

A male swimmer is captured in a dynamic pose, performing a butterfly stroke in a swimming pool. He is wearing a blue swim cap, blue goggles, and a blue and yellow striped swim cap. His arms are extended forward, and his legs are kicking, creating a large splash of water. The background is a clear blue pool with lane lines visible.

Dreams of Gold...or not
How do athletes really sleep?

Dr Ricco Swinbourne

Team Lead, Sport Nutrition, SSI. Sleep Scientist.

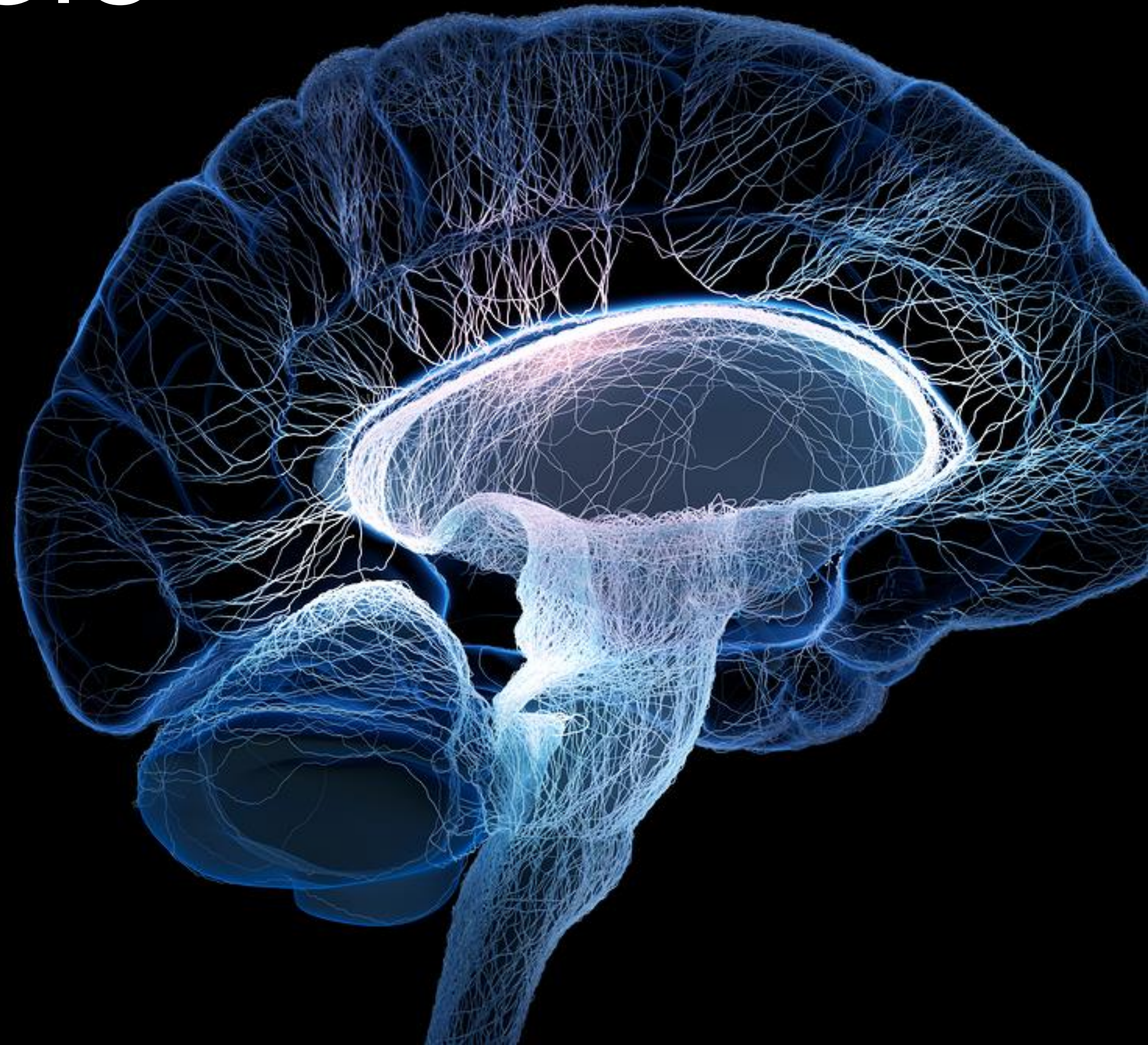
HOW DO ATHLETES SLEEP?





MIRACLES & MAGIC

SLEEP: A highly active brain trapped
inside an inactive body




SLEEP: A
behaviour as
critical as
training.

We monitor
training.

Do we
monitor
sleep?





Between stimulus and response, there
is a space. In that space is our power to
choose our response. In our response
lies our growth and our freedom.

Victor E. Frankl

“Sleep is extremely important to me. I need to rest and recover in order for the training I do to be absorbed by my body”

Usain Bolt – 8-10hr / night

Sleep debt simplified

I need 8 hours and got 7 hours = 1 hour of sleep debt

I now need to get 9 hours tonight to pay back that 1 hour

How do I know if I have sleep debt? – “drowsiness is red alert”



How can we better understand how athletes sleep?

Psychiatry Research

Volume 28, Issue 2, May 1989, Pages 193-213

The Pittsburgh sleep quality index: A new instrument for psychiatric practice and research

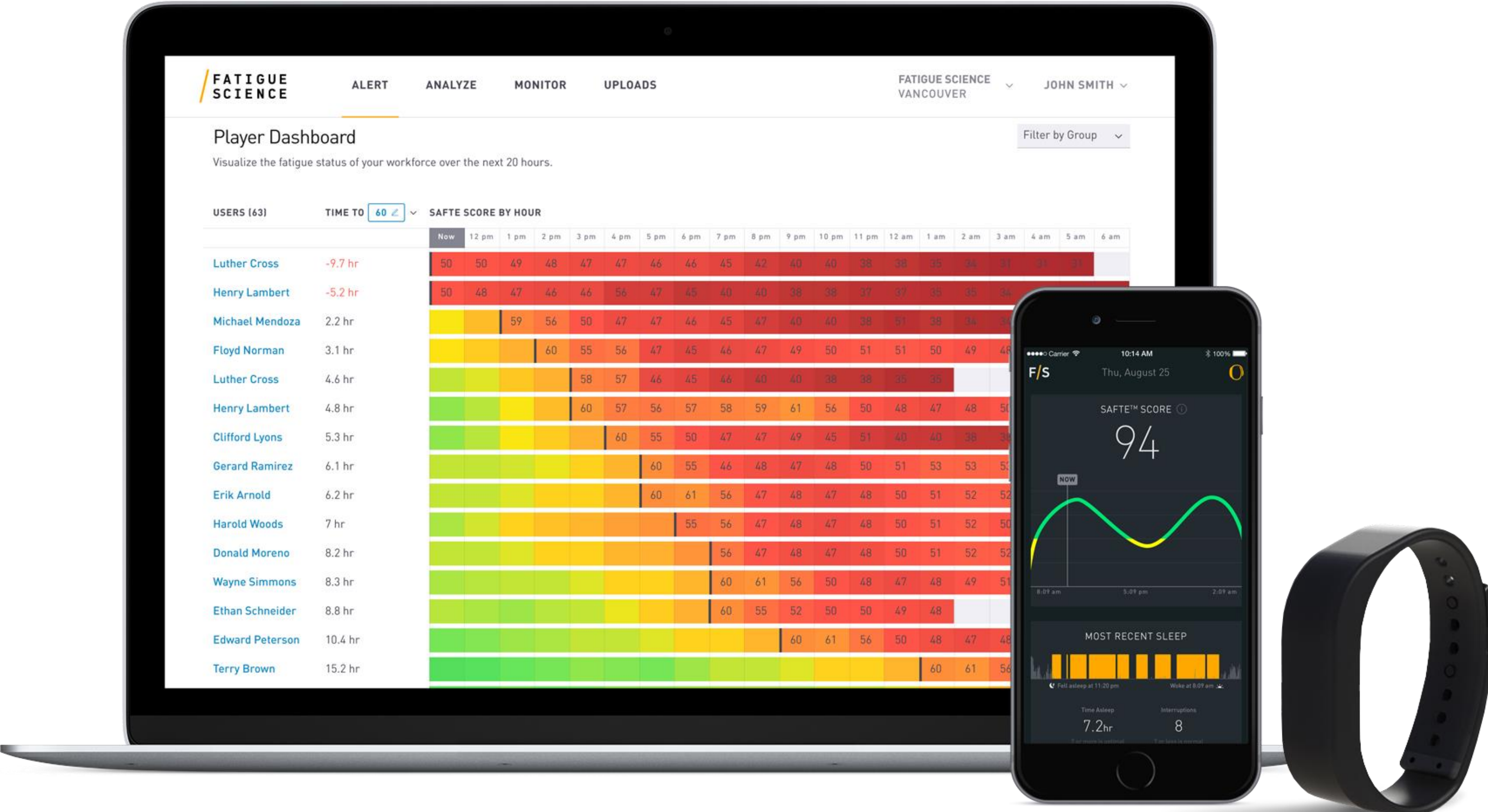
Daniel J. Buysse * ... David J. Kupfer *

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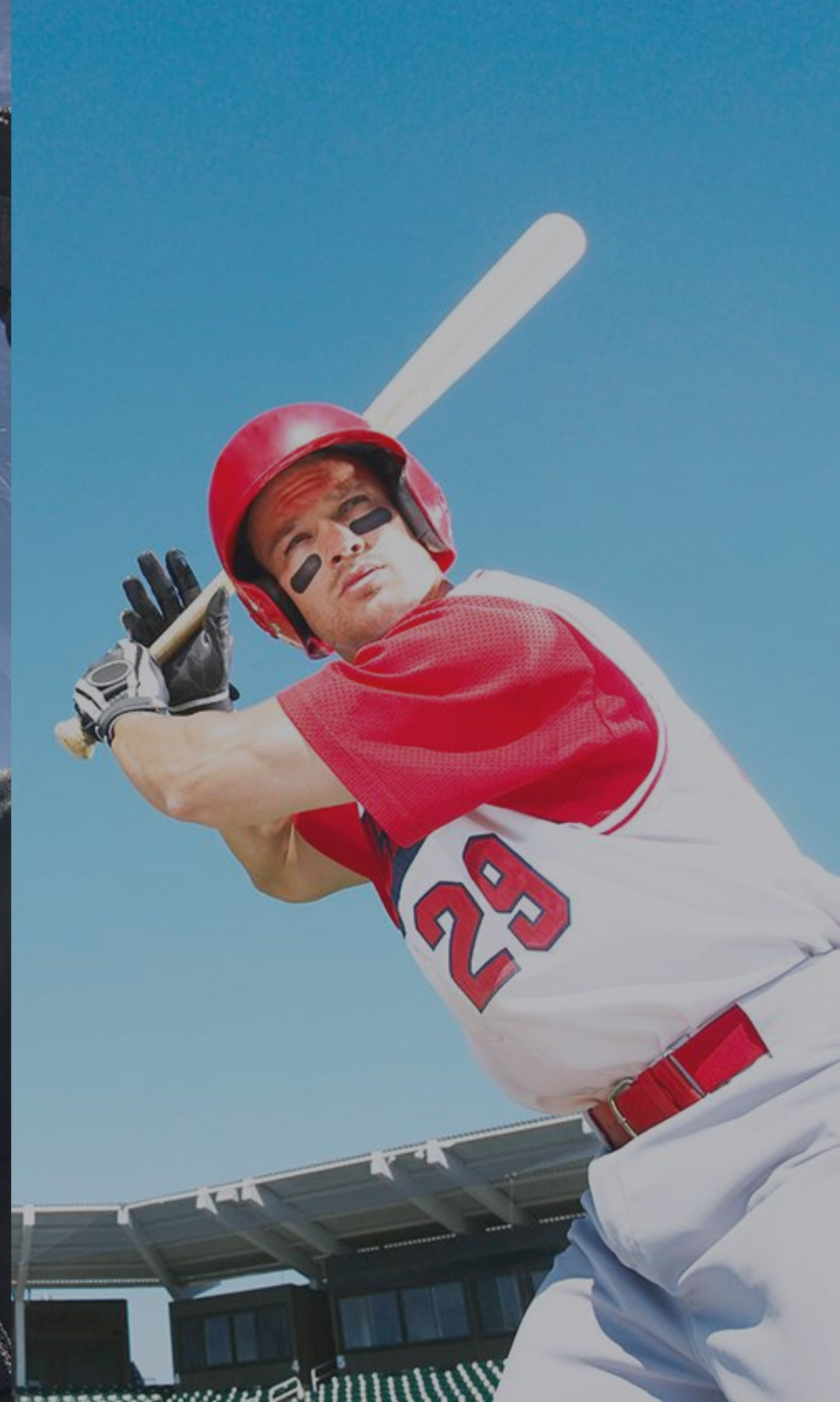
[https://doi.org/10.1016/0165-1781\(89\)90047-4](https://doi.org/10.1016/0165-1781(89)90047-4)



FATIGUE SCIENCE



Military research to applied sport



The US military
wanted to see the
relationship between
sleep and reaction
time / mental
performance



SAFTE™

BIOMATHEMATICAL
FATIGUE MODEL



So, in response,
the US Army
developed a
biomathematical
fatigue model



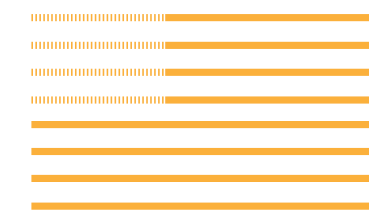
About the Readiband



Captures sleep data for fatigue and performance analytics



Only technology in the world that illustrates how sleep impacts reaction time



Uses US military developed fatigue modeling algorithm



Helps diagnose extent and source of fatigue in athletes



Player APP



Good Night, Sleep Tight



18th ASIAN GAMES

Jakarta
Palembang
2018

361°



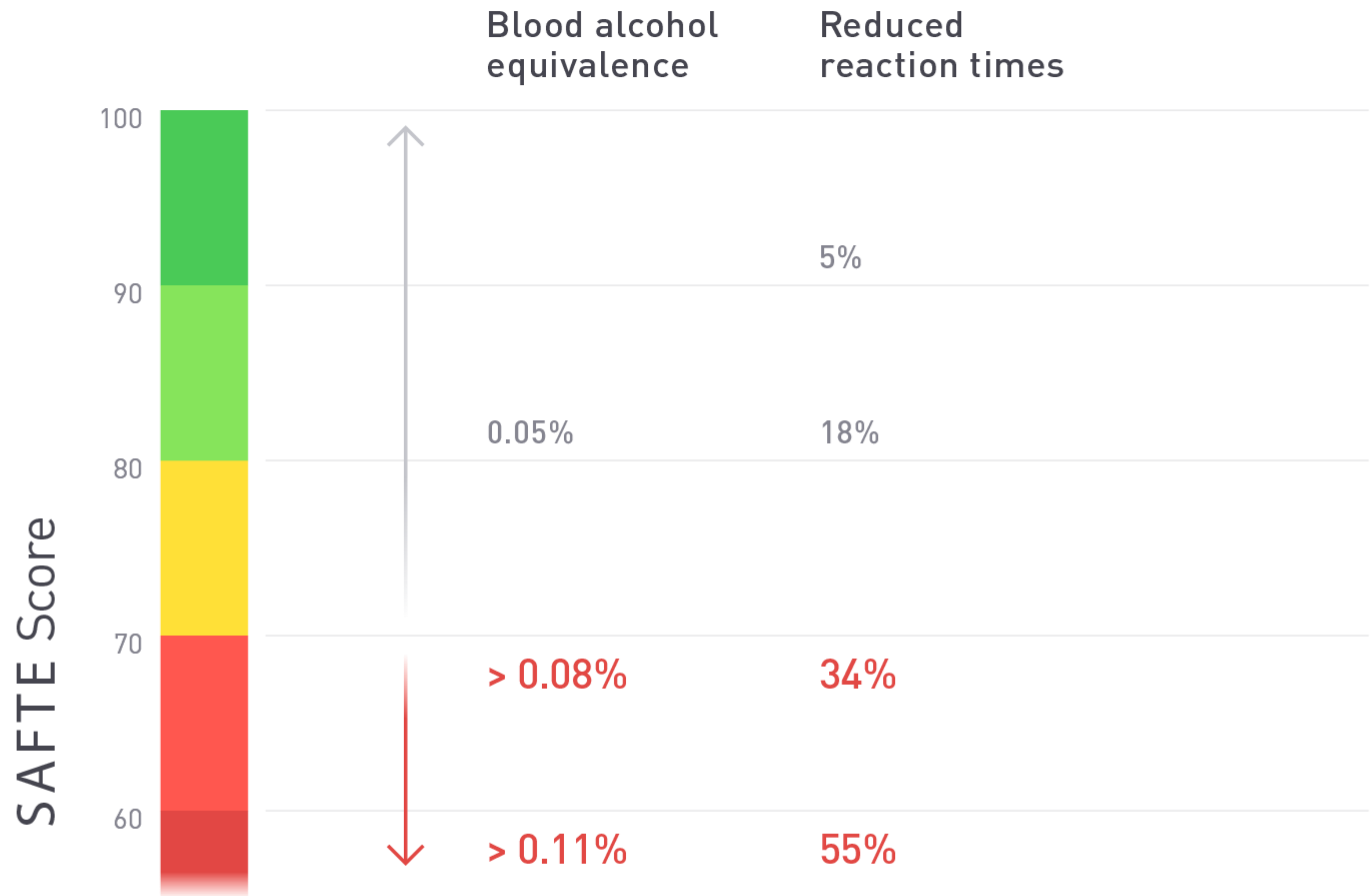
Chronically
under-recovered

Failure to thrive

Poor sleep
quality



Screen shot sleep report
graph pre op



Screen shot post op
graph

“Sleep is where all the good stuff happens.
It’s where I truly get to recover.”



SNAG.
50.56

AG.
49.29



Reasons some athletes don't get enough sleep



Sleep disorders

Insomnia

Sleep apnea



Scheduling

Practices, training
and meetings

Games

Long distance travel,
time zone shifting

Media or promotional
commitments

Eating, commuting,
time off



Lifestyle/Environmental

Sleep hygiene

Alcohol, drugs, caffeine

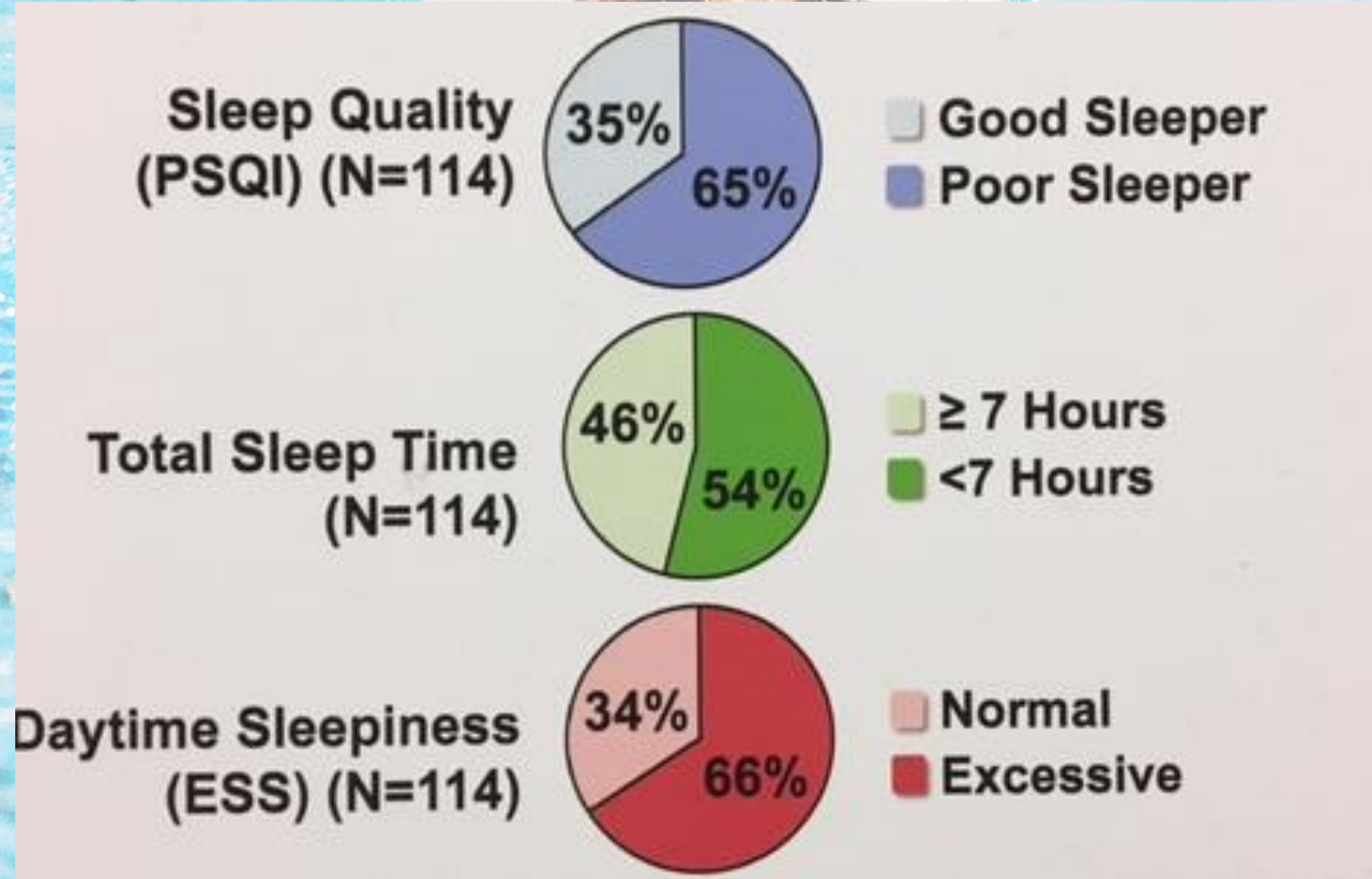
Noise, air quality, light
exposure

Stress

How Do Elite Athletes Sleep?

Sport	Time asleep Target 8+ hrs	Sleep Quality Target >90%	Author
Olympic Athletes, Variety of sports	M=7:06 hr:m F=6:56 hr:m	81%	Leeder et al., 2012
Ballet Troop	6:58 hr:m	81%	Frietze et al., 2009
College Basket ball	6:41 hr:m		Mah et al., 2011
National Athletes, variety of sports	6:30 hr:m		Sargent et al., 2014

Sleep Among Singaporean Athletes



Swinbourne et al, 2016

Time in bed	Time lights out	Time awake	How refreshed do I feel? 1-10	Sleep routine notes

My Sleep Journal

This Journal Belongs to:



Application and logistics

Screening for sleep disorders e.g. Insomnia, RLS

Asking relevant recovery questions, and educating your athletes 1v1

Time management

Sleep preferences sent to hotels e.g. temperature, pillows

Advanced travel logistics e.g. flight plan, time zone adaptation, clocks, phones, etc.

Blue-light filters for phones and tablets

Study: Sleep extension with swimmers

After extending time in bed to
10hr/night for several weeks
collegiate swimmers showed
improvements of

+8% **+20%** **+10%** **+19%**

15m sprint
speed

reaction time
off the block

turn time
efficiency

kickstrokes

Extended Sleep and the Effects on Mood and Athletic Performance in
Collegiate Swimmers;
Mah CD, Mah KE, Dement WC, 2011, Psychiatry and Behavioural
Sciences, Stanford University, CA



Study: Sleep extension with basketball players

After extending time in bed to 10hrs/night for several weeks, collegiate basketball players showed a:

+9%

improvement
in free throw
shooting
accuracy

+9.2%

improvement
in 3pt field
goal shooting
accuracy

Source: The Effects of Sleep Extension on the Athletic Performance of Collegiate Basketball Players; Mah CD, Mah KE, Dement WC, Kezirian, EJ, Psychiatry and Behavioral Sciences, Stanford University, CA



SUMMARY

Sleep is critical for Health and Performance

Athletes need to understand their sleep

Seek to dissolve sleep debt, and move towards
sleep extension

High level monitoring with Fatigue Science offers our
Singaporean Elites a competitive edge

#DRUGZZZ

Acknowledgements

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SSA
SSI