Fitness Resilience for Pilots

Stu Beech and Tom Axson

EASA Wellbeing Model and The RP Wellbeing Assessment Funnel.

What models can we implement to help assess and manage our Wellbeing?

Biological elements to improve Wellbeing Both in the air and on the ground

We explore the 5 key elements to help tweak and improve general fitness and wellbeing for pilots.

Tom Looks at Short-Haul 24 hour Wellbeing system

Timeline identifying strategies to improve wellbeing and performance before, during and after a short haul duty.

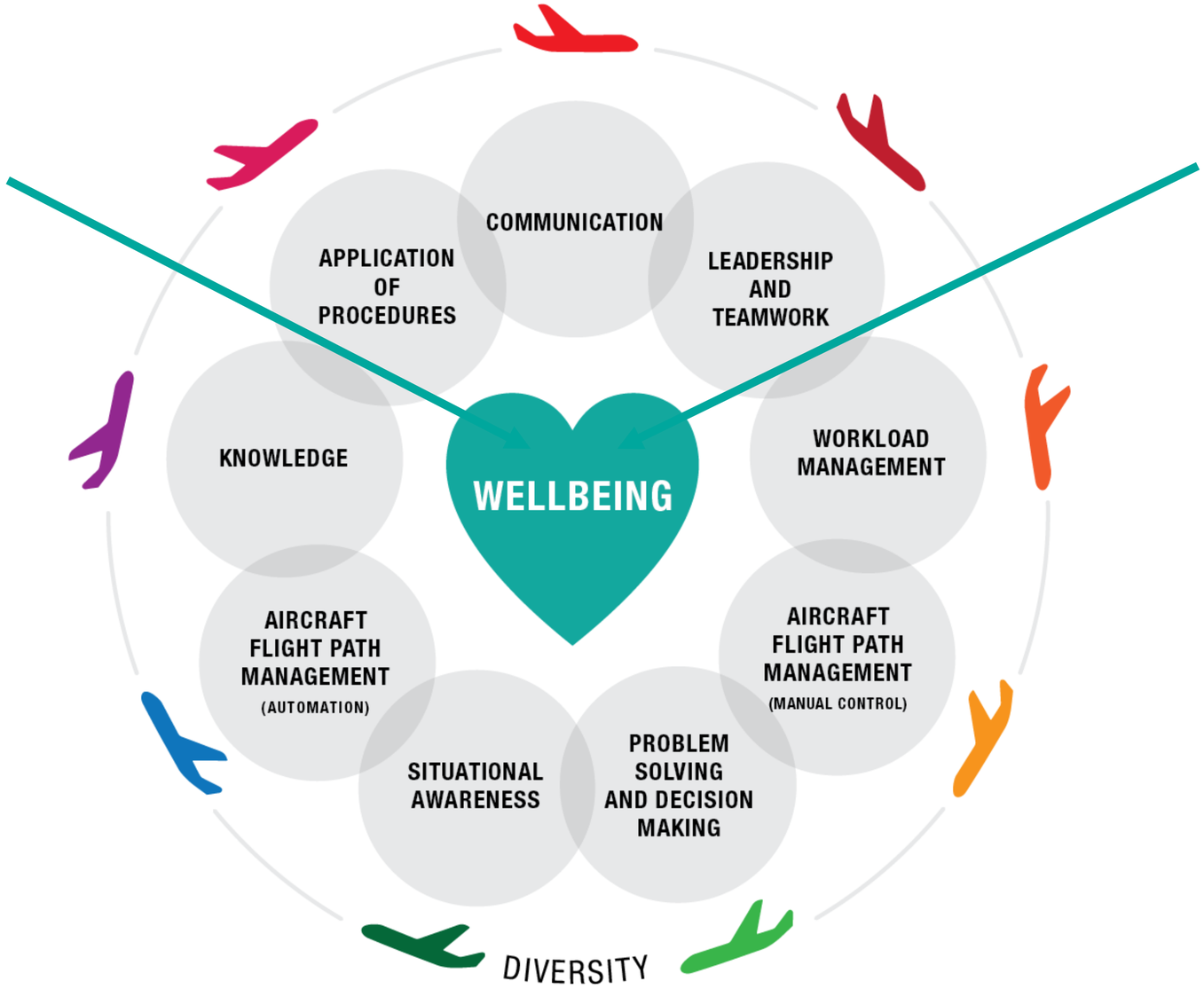
Stu explore Long-Haul 24 hour fitness system

Timeline identifying strategies to improve wellbeing and performance before, during and after a Long-haul duty.

Resilient Pilot Foundations

MARGINAL GAINS THEORY

- Small changes add upto a significant overall improvement when added together
- Sir David Brailsford – British Cycling
- 5% improvement on the things you can control.
- Today we look at 5 element to improve Fitness Resilience
- Total gains = 25%



CASH IN/OUT

- We are Hummingbird
- Bank Balance
- Cash in for implementing marginal gains
- Build up you bank of resilience
- Accept that we may need to cash out from our reserves.
- Find opportunities today to cash in

Three Pillars of Wellbeing

Sleep

Stress

Mental Health

Purpose

Family

Career

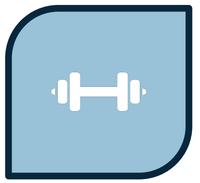
Relationships

Work Relationships

Nutrition

Health Conditions

Fitness



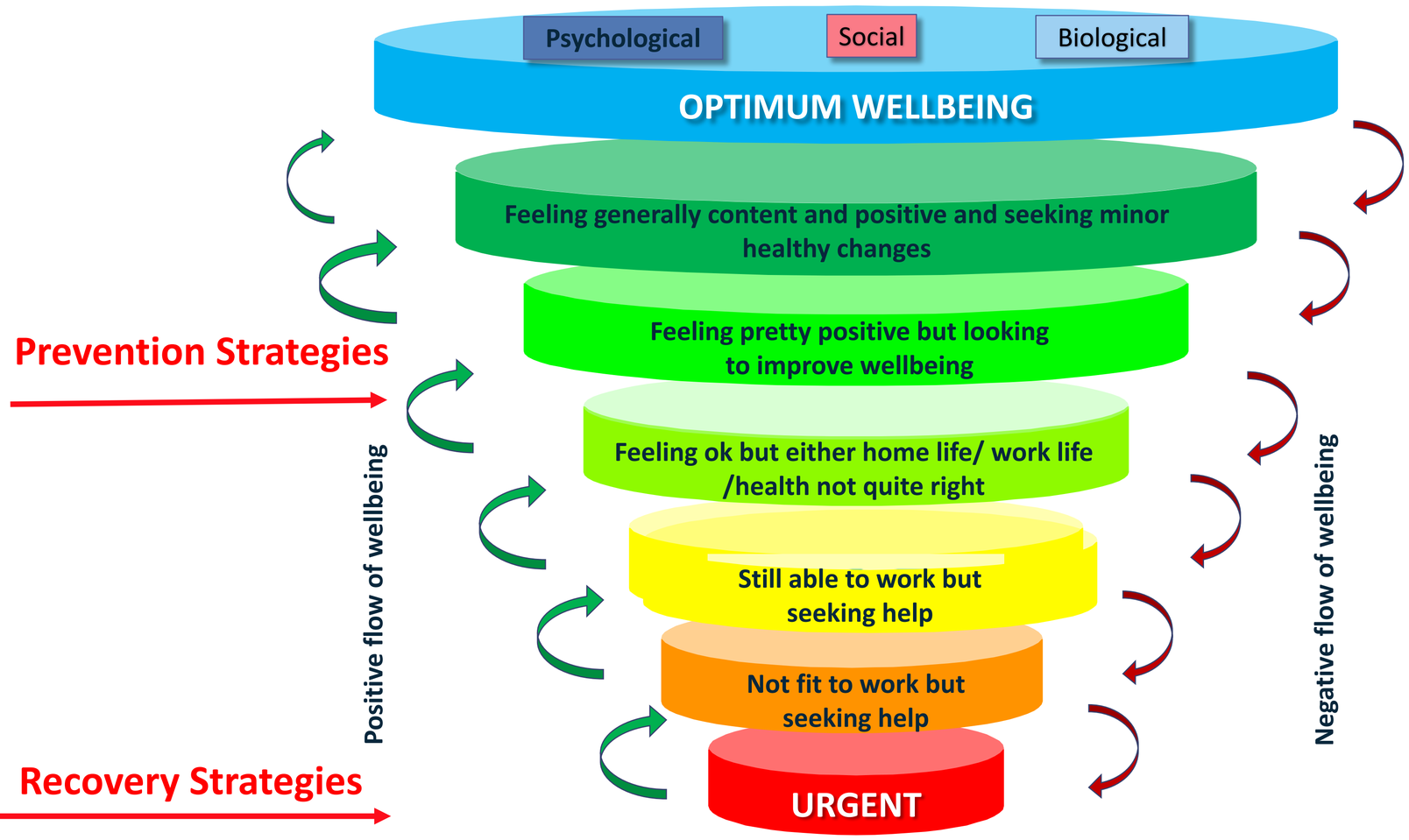
Hydration

Captain Paul Cullen. Turbulent Times, 2020.

Paul has been a Research Associate with the Centre for Innovative Human Systems (CIHS) and the School of Psychology at Trinity College Dublin since 2018.

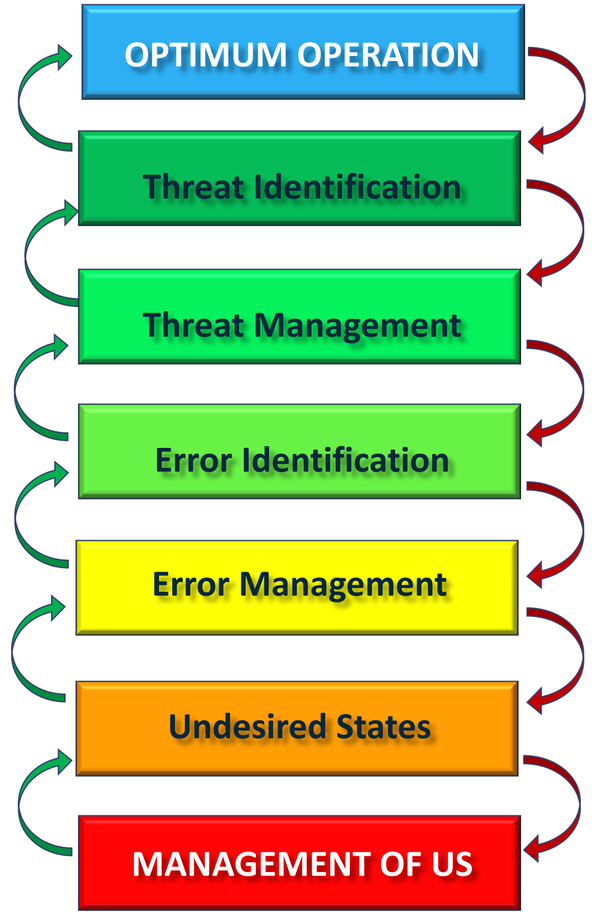
Resilient Pilot Wellbeing TEM Model©

WELLBEING Assessment Funnel



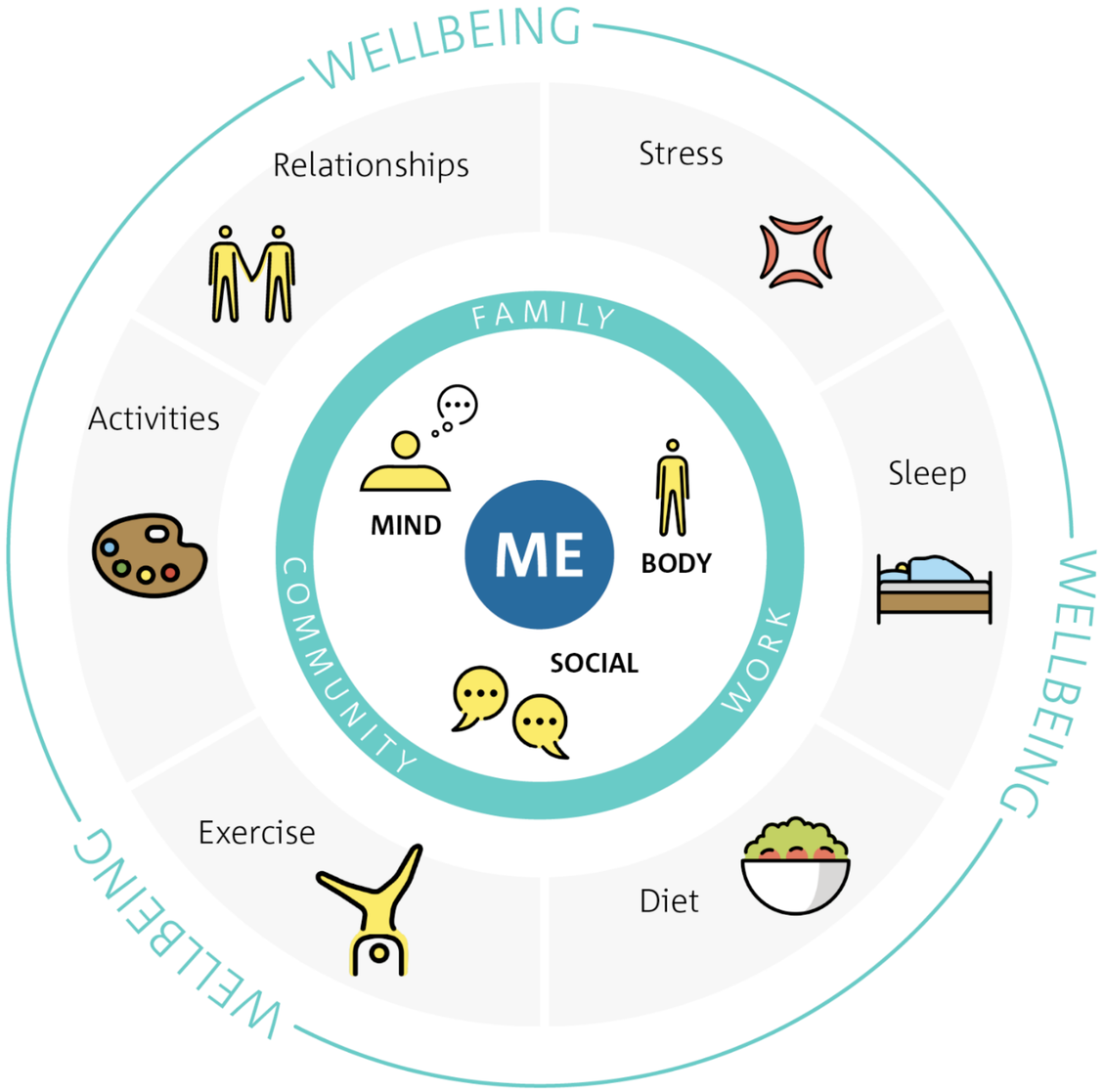
CRM/PC's
LTW
COM
WLM
PSD
SAW
PRO
KNO
FPA
FPM

TEM MODEL



EASA Wellbeing Model

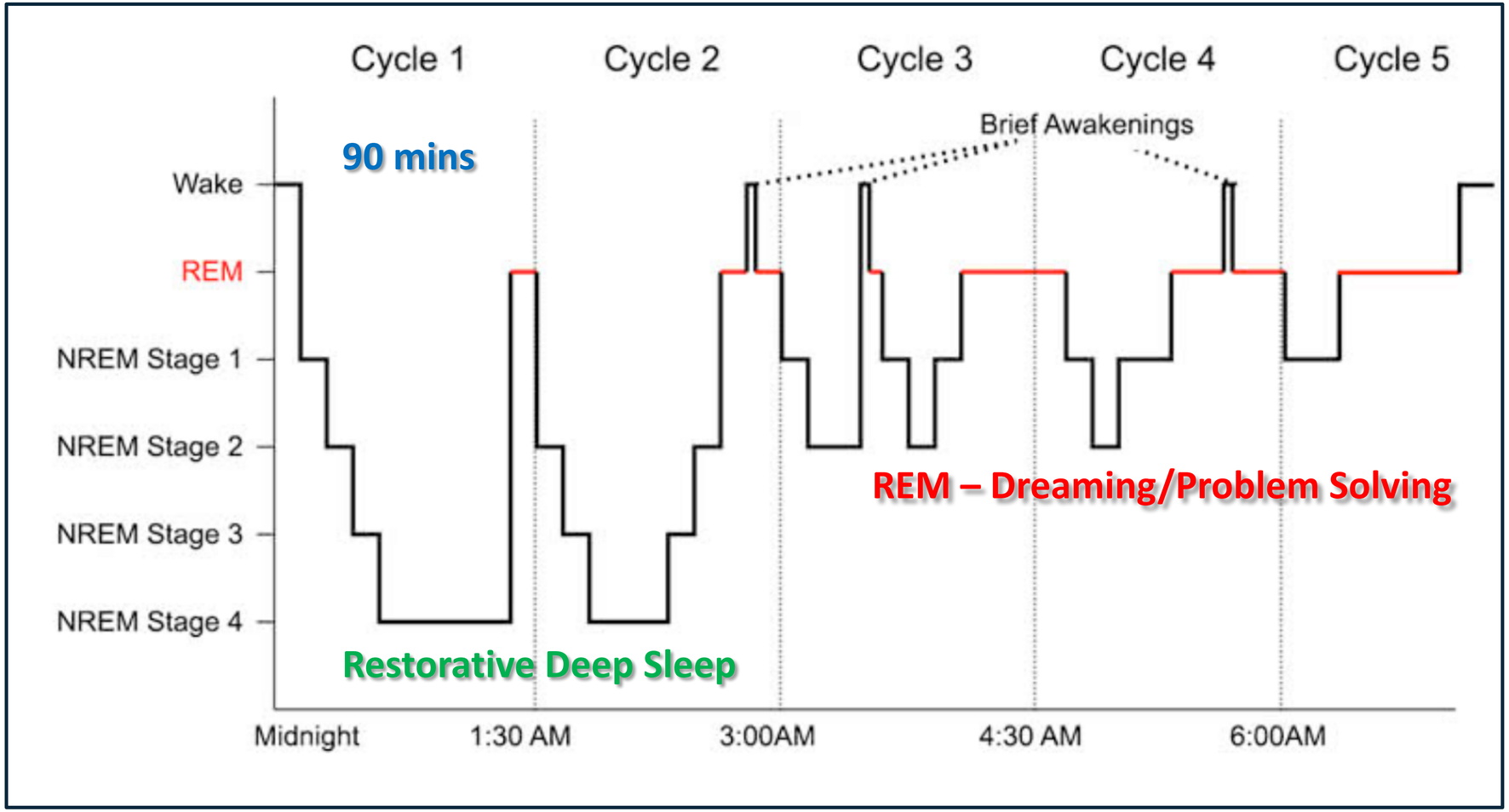
To achieve an optimal state of being, one must take a holistic and systematic approach, whereby you look at your body as a set of individual systems that make up the whole, and optimise them in order of priority, from sleep, diet and fitness, to your cognition and longevity.



This 'BioPsychoSocial model of Health' allows us think of our health as a 3-legged stool, in which each of the legs represents one of the pillars: Biological, Psychological & Social. The physical, mental and social aspects of our health are inter-dependent and a holistic approach is needed to look after them.

Optimising Your Sleep Cycle -24 Hour System

NHS - Most adults require between 6-9 hours of sleep per sleep opportunity
Between 4 and 6 Sleep Cycles



- Important to Organise Sleep in cycles.
- At least 4 cycles for effective NREM and REM Sleep.
- Program Sleep Cycles as part of 24 hour system
- Factor the system into rosters

Lark or an Owl?

- Determine what type you are
- Performance based upon Lark or Owl
- Owl – Adenosine high concentrations in the morning generating sleep pressure and reduced performance

- **Control and Bid for late starts to counteract the natural effect**

Optimising Your Sleep - 24 Hour System

On Ground Preparation

- Circadian rhythms.
- Preparing for duties a day before – plan rest and aim for 4-6 sleep cycles prior to a duty.

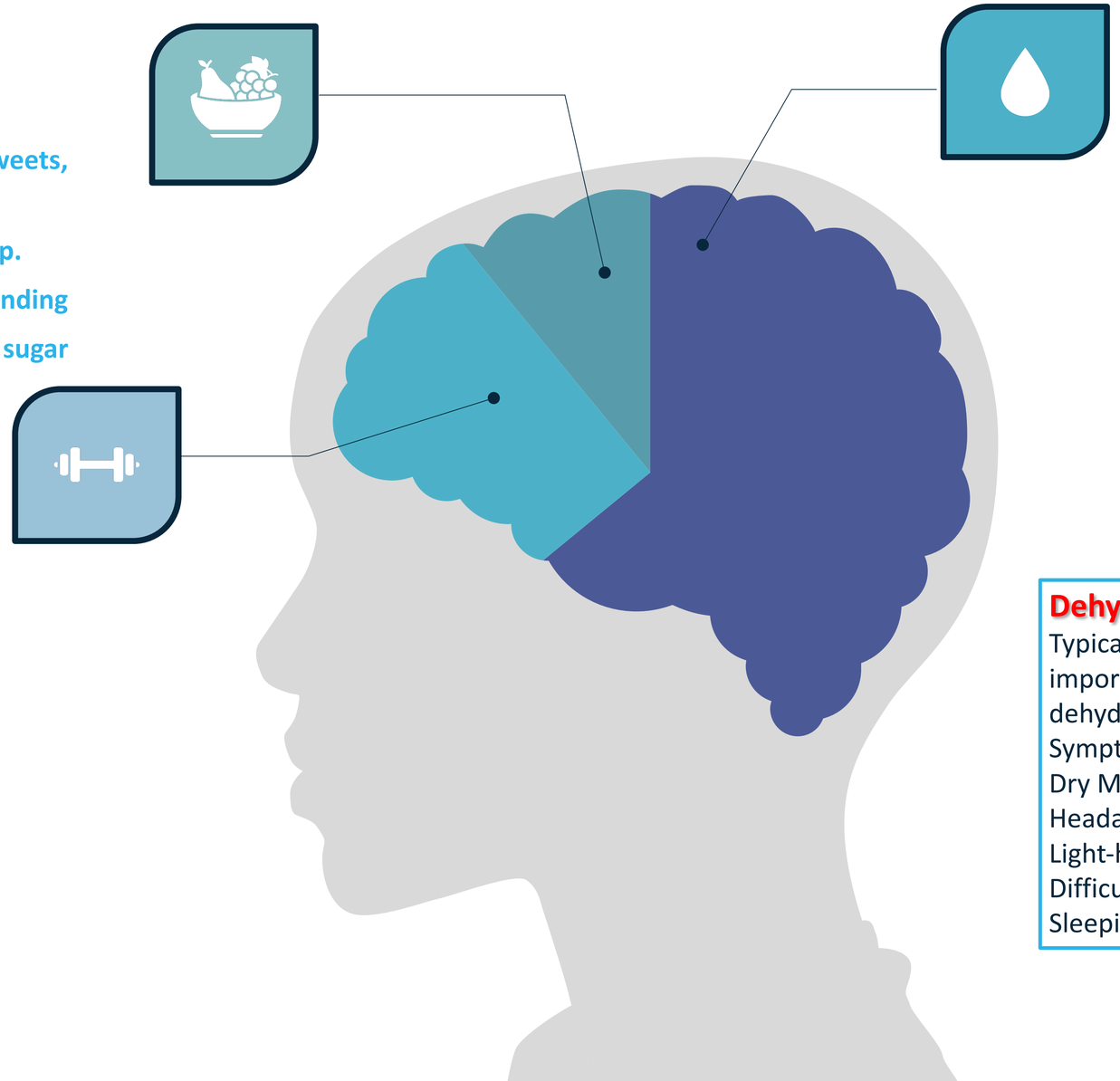
Sleep Cycle

Airborne Strategies

- Controlled Rest – in seat – Primarily Short/Mid-Haul flying. Ensure fully aware of the Airline Controlled Rest policy and culture.
- Full Rest Period – Crew Rest Bunks – Typically Long-Haul
- How to prepare for a rest period?
- What is an optimum level/amount of rest?
- What benefits does an optimum rest period in-flight give to the Pilot?
- Why do you feel the need to have a rest mid-flight?

Importance of Hydration, Nutrition and Fitness for Performance

Tweak these elements to improve our performance and resilience



Nutrition

- Avoid simple sugar foods such as sweets, chocolate generally.
- Avoid Caffeine 6 hours prior to sleep.
- Targeted Caffeine 30 mins before landing
- High Protein Diet – regulates blood sugar
- Awareness of nutritional intake
- Be aware of crew food available

Fitness

- Are you a morning person or a late person?
- It doesn't entirely matter but it is important to identify what works best with your routine and body clock & make it work for you.
- The best rule to follow is exercising at the same time every day - regardless of morning, noon or evening.
- Plan ahead facilities down-route

Hydration

- Water is better than other drinks generally. However, other drinks will still hydrate you – Food also contains a lot of water -Soup
- Around 2L of fluid per day in addition to other drinks while flying.
- 8 x 8 Rule – 8 Glasses fluid - 8 Ounces
- Consider climate and aircraft altitude, exercise duration, activity level to adjust this accordingly.

Dehydration: Reduction in performance

Typically symptoms are very subtle at first, so it important to be proactive in avoiding any kind of dehydration.

Symptoms:
Dry Mouth
Headache
Light-headedness
Difficulty Concentrating
Sleepiness and Fatigue

Fitness Strategies

What are tested in Pilot Medicals. Targeted exercises to ensure the best chance of not losing medical certificate.
ECG – Maintaining a healthy Heart – Diet definitely contributes considerably – Targeted exercises, Cardio (Running, Cycling, etc.)
Targeting areas that are strained throughout the day as Flight crew
Slumping in the seat – Target Shoulder and Back exercises, however it is important to balance these exercises with other muscle groups that have a direct effect on those, such as Shoulder/Chest and Back/Core or Abs.
In a very over simplified ideology, there are 2 types of people when it comes to exercise and physical fitness.

1. People who are only motivated by doing exercise they enjoy.
2. People who know roughly what works for them, but need someone or something to give them the drive to do it.

Now more than ever, there are lots of options to workout from home as well as going to a gym. Large fitness organisations such as Les Mills have now created a 'on-demand' service alongside apps like Nike+ amongst many others.

- Split between Short Haul and Long Haul as each type of flying gives different opportunities.
- Short-Haul – On Turnarounds, there is space in galleys and on the airbridge/stairs to stretch out between sectors.
- Mid-Haul – No rest area and only 2 crew operation – Using available space where necessary – depending on airline specific policies, you may be able to help stretch out whilst on a toilet break or any other suitable time in a flight.
- Long-Haul – Rest area can help, although cramped in areas which can prove a challenge – Again, use of open spaces such a galleys can give more options.
- Simple stretches can include stretching down to your toes, squeezing your shoulders together against a empty panel or even reaching backwards towards the ceiling and wall behind you. This can help your mobility and set a good precedent for when you get off and have the opportunity to stretch out fully.

Hoping to put together some good in-seat exercises as well as exercises that can be done in confined spaces in the next couple of weeks. These ideas will come from Tom's ex-colleagues from his Country Club days.

NTC

SHORT Haul Tool Kit

Optimising In-flight Performance

Speak up if keeping things to yourself or struggling.

Hydrate 6-8 glasses of fluid

Optimise workout for body clock
Plan within 24 hour system

Rest and **R**ecover – 4-6 Sleep Cycles
Identify your optimum amount of sleep

Time meals and workouts:
Avoid exercise 2 hours before bed
Light protein rich meal before bed

PILOT ASSISTANCE NETWORK

Short Haul Report Timeline – LHR/MAN

Coffee
Gym/Exercise 30 mins +

Nutritious Breakfast
Salmon/eggs/avocado
Granola/yohgurt
Fruit

Meal Prep for next day
Afternoon health snack

Light Dinner 120 mins
before bed 1800
High protein
Reduced sugar
Limit Alcohol

High protein breakfast
Eggs/porridge
Banana
Plenty of water
Coffee

0700
5 SLEEP CYCLES

0900-1500

1500
CAFFEIN BAN
ALCOHOL BAN

2030-0230 Sleep
4 SLEEP CYCLES

0510 Report LHR

Wake up earlier than normal by 2 hours

< 8 hours to build sleep pressure

Create time for normal daily activities

Flight Preparation

New Destination?

Weather Forecast

LIMIT EXRECISE

Read 30 mins before sleep

Warm shower 60 mins before bed

Dark room/blinds

No Blue light

Factor in traffic

Arrive 30 mins before report

LONG Haul Tool Kit

Optimising In-flight Performance

NASA's research showed that naps really can fully restore cognitive function at the same rate as a full night's sleep. The space agency found that pilots who slept in the cockpit for 26 minutes showed alertness improvements of up to 54% and job-performance improvements by 34%

https://science.nasa.gov - 2005 NASA Directorate

Limit

High content sugary foods and carbs –to reduce spikes and slumps, improving performance and lowering fatigue.

Optimise – NASA 26 MIN Nap

Combine Caffeine consumption prior to optimum nap. Double effect to improve alertness for another 2 hours

Nutrition and Hydration

Plan in-flight high protein meals and 2L of water per 10 hour flight.

Generate

Use period of alertness and low work loads to brief and plan ahead so crew can optimise in-flight rest.

Factor in 5 mins after rest for inflight stretching and breathing

4-7-8

LONG Haul Tool Kit

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Long Haul Report Time Line – LHR/JNB - Operating

MORNING COFFEE

Resistance training/exercise

Nutritious Breakfast
Salmon/eggs/avocado
Granola/yohgurt
Fruit

Chicken/brow
rice/broccoli
Plenty of water
Green Tea

Tactical Coffee
Banana
Plenty of water

2200 → 0830 6 SLEEP CYCLES → 0900-1000 → 1000-1300 → 1300-1400 WOCL → 1610 Report

Wake up 2 hours later

Maximize sleep opportunity

Reduce sleep pressure to min

Very import to exercise as next 24 hours mainly sedentary

Create time for normal daily activities

Call Family

Get life in order

Lunch and nap opportunity 30 mins

Read Notices

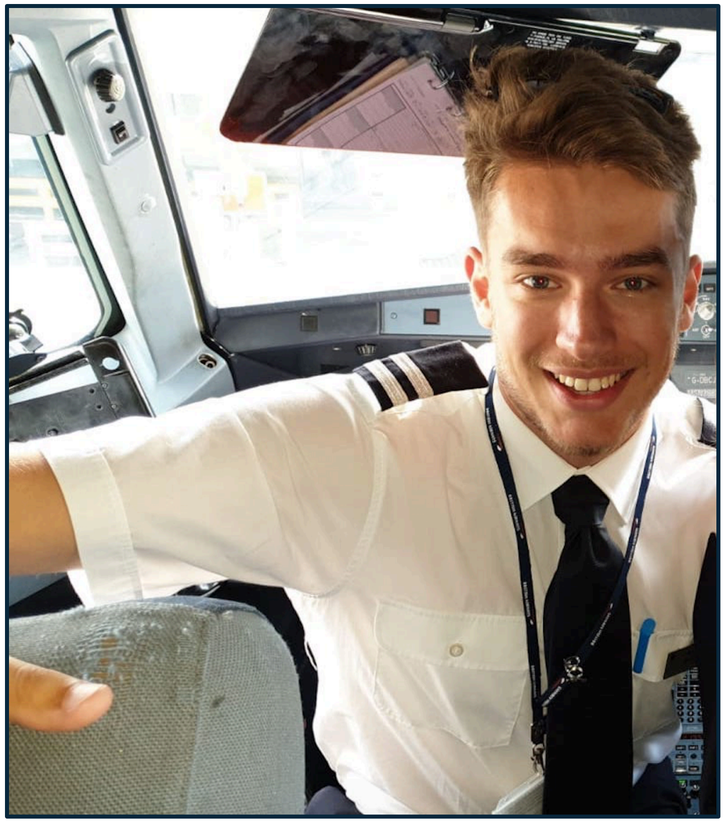
Flight preparation

Download updates

1510 HEX

Arrive 30 mins before report

A Well Spent Day Brings Happy Sleep
Any Questions?



Resilient Pilot