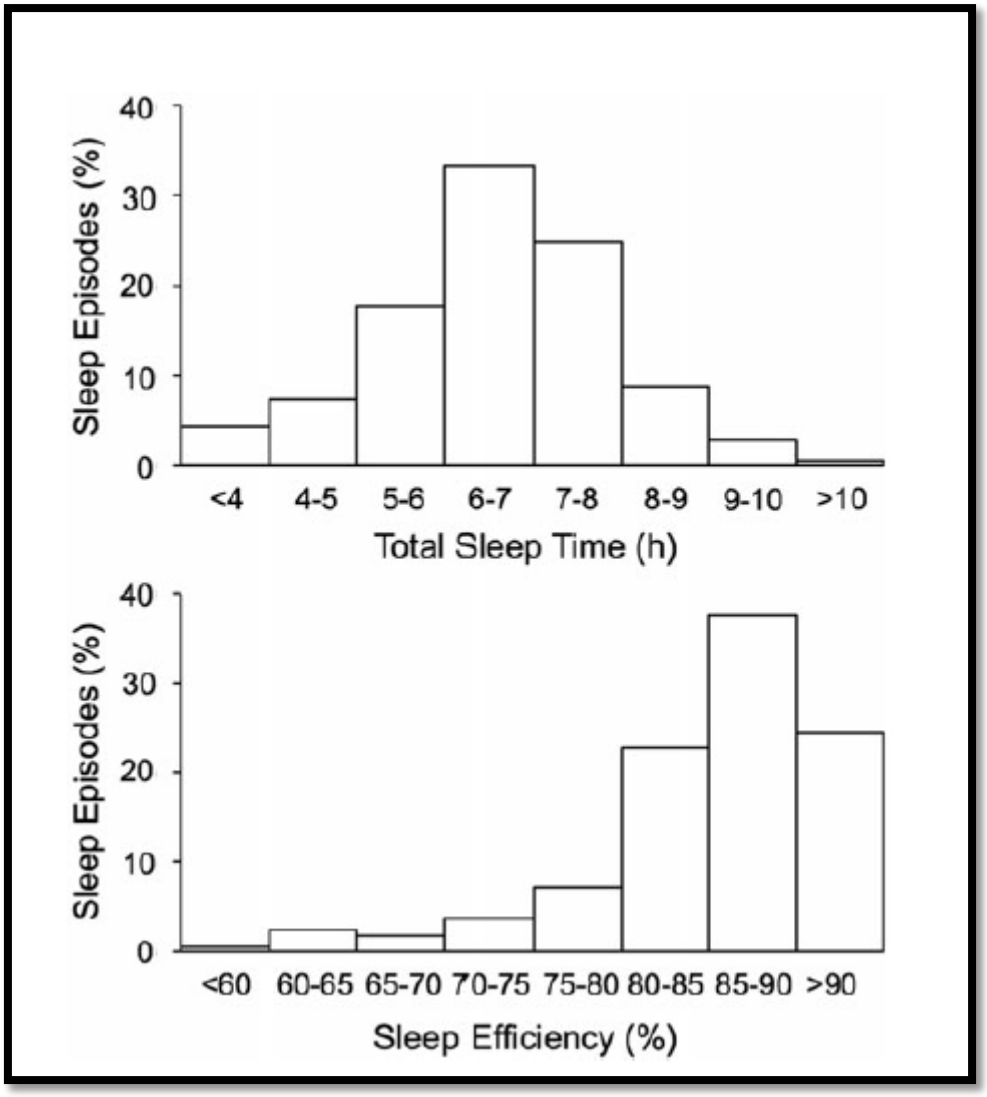
Sleep/wake behaviours of elite athletes from individual and team sports

MICHELE LASTELLA[1], GREGORY D. ROACH[1], SHONA L. HALSON[2], & CHARLI SARGENT[1]

Table III. Sleep/wake variables for athletes from individual and team sports

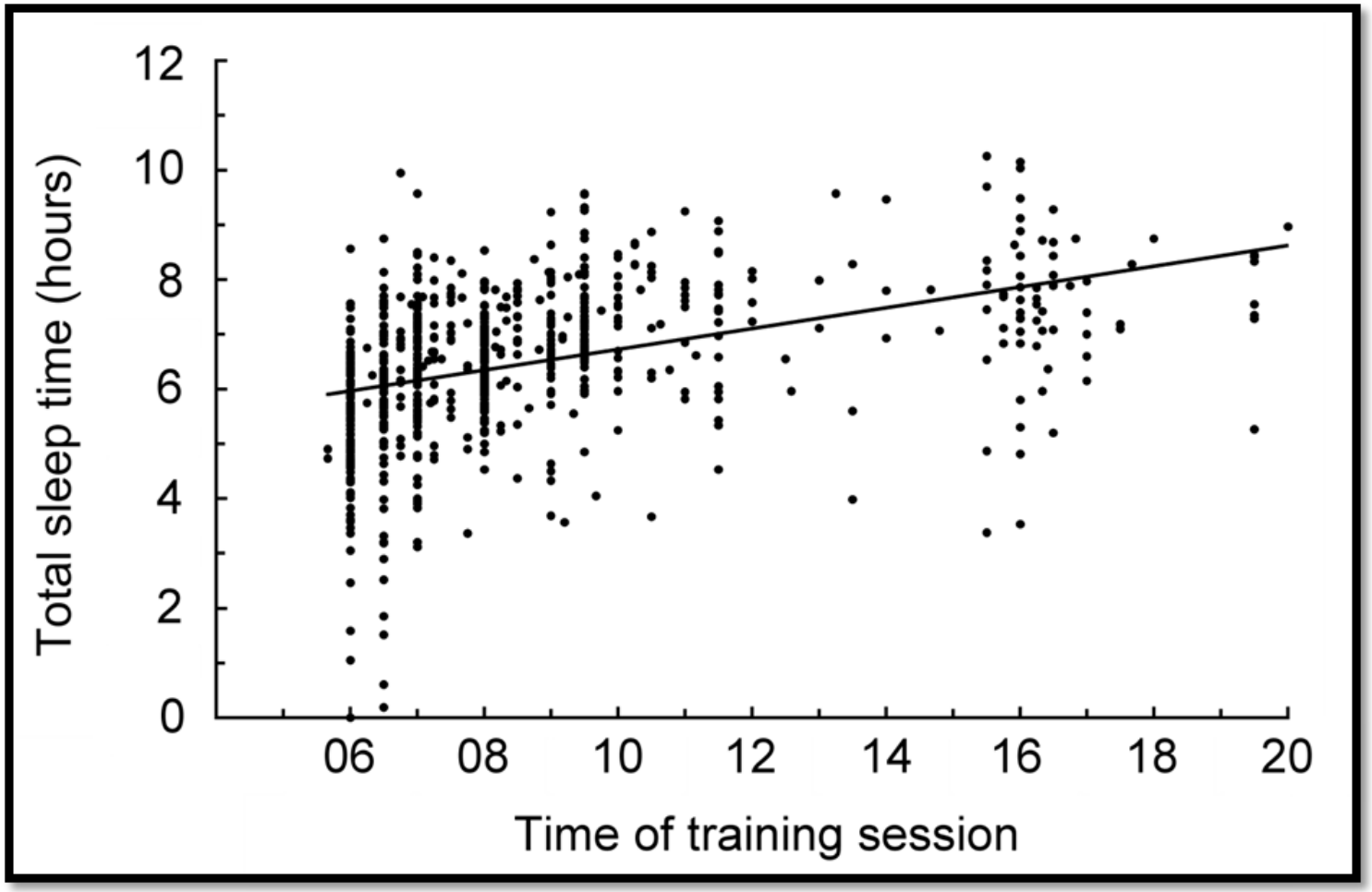
Sleep variables	Individual sport (mean ± *s*)	Team sport (mean ± *s*)
Bedtime (hh:mm)	22:27 ± 00:49	23:24 ± 01:06
Get-up time (hh:mm)	06:42 ± 01:00	07:56 ± 01:07
Sleep onset time (hh:mm)	22:49 ± 00:48	23:40 ± 01:05
Sleep offset time (hh:mm)	06:29 ± 01:01	07:46 ± 01:08
Sleep latency (min)	22.0 ± 26.6	16.0 ± 20.1
Time in bed (h)	8.2 ± 1.0	8.5 ± 1.2
Total sleep time (h)	6.5 ± 1.1	7.0 ± 1.2
Sleep efficiency (%)	85.9 ± 6.1	86.4 ± 4.8
Moving minutes (min)	82.5 ± 35.4	78.5 ± 26.3
Wake after sleep onset (%)	18.0 ± 7.4	16.2 ± 5.0
Subjective sleep quality	2.7 ± 1.0	2.6 ± 0.9

Sleep (Acute)



Sargent, Lastella, Halson & Roach (2014)

Sleep (Acute) -Practicalities



Sleep in Swimmers

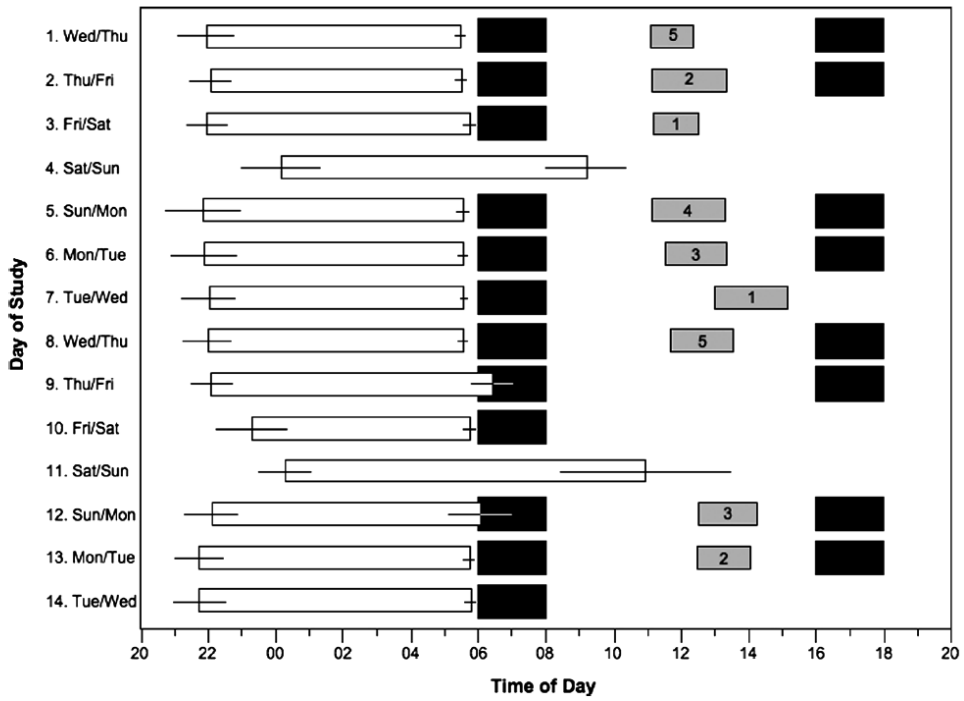


Figure 1. Sleep/wake patterns of seven elite swimmers during a 14-day high-intensity training programme. Each line represents a 24-h study day from 20:00 to 20:00 h. Black bars indicate the scheduled timing of training sessions. White bars indicate the mean ($\pm s$) start and end times of night-time sleep periods. Grey bars indicate the mean start and end times of daytime naps; the numbers in the grey bars represent the number of participants that napped on that day. On two occasions during the study, participants overslept and missed the scheduled start of training. This occurred on Day 9 for four participants and on Day 12 for two participants.

Sargent C, Halson S, Roach G. (2014)

Does Sleep Extension Improve Performance?

The Effects of Sleep Extension on the Athletic Performance of Collegiate Basketball Players

Cheri D. Mah, MS[1]; Kenneth E. Mah, MD, MS[1]; Eric J. Kezirian, MD, MPH[2]; William C. Dement, MD, PhD[1]

[1]Stanford Sleep Disorders Clinic and Research Laboratory, Department of Psychiatry and Behavioral Sciences, School of Medicine, Stanford University, Stanford, CA; [2]Department of Otolaryngology—Head and Neck Surgery, University of California, San Francisco, CA

Table 4—Athletic performance measures at baseline and end sleep extension

	Baseline	End Sleep Extension	P
282 feet sprint (sec)	16.2 ± 0.61	15.5 ± 0.54	< 0.001
Mean days of data	9.2 ± 3.6	6.9 ± 1.2	
Free throws (out of 10)	7.9 ± 0.99	8.8 ± 0.97	< 0.001
Mean days of data	9.2 ± 3.6	6.9 ± 1.2	
Three-point field goals (out of 15)	10.2 ± 2.14	11.6 ± 1.50	< 0.001
Mean days of data	9.2 ± 3.6	6.9 ± 1.2	
Subject self-rating at practices (1-10)	6.9 ± 1.41	8.8 ± 1.06	< 0.001
Mean days of data	8.9 ± 3.5	6.8 ± 1.3	
Subject self-rating at games (1-10)	7.8 ± 1.07	8.8 ± 1.19	< 0.001
Mean days of data	4.2 ± 1.7	3.7 ± 0.5	

Data presented as mean ± standard deviation.

Table 2—Total sleep time per night during baseline and sleep extension

	Baseline	Sleep Extension	P
Subject sleep journals (min)	470.0 ± 65.9	624.2 ± 68.4	< 0.001
Mean days of data	18.2 ± 5.6	41.5 ± 3.3	
Actigraphy (min)	400.7 ± 61.8	507.6 ± 78.6	< 0.001
Mean days of data	17.7 ± 4.8	41.2 ± 3.3	

Data presented as mean ± standard deviation.

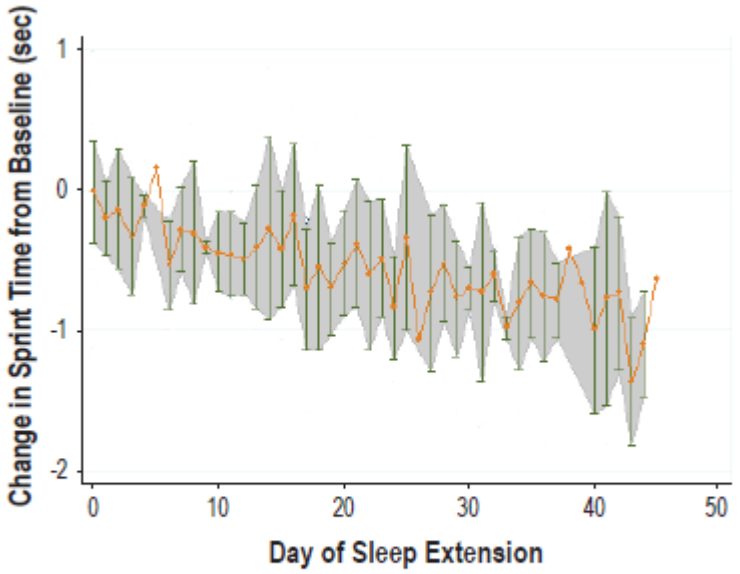
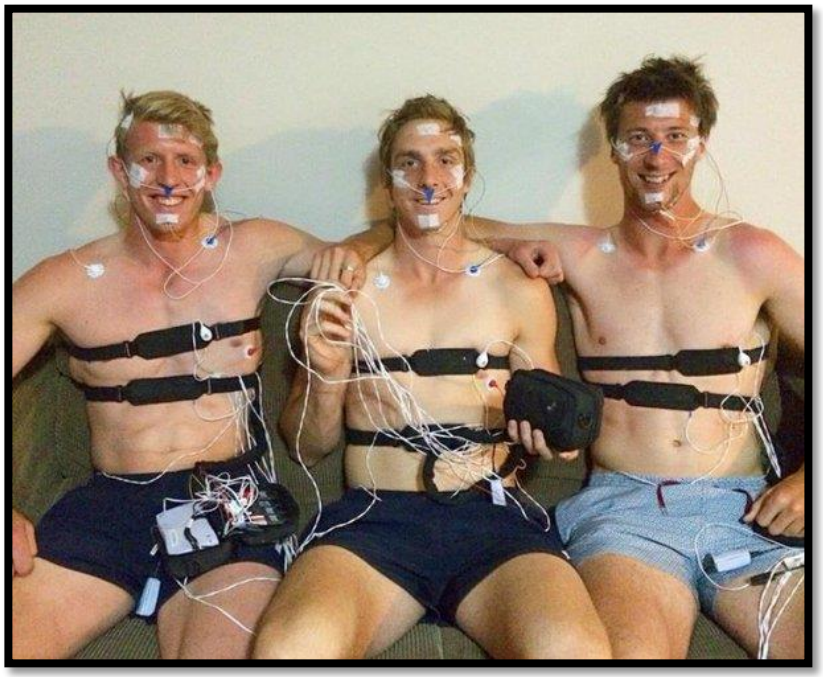


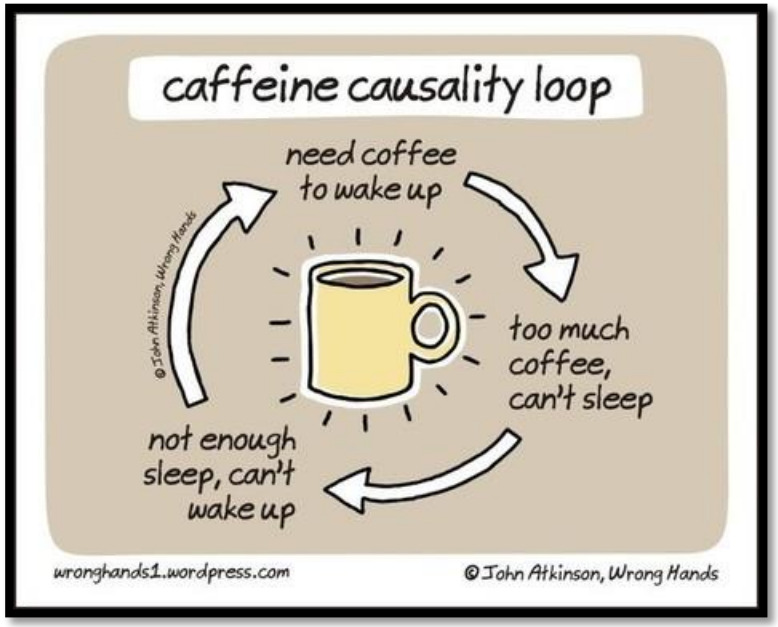
Figure 2—Change in 282 feet sprint time during sleep extension compared to baseline. Data presented as mean ± standard deviation.

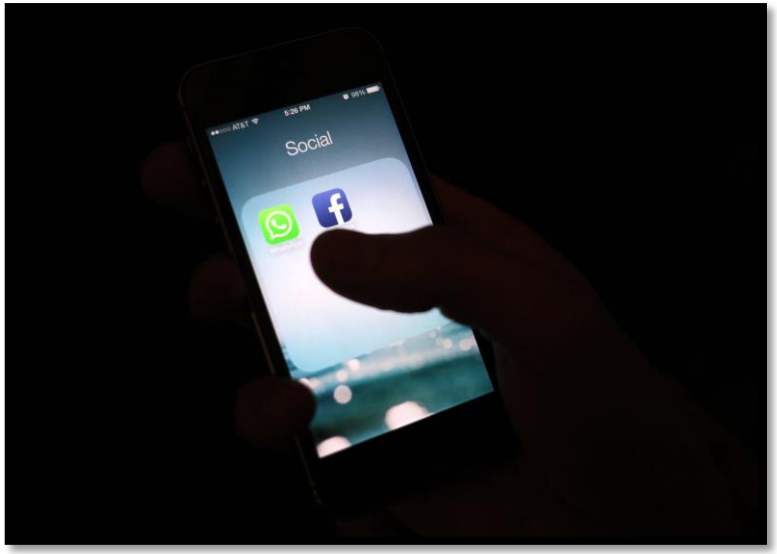
Sleep (Chronic) - Practicalities

- Athletes care predominantly about sleep around imminent competition, not habitual sleep
- Fatigue does not always equate to sleepiness
- *Regular* education and monitoring is necessary
- Many athletes have FOMO
- Cannot simulate Olympic Games

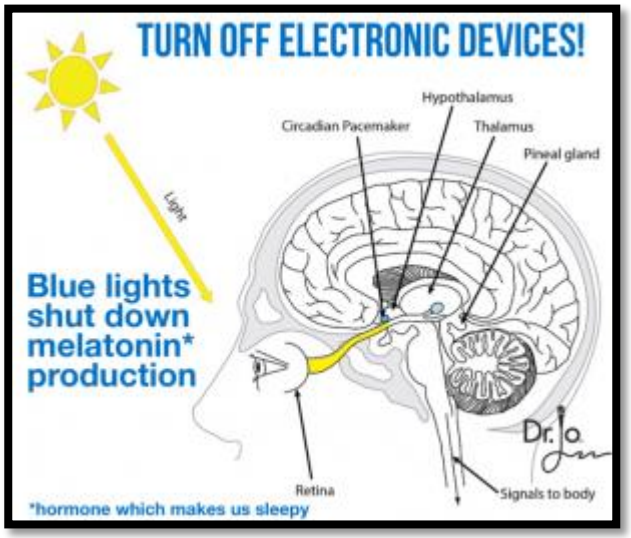


Sleep – In the real world





Social Media



Prev Med. 2016 April ; 85: 36–41. doi:10.1016/j.ypmed.2016.01.001.

The Association between Social Media Use and Sleep Disturbance among Young Adults

Jessica C. Levenson, PhD[1], **Ariel Shensa, MA**[2,3], **Jaime E. Sidani, PhD**[2,3], **Jason B. Colditz, MEd**[2,3], and **Brian A. Primack, MD, PhD**[2,3]

Results—In models that adjusted for all sociodemographic covariates, participants with higher SM use volume and frequency had significantly greater odds of having sleep disturbance.

Discussion—The strong association between SM use and sleep disturbance has important clinical implications for the health and well-being of young adults.

How to assess sleep

How to assess sleep?

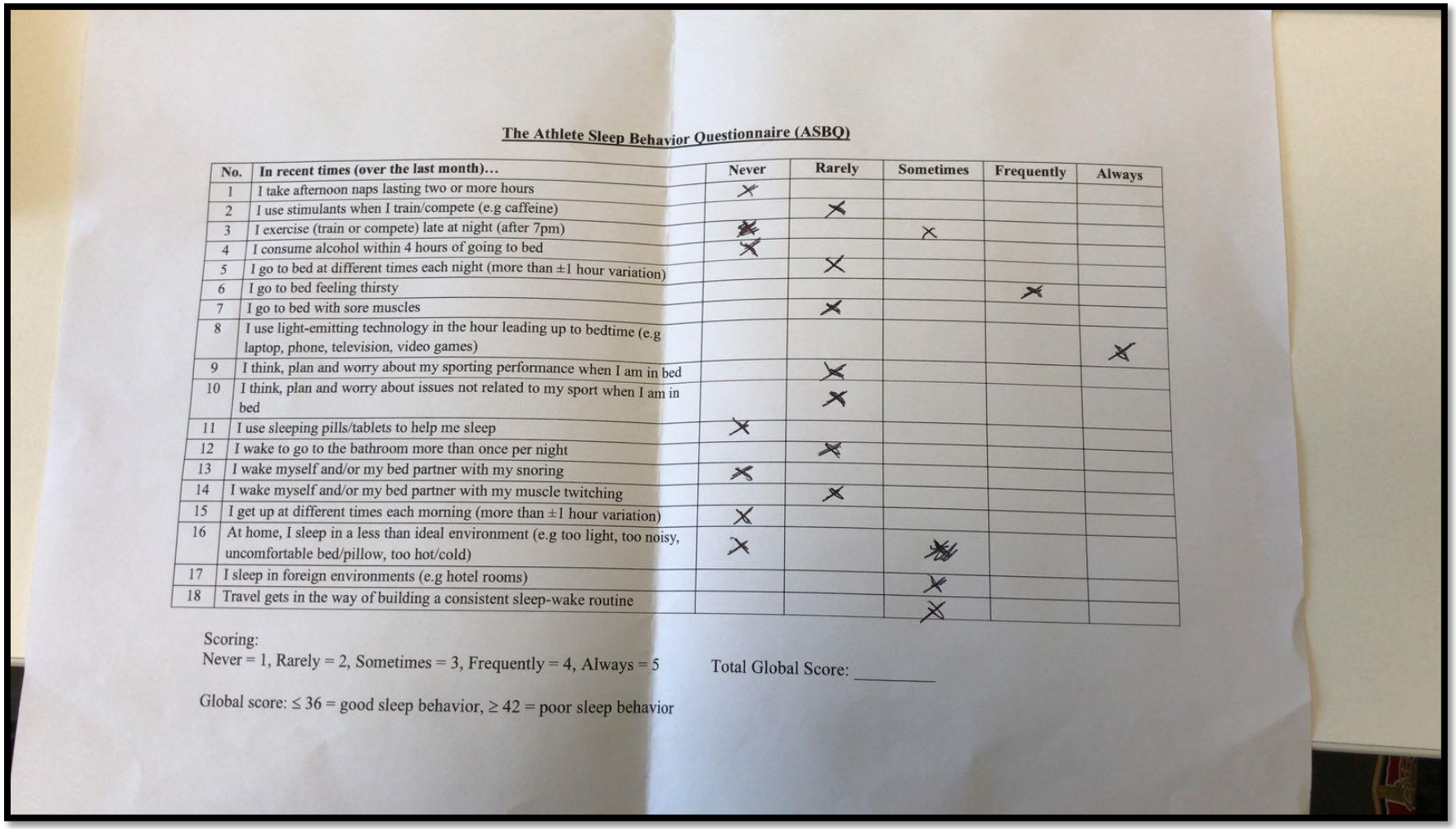
The Athlete Sleep Behavior Questionnaire (ASBQ)

No.	In recent times (over the last month)…	Never	Rarely	Sometimes	Frequently	Always
1	I take afternoon naps lasting two or more hours					
2	I use stimulants when I train/compete (e.g caffeine)					
3	I exercise (train or compete) late at night (after 7pm)					
4	I consume alcohol within 4 hours of going to bed					
5	I go to bed at different times each night (more than ±1 hour variation)					
6	I go to bed feeling thirsty					
7	I go to bed with sore muscles					
8	I use light-emitting technology in the hour leading up to bedtime (e.g laptop, phone, television, video games)					
9	I think, plan and worry about my sporting performance when I am in bed					
10	I think, plan and worry about issues not related to my sport when I am in bed					
11	I use sleeping pills/tablets to help me sleep					
12	I wake to go to the bathroom more than once per night					
13	I wake myself and/or my bed partner with my snoring					
14	I wake myself and/or my bed partner with my muscle twitching					
15	I get up at different times each morning (more than ±1 hour variation)					
16	At home, I sleep in a less than ideal environment (e.g too light, too noisy, uncomfortable bed/pillow, too hot/cold)					
17	I sleep in foreign environments (e.g hotel rooms)					
18	Travel gets in the way of building a consistent sleep-wake routine					

Scoring:
Never = 1, Rarely = 2, Sometimes = 3, Frequently = 4, Always = 5 Total Global Score: _____

Global score: ≤ 36 = good sleep behavior, ≥ 42 = poor sleep behavior

How to assess sleep?



The Athlete Sleep Behavior Questionnaire (ASBQ)

No.	In recent times (over the last month)…	Never	Rarely	Sometimes	Frequently	Always
1	I take afternoon naps lasting two or more hours	X				
2	I use stimulants when I train/compete (e.g caffeine)		X			
3	I exercise (train or compete) late at night (after 7pm)	X		X		
4	I consume alcohol within 4 hours of going to bed	X				
5	I go to bed at different times each night (more than ±1 hour variation)		X			
6	I go to bed feeling thirsty				X	
7	I go to bed with sore muscles		X			
8	I use light-emitting technology in the hour leading up to bedtime (e.g laptop, phone, television, video games)					X
9	I think, plan and worry about my sporting performance when I am in bed		X			
10	I think, plan and worry about issues not related to my sport when I am in bed		X			
11	I use sleeping pills/tablets to help me sleep	X				
12	I wake to go to the bathroom more than once per night		X			
13	I wake myself and/or my bed partner with my snoring	X				
14	I wake myself and/or my bed partner with my muscle twitching		X			
15	I get up at different times each morning (more than ±1 hour variation)	X				
16	At home, I sleep in a less than ideal environment (e.g too light, too noisy, uncomfortable bed/pillow, too hot/cold)	X		X		
17	I sleep in foreign environments (e.g hotel rooms)			X		
18	Travel gets in the way of building a consistent sleep-wake routine			X		

Scoring:
Never = 1, Rarely = 2, Sometimes = 3, Frequently = 4, Always = 5

Total Global Score: _____

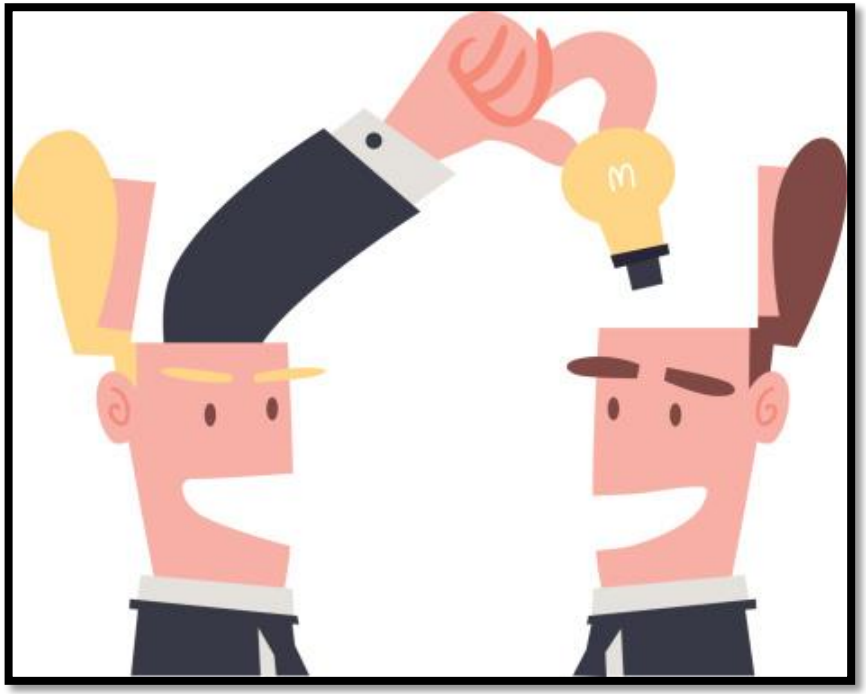
Global score: ≤ 36 = good sleep behavior, ≥ 42 = poor sleep behavior

How to assess sleep?

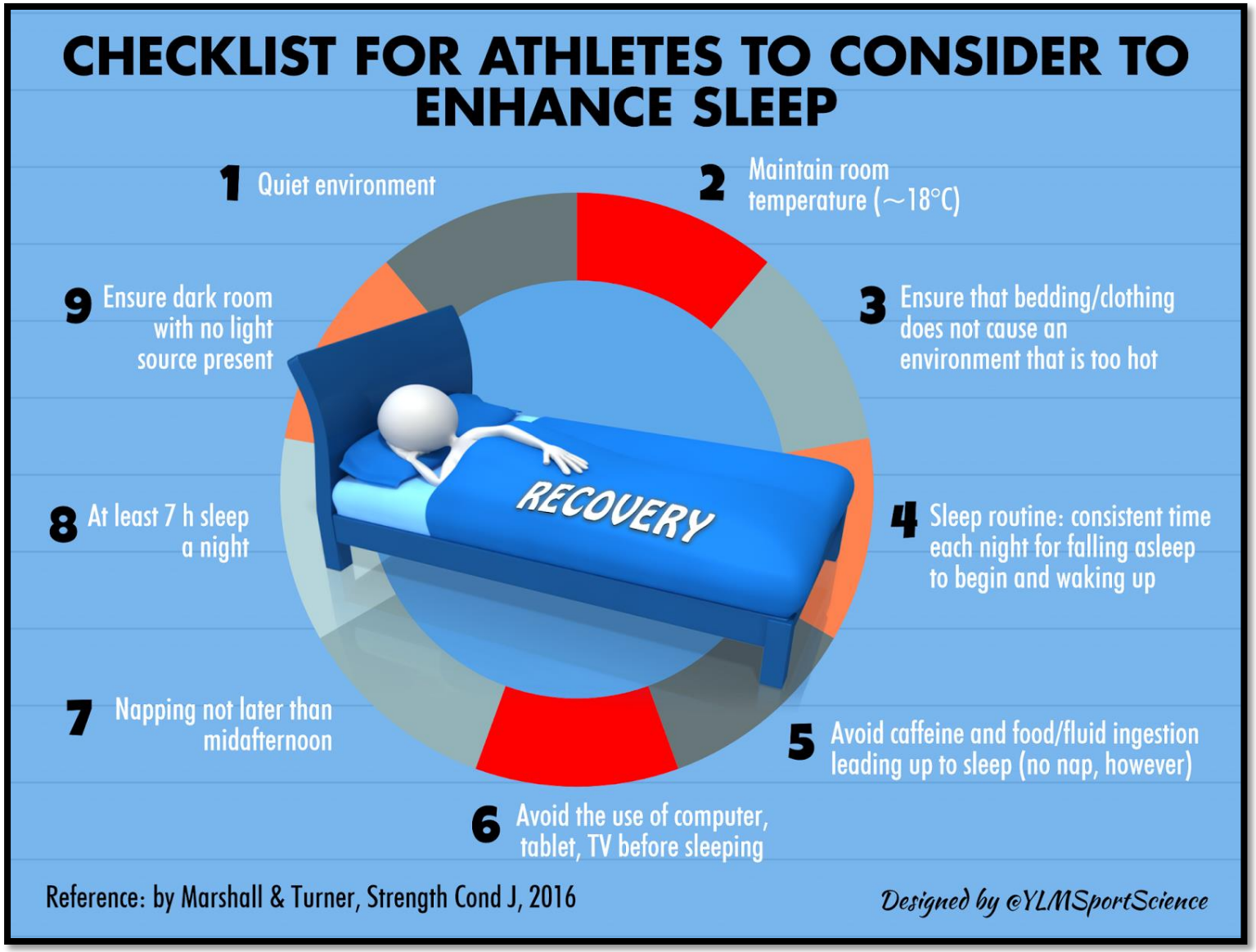
ASSESSMENT TOOL	ADVANTAGES	DISADVANTAGES	WHEN TO USE	EXAMPLES
POLYSOMNOGRAPHY (PSG)	Gold standard of sleep assessment	Expensive	Suspected sleep disorder	Lab or home based systems
	Allows determination of sleep architecture	Does not determine schedules	Research	
	Identification of medical sleep disorders	Intrusive unnatural sleep environment		
	Useful for assessment of daytime sleepiness			
ACTIVITY MONITORING	Non-intrusive	Does not measure sleep architecture	Research	Phillips ActiWatch
Research grade devices	Less expensive than PSG	Does not measure breathing	Monitoring (1-2 wks)	Fatigue Science
	Provides data on schedules	Device can be removed		
	Validated against PSG	Requires some expertise		
		More expensive than commercial devices		
WEARABLES	Increase sleep awareness	Lack of validation	Limited expertise and	Fitbit
Commercial devices	Promote athlete- staff interaction	Likely to overestimate sleep	funds available	Whoop
	Inexpensive	May cause increased anxiety		
	Accessible			
	Device is worn by the indiviudal			
	May promote further evaluation			
NEARABLES AND APPS	Increase sleep awareness	Lack of validation	Limited expertise and	Beddit
Commercial devices	Promote athlete- staff interaction	Device not worn by individual	funds available	Resmed S+
	Inexpensive	Apps may increase screen time		SleepScore
	Accessible	May cause increased anxiety		
	May promote further evaluation			
SLEEP DIARY	Cost effective	Requires compliance	Limited expertise and	Multiple available and
	Provides information on schedules	May be influenced by recall bias	funds available	can be tailored
	May be more accurate than questionnaires		Schedule assessment	
			Screening	
QUESTIONNAIRES AND	Cost effective	May be influenced by response bias	Limited expertise and	Athlete Sleep Behaviour Questionnaire
SUBJECTIVE RATINGS	Can provide information on sleep disorders,	Lack of standardised data for athletes	funds available	Pittsburg Sleep Quality Index
	daytime sleepiness and sleep hygiene		Limited time	Epworth Sleepiness Scale
			Screening	Sleep Hygiene Index
				Visual Analogue Scale
				Ratings

Providing Feedback

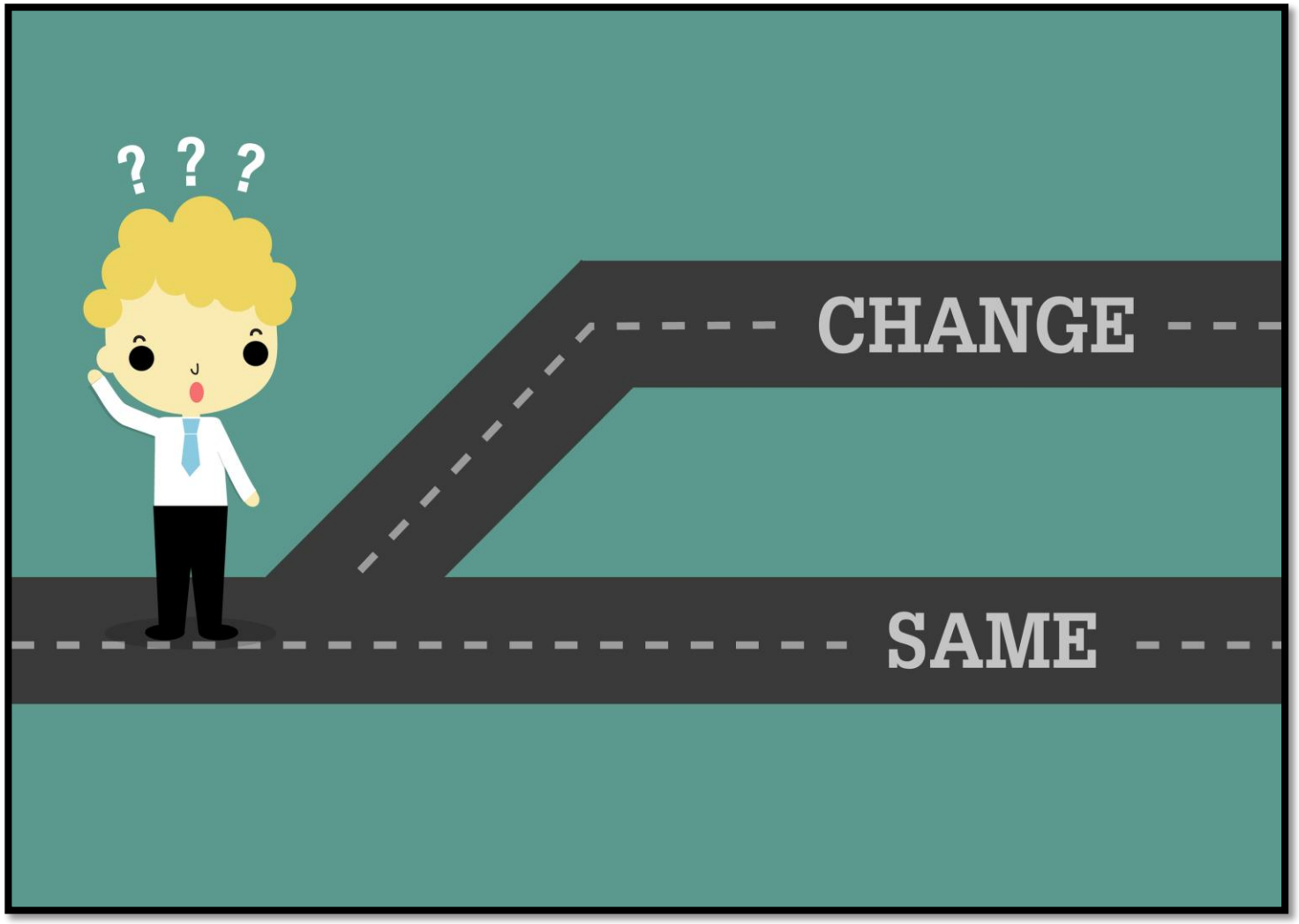
- **Stress** and **anxiety** are related to sleep
- Care needs to be given to **how** and **what information** is provided



Sleep- Recommendations



Behaviour Change



Sleep Education

Contents lists available at ScienceDirect

Sleep Health

Journal of the National Sleep Foundation

journal homepage: sleephealthjournal.org

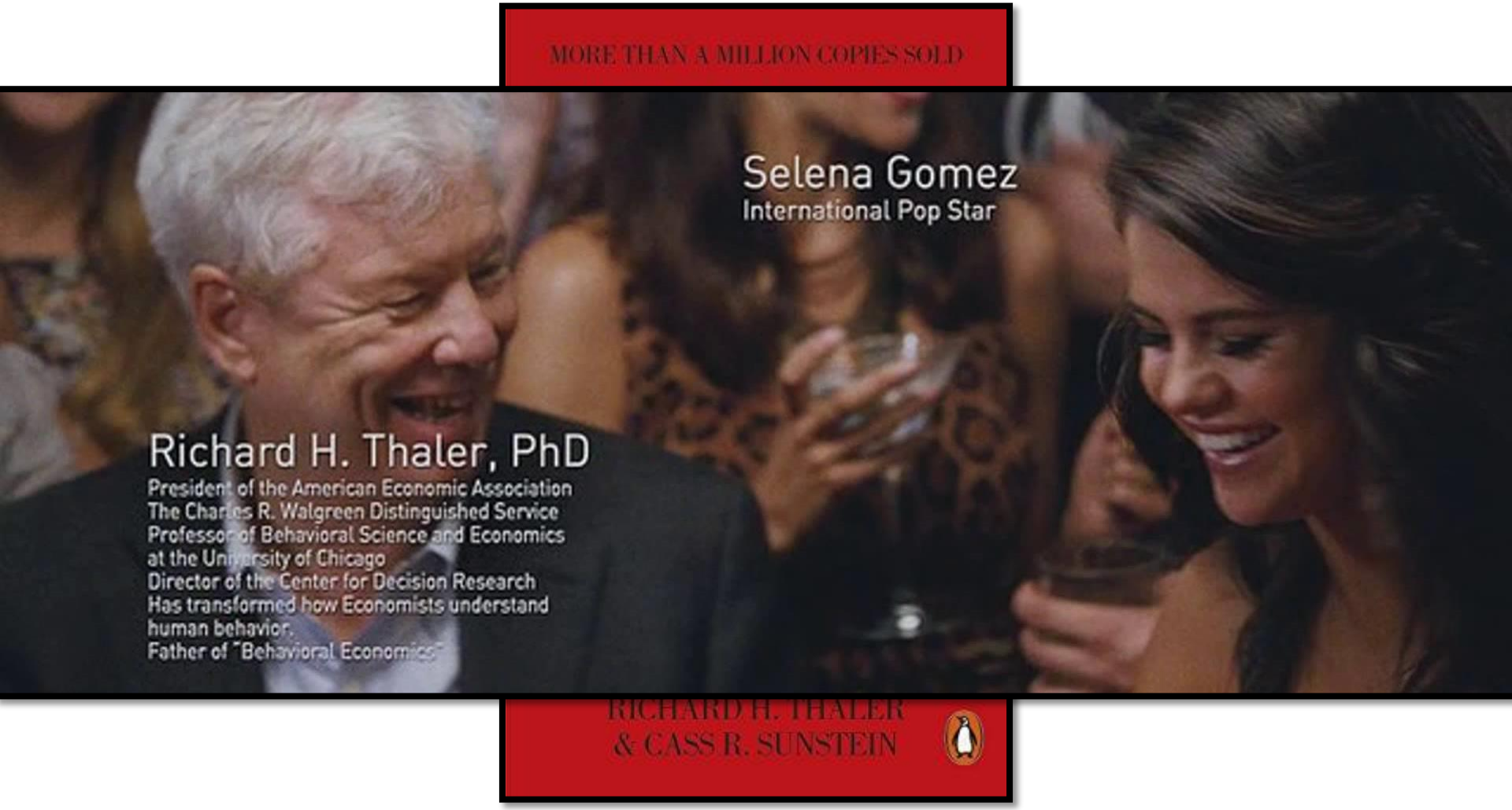
The influence of sleep hygiene education on sleep in professional rugby league athletes

Johnpaul Caia [a,b,*], Tannath J. Scott, PhD [a], Shona L. Halson, PhD [c], Vincent G. Kelly, PhD [a,b,d]

A B S T R A C T

Objective: To examine the usefulness of sleep hygiene education on the sleep of professional rugby league athletes during a 10-week period of the competitive season.
Design: Case study.
Participants: Twenty-four professional rugby league athletes.
Measurements: Initially, participants were monitored for a 2-week period using wrist activity monitors allowing baseline estimation of sleep. Following this, 12 athletes attended two 30-minute sleep hygiene education seminars delivered over successive weeks, whereas the remaining 12 athletes received no education. Sleep was monitored in all athletes across the 2-week education period and for a 2-week period 1 month following the end of education. Split-plot analysis of variance and paired *t* tests were used to examine differences in sleep across the duration of the investigation.
Results: An initial sleep hygiene education seminar resulted in an earlier bedtime (effect size [ES] = 0.53 ± 0.48), more time in bed (ES = 0.53 ± 0.49), and increased sleep duration (ES = 0.47 ± 0.44). A second sleep hygiene education seminar resulted in more time in bed (ES = 0.84 ± 0.50) but a reduction in sleep efficiency (ES = 1.15 ± 0.48). One month following sleep hygiene education, sleep behavior was comparable to that observed at baseline.
Conclusion: This study shows that sleep hygiene education can lead to positive changes in sleep behavior. However, changes in sleep from education may not be sustained following the initial intervention.

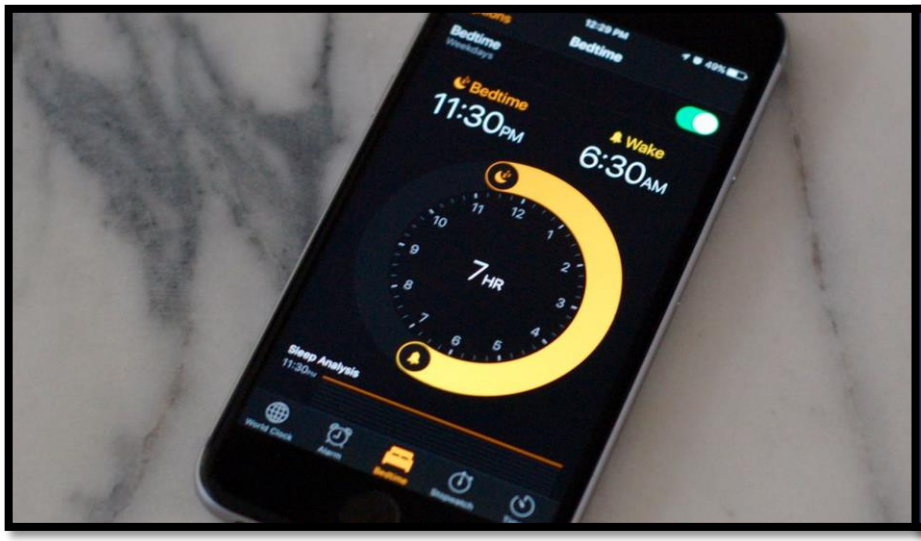
Behaviour Change- Shouldn't it be easy??

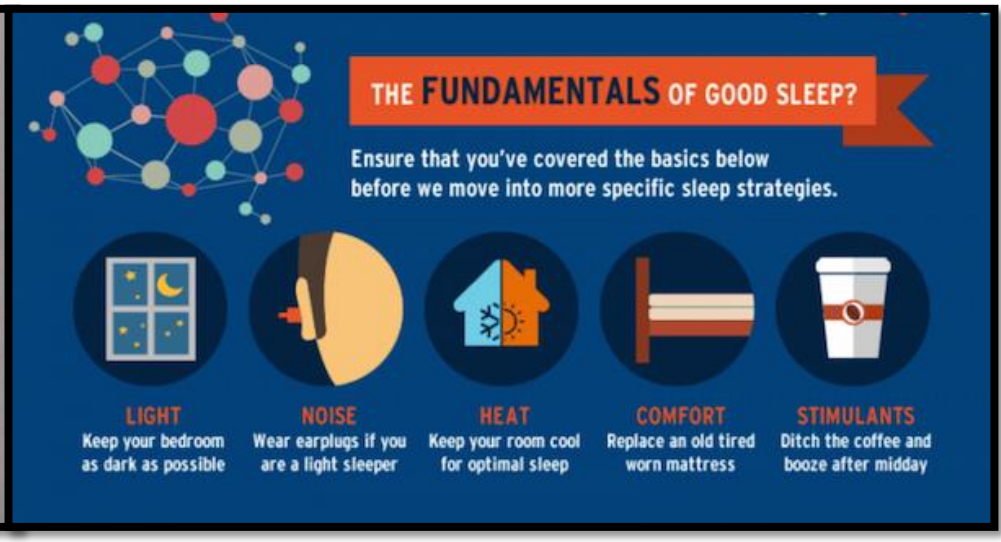


How do we change behaviour- Nudging

- A nudge is any aspect of the choice architecture that alters peoples behaviour in a predictable way without forbidding any options

Social Nudging-
How can we Nudge in sport?



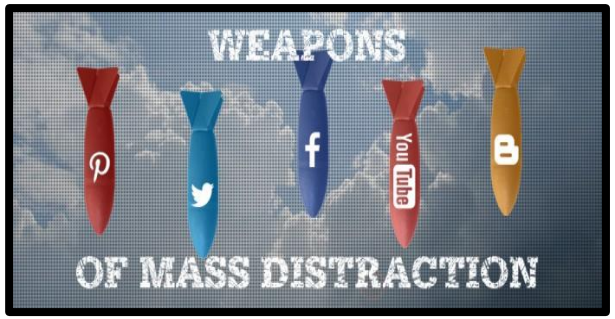


GET MORE SLEEP

SLEEP LOSS CAN REDUCE PERFORMANCE

Influencing Behaviour Change

Nudging with Education



HOW TO GET A GOOD NIGHT SLEEP

Thank You