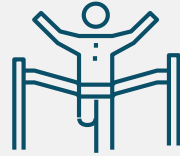


# Performance Intelligence (PQ) & Critical Decisions

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# An Interesting Parallel



## The Athlete

Trains for hours each week to become Match Fit

Competes for 10 seconds to a few hours each week

Focuses on strategic recovery

Periodises their training calendar balancing stress (training and competition with recovery

Prioritises sleep and relaxation

Has an off-season for 2 – 3 months

Has a dedicated support team, including nutritionist, sport psychologist, masseur and specialist coaches

Career lasts approximately 10 – 15 years



## The Leader

Little to no training each week

Competes for 40+ hours a week

Views recovery as luxury / unnecessary

Crams their diary with as many tasks as possible and lives in a state of stress

Cuts back on sleep to fit everything in

Takes 4 weeks' break per year, constantly checking technology on holidays

Little to no support team

Career lasts 40+ years

# REAL Building Blocks of Critical Decisions



**E**nergy

The way you eat and move



**R**ecovery

The way you balance stress



**A**ttention

The way you maintain focus



**L**iving It

The way you work and live



# Recovery (Out)



# Recovery (In)





# Recovery: Why Does It Matter?

01

Parasympathetic Nervous system (PSN) activation increases slow brain waves, **enhancing creativity and lateral thinking.**

02

PSN activation increases access to cortical areas, which **enhance** executive functioning such as **managing complexity, planning, decision making.**

03

Mindfulness exercises activate brain areas (left anterior cortex) responsible for resilient thinking and **reduces fight and flight responses** (shrinks Amygdala).

04

Mindfulness **prevents age related brain decline** in the prefrontal cortex (thinking brain).

05

Quality sleep allows **better memory consolidation, reaction times and vigilance.**

# The performance impact of excessive work



**Fatigue has the same effect as alcohol on an Operator's fitness for duty**

**Like alcohol, fatigue affects three core physiological faculties required for safe operation. When fatigue impacts these factors to the same extent as drunk driving (Bac 0.08, it is known as fatigue impairment)**

**Reaction  
Time**

**Lapse  
Likelihood**

**Cognitive  
Effectiveness**

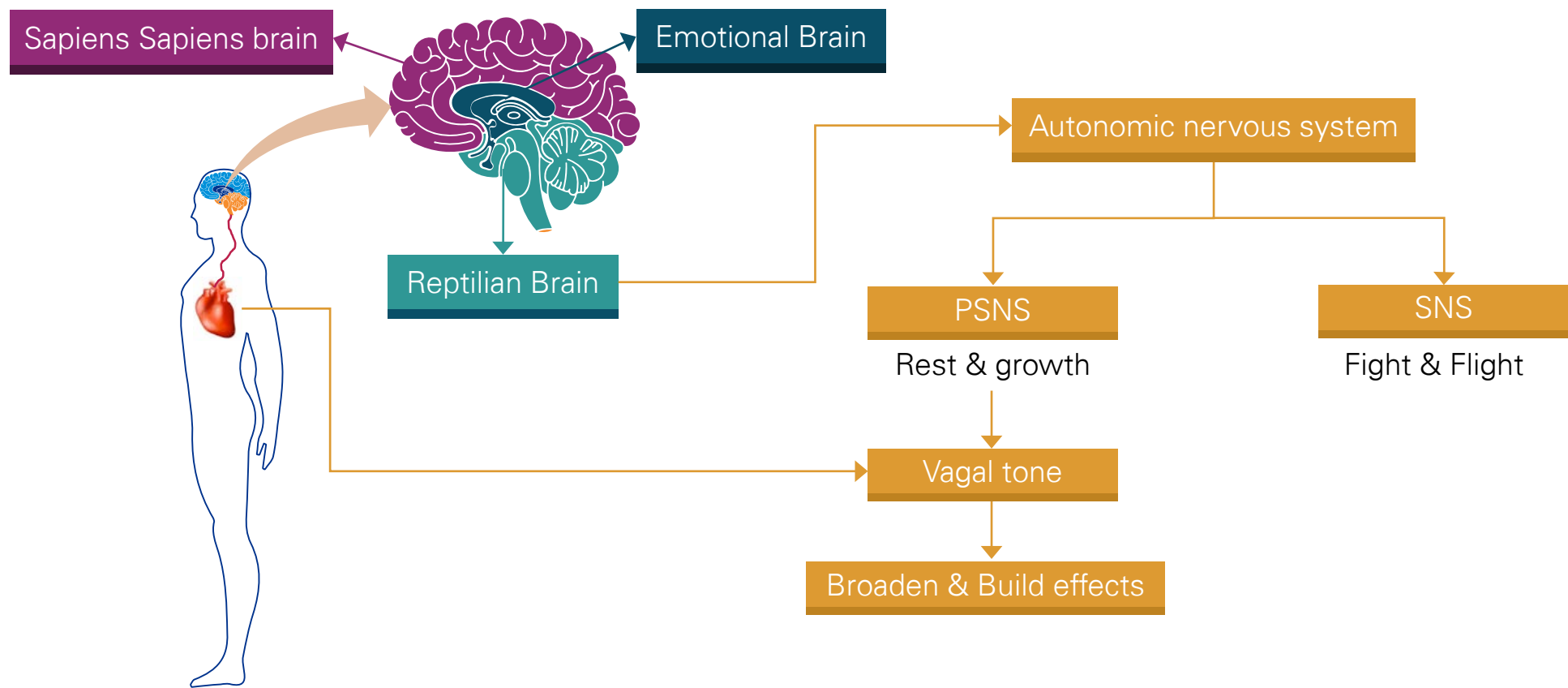
**The above measures become worse at night**

(Lieberman et.al. 2006)

# The health impacts of excessive work

- Working through the night means you're more likely to suffer from **shift work disorder**, a **circadian sleep disorder** characterized by sleepiness and/or insomnia. Shift work disorder is associated with **decreased productivity, impaired safety**, diminished quality of life and adverse effects on health (Figueiro & White, 2013);
- Over the longer term there is a higher propensity to develop metabolic and nutritional disorders, such as obesity, diabetes, **metabolic syndrome and gastrointestinal disorders** (Zimberg et al. 2012);
- Night work and excessive hours have been associated with **deregulation of the circadian rhythm**, which could **change psychological functions**, dietary and social habits, and **Autonomic Nervous System function** (Monteze et al. 2015);
- Working memory and attention are still impaired after three years in patients with stress-related exhaustion – (Scandinavian Journal of Psychology 2017)

# Physiology: What can I do?





# Sleep Preparation



## Day

Mindfulness Practice

Walk & talk

Lunch by the water / park

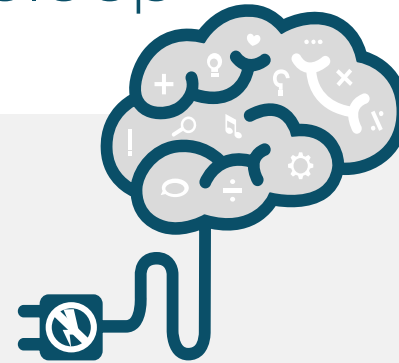
20-30 min nap ....in the office

Can be physically removing yourself from work/computer

Can be strategic – pre/post performance moments

Can partition work time from home time

# Sleep



## Night

Sleep is a continuation of the day's events

It is not a separate state and reflects mood

Mindfulness practice improves ability to fall asleep

Space during the day positively impacts sleep

Must be cool, dark, protected, no electronics

Wind down with music, scents, hot bath/shower

Limit blue light, and electronics

Limit alcohol (sugar) 2hrs before bedtime

Herbal teas

Clean sheets and comfy clothes

Use a sleep journal

# Top aids to promote restorative sleep



## Magnesium

Supplementation of 500 mg of Mg has been associated with significant improvement in the insomnia severity index, sleep time, sleep efficiency, sleep onset latency, serum cortisol concentration, serum renin, and melatonin.



## Zinc

dietary intake of Zinc correlated with a modification of sleep amount. According to research, very short sleepers (<5 h) ingested significantly less zinc than did normal or long sleepers.



## Barley Grass

Barley grass powder with higher GABA, Ca, K, and tryptophan contents is a very effective functional food in promoting sleep



## Valerian Root

increases the neurotransmitter GABA, causing a calming effect on the brain, this is the same effect as prescribed medications for anxiety.



## Cherry Juice

contains a high concentration of melatonin helping to enhance sleep, cherry juice has been used in the prevention of insomnia. Studies have shown an increase of 1.5 extra hrs of sleep.

<https://www.health.harvard.edu/mind-and-mood/foods-linked-to-better-brainpower>  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2805706/>



# Recovery: What can I do?

01

**Brain Breaks built into every work day to balance stress and recovery.**

02

**Make sleep quantity and quality a priority and aim to have 300 good nights sleep a year**

03

**Strategically plan your annual holidays to maximize performance with 1 major and 3 minis (plus 2 relaxation activities every week)**

04

**Mindfulness practice as part of your everyday routine.**

05

**Partition work and home time to maximize recovery and brain breaks**

# Energy: Why Does It Matter?

01

Regular cardiovascular exercise prevents cognitive decline by **enhancing the growth of new neurons** (neurogenesis) as well as maintaining existing neurons.

02

Regular cardiovascular exercise positively impacts the hippocampus, which **improves memory**.

03

Regular strength training **improves working memory**, which is crucial for complex problem solving.

04

Regular snacking to control your blood sugar levels ensures **better functioning of the prefrontal cortex (thinking brain)**.

05

Staying hydrated **improves attention and working memory**.



# Exercise Energy

**50% increase in positivity and mental health when exercising in a nature compared to an urban environment (or gym)**

Once per week having residual/compounding positive effect, but the more the better

(Mitchell et.al. 2008)

A study of **14,000 Army personnel** found that **Exercise and Nutritional habits can directly influence sleep quality and duration**, in either negative or positive directions

(Lentino et.al. 2013)

**More active individuals are able to process information more quickly. Aerobic fitness enhances cognitive strategies** enabling people with higher levels of fitness to respond effectively to an imposed challenge with a better yield in task performance.

Gomez-Pinilla, F., & Hillman, C. (2013)

**15 min walk in nature = 16% cortisol drop, 2% blood pressure drop, 4% heart rate drop**

(Miyazaki et.al. 2010)

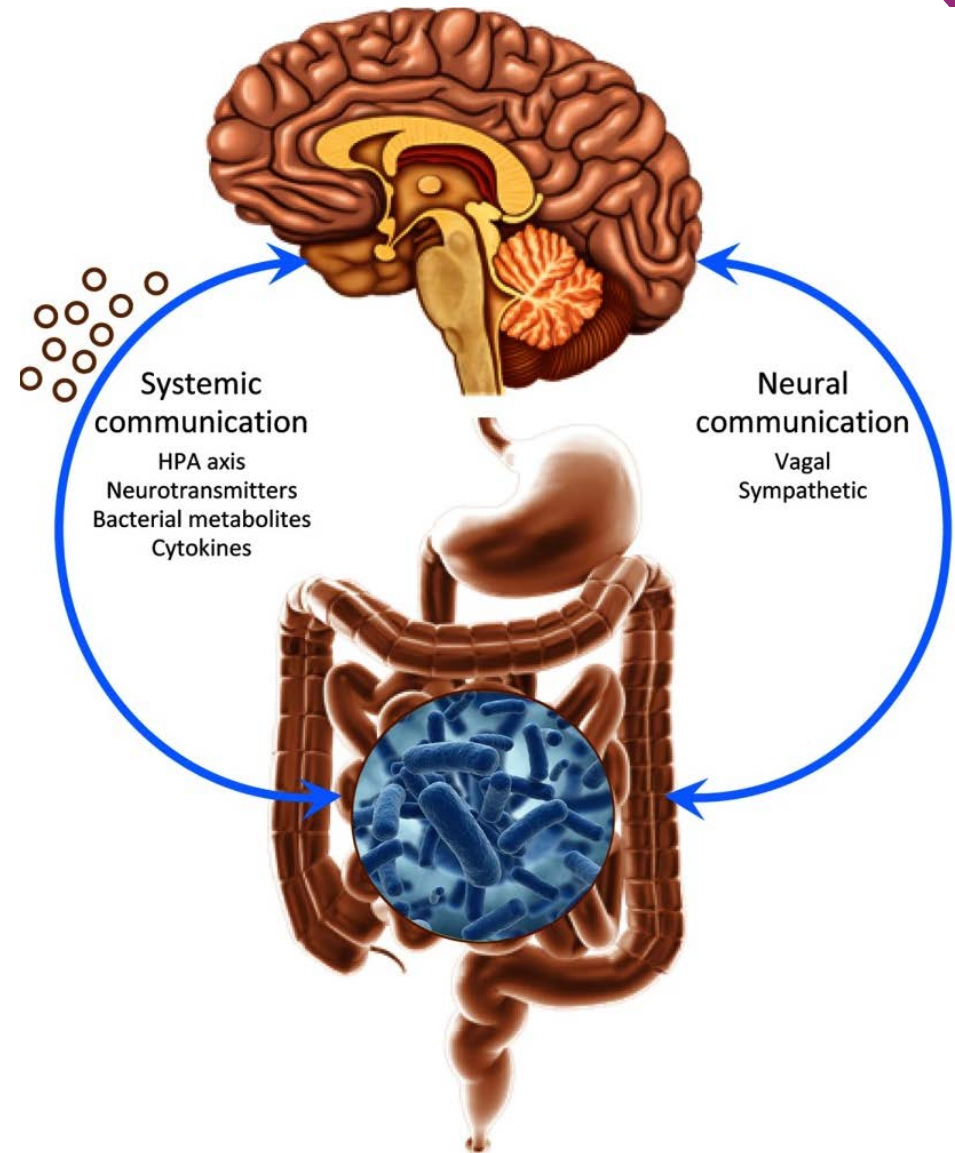
# Gut Microbes & the Brain

## Paradigm Shift in Neuroscience

Bidirectional communication channels between the gut microbiome, the gut, and the brain.

**Endocrine-, neurocrine-, and inflammation-related signals generated by the gut microbiota and specialized cells within the gut can, in principal, affect the brain.**

In turn, **the brain can influence microbial composition** and function via endocrine and neural mechanisms.





# Nutrition Considerations

Research has shown that **probiotic's** have antidepressant properties, restores gut flora, **helps in reducing the anxiety stress response as well as improving mood** (Cryan, page & Lucki, 2005)

The **bidirectional signaling between the gastrointestinal tract and the brain** is vital for maintaining **homeostasis** (Cryan & O'Mahony, 2011)

**High sugar foods** (EG: takeaway & highly processed or packaged foods) **disrupt your MITOCHONDRIA's ability to provide energy** (Cheung et.al. 2010)

**Keep adequately hydrated,** (soft drinks, **energy drinks** have the opposite effect). (Cheung et.al. 2010)

**Caffeine** in moderate doses (100 - 200 mg every 3 - 4 hours) can restore **vigilance and alertness**, but cannot be a substitute for sleep. High doses, can impair fine motor coordination. Caffeine is not useful for individuals already consuming 300 mg (4 cups) or more of caffeine a day (caffeine's half-life is 6.5hrs) (Cheung et.al. 2010)



# Top Foods for Vigilance and Cognition



## Oily Fish / Salmon

source of the Essential Fatty Acid Omega 3 DHA an essential building block for our brain cell membranes. DHA also supports cerebral blood flow and the production of new neurons.



## Green Leafy Vegetables

broccoli, spinach, kale, cabbage... provides magnesium and B vitamins, these nutrients are vital in the production of energy within brain cells. Magnesium is also neuro-protective at times of stress and high cortisol.



## Caffeine

studies show caffeine consumption increases mental alertness, mental energy and can function to solidify memories for optimal recall.



## Berries

packed with brain protective antioxidants, studies show the consumption of berries can improve memory and delay memory decline.



## Curcumin

is the active component of turmeric. Curcumin can boost Brain-Derived Neurotrophic Factor, linked to improved brain function and a lower risk of brain disease.

# Energy: What can I do?

01

**Minimum of 3 x 60 minutes Fitness sessions per week balancing cardio, strength and flexibility**

02

**10,000+ steps every day for general movement and homeostasis.**

03

**30 minutes every non training day, of low level cardio movement**

04

**Track and monitor your success and commit to an annual event to focus your attention**

05

**Plan and consider what nutrition requirements work best for your performance environment**



# Attention: Why Does It Matter?

01

Your talent and your IQ don't play nearly as big of a role in your success as you might think. Research indicates that **IQ only accounts for 30% of your achievement** — at the extreme upper end

02

**Mental toughness development** is a well-known training technique within the elite sporting world with **significant correlations between being more mentally tough and improved physical endurance.**

03

Mental toughness is a **key psychological variable** related to achievement in performance domains and **perseverance in challenging circumstances**

04

**Mental toughness**, found to contribute **up to 30% of the overall variance in your performance**, irrespective of what type of work, or task you're doing.

05

Research shows that **Mentally Tough individuals appear to be able to maintain a good level of decisions making.** Mentally Sensitive individuals however tended to make poorer quality decisions

1 & 2 Lili Slackchith Rasprasith, (2015) Why Some Can But Others Can't: Secrets To Life, Success & Happiness. Bloomington IN Booktango

3 Crust, L., & Clough, P. J. (2005) Relationship between mental toughness and physical endurance. Perceptual and Motor Skills, 100(1), 192-194

4 Crust, L., Swann, C. & Allen-Collinson, J. (2016). The thin line: a phenomenological study of mental toughness and decision-making in elite high-altitude mountaineers. Journal of Sport and Exercise Psychology, 38 (6), 598-611

5 <https://www.linkedin.com/pulse/impact-mental-toughness-problem-solving-decision-doug-strycharczyk/> retrieved 22/11/18

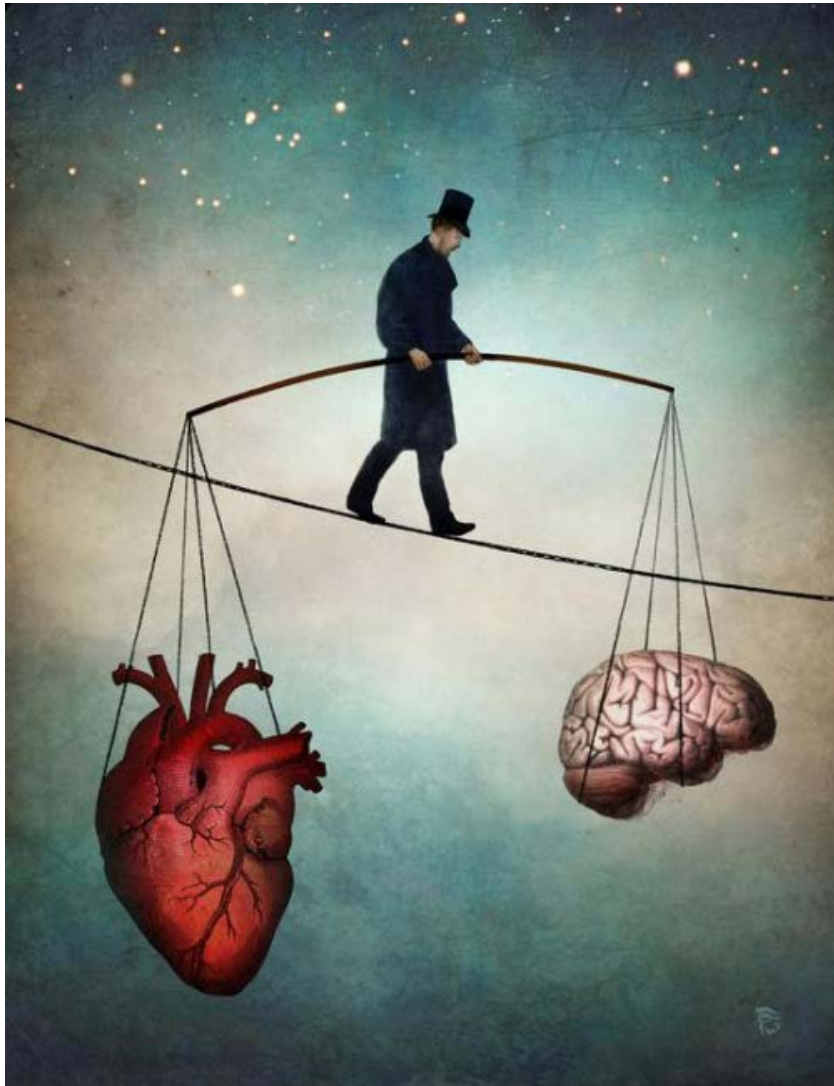
# Mental Toughness

## A Definition

*Mental toughness is **possessing**, understanding and being able to **utilize** a **set of psychological skills** that allow the **effective**, and even **maximal execution** or **adaption**, and **persistence** of **decision-making** and **physical** and **tactical skills learned** in **training** and by **experience***

Asken, Grossman, Christensen Warrior Mindsets 2011

# Mental Toughness

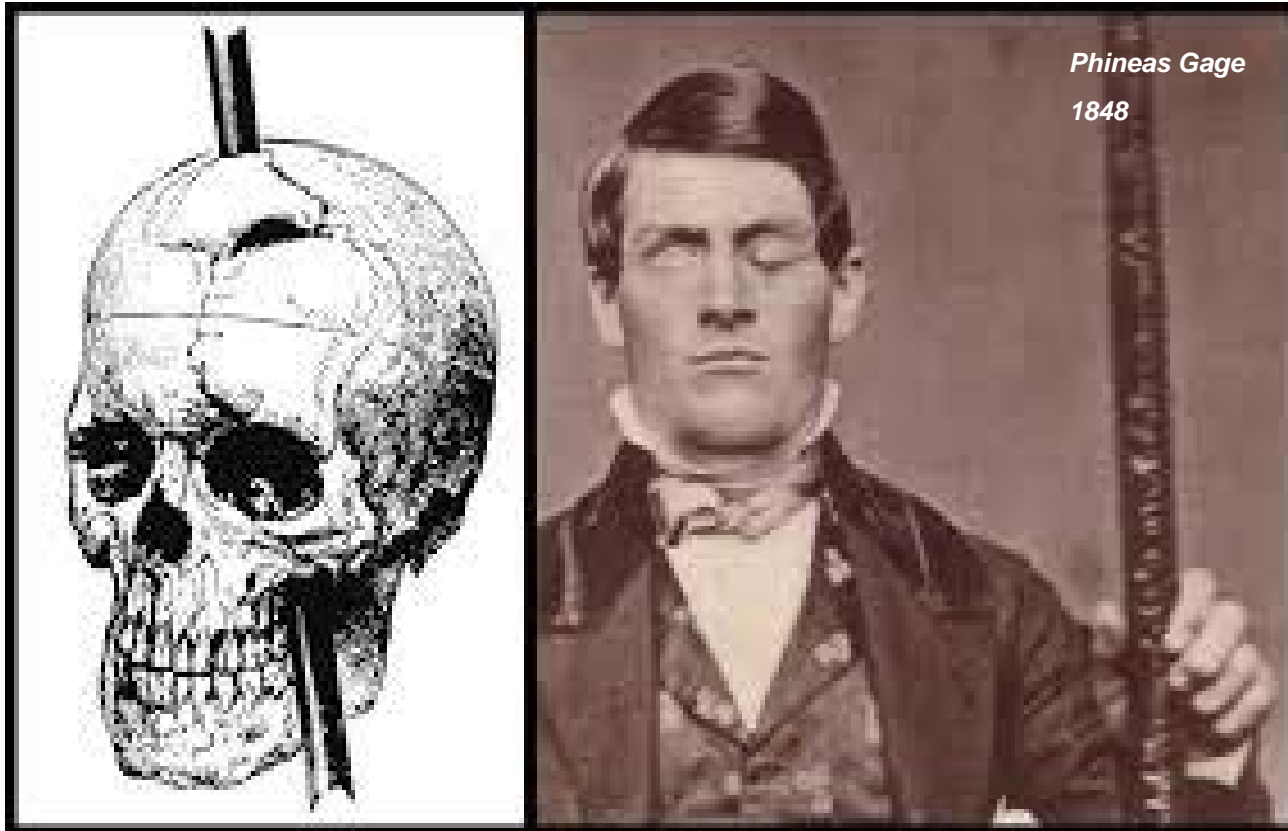


1. Baseline Capacity
2. Maximise Capacity
3. Building Capability



# Mental Toughness

## Baseline Capacity



***We are not thinking  
machines. We are  
feeling machines  
that think.***

Damasios's 1994

# Mental Toughness

## Maximise Capacity

**Success Visualisation** – *imagine the best future state*

**Physiological Control** – *breathing exercises*

**Mental Control** – *mindfulness practice*

**Positive Thinking** – *reframing techniques and language*

# Mental Toughness

## Maximise Capacity – Positive Thinking

*Oh, the mission got cancelled? Good... We can focus on another one.*

*Didn't get the new high-speed gear we wanted? Good... We can keep it simple.*

*Didn't get promoted? Good... More time to get better.*

*Didn't get funded? Good... We own more of the company.*

*Didn't get the job you wanted? Good... Go out, gain more experience, and build a better resume.*

*Got injured? Good... Needed a break from training.*

*Got tapped out? Good... It's better to tap out in training than tap out on the street.*

*Got beat? Good... We learned.*

*Unexpected problems? Good... We have to figure out a solution*

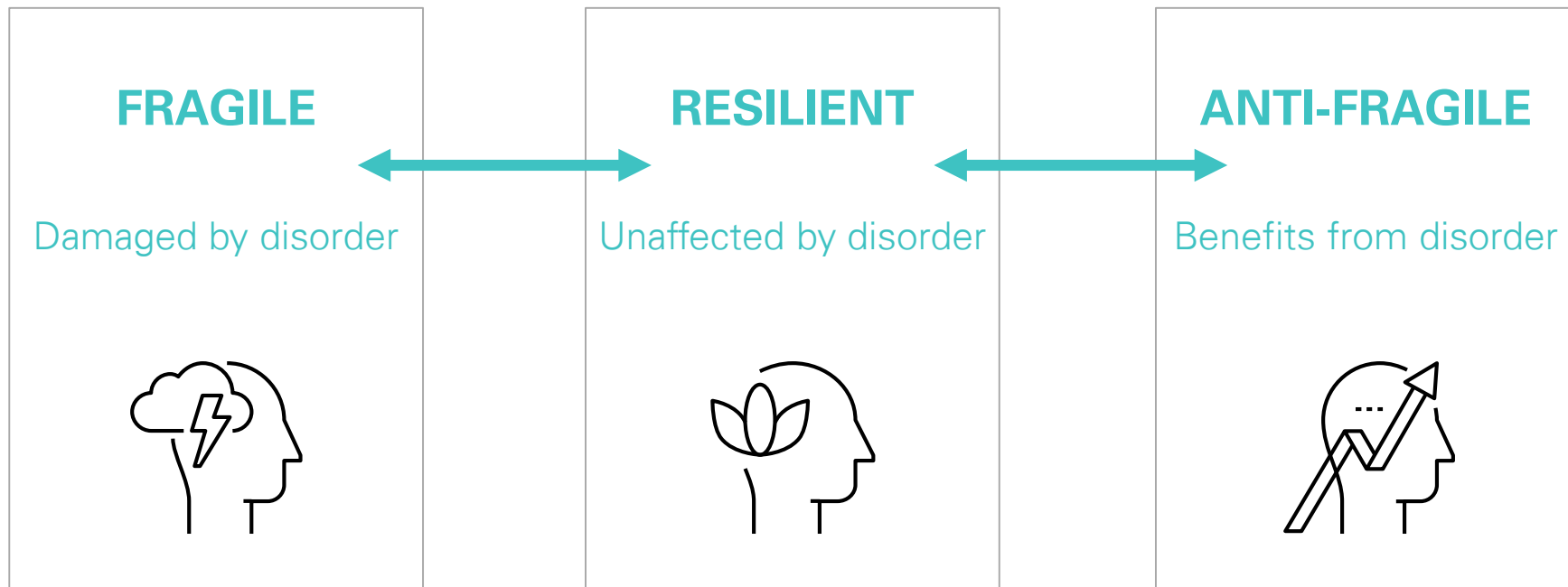
*Jocko Willink, Ex Navy SEAL Commander*

# Mental Toughness

## Building Capability

*How do we become anti-fragile and benefit from disorder?*

N. Taleb 2012

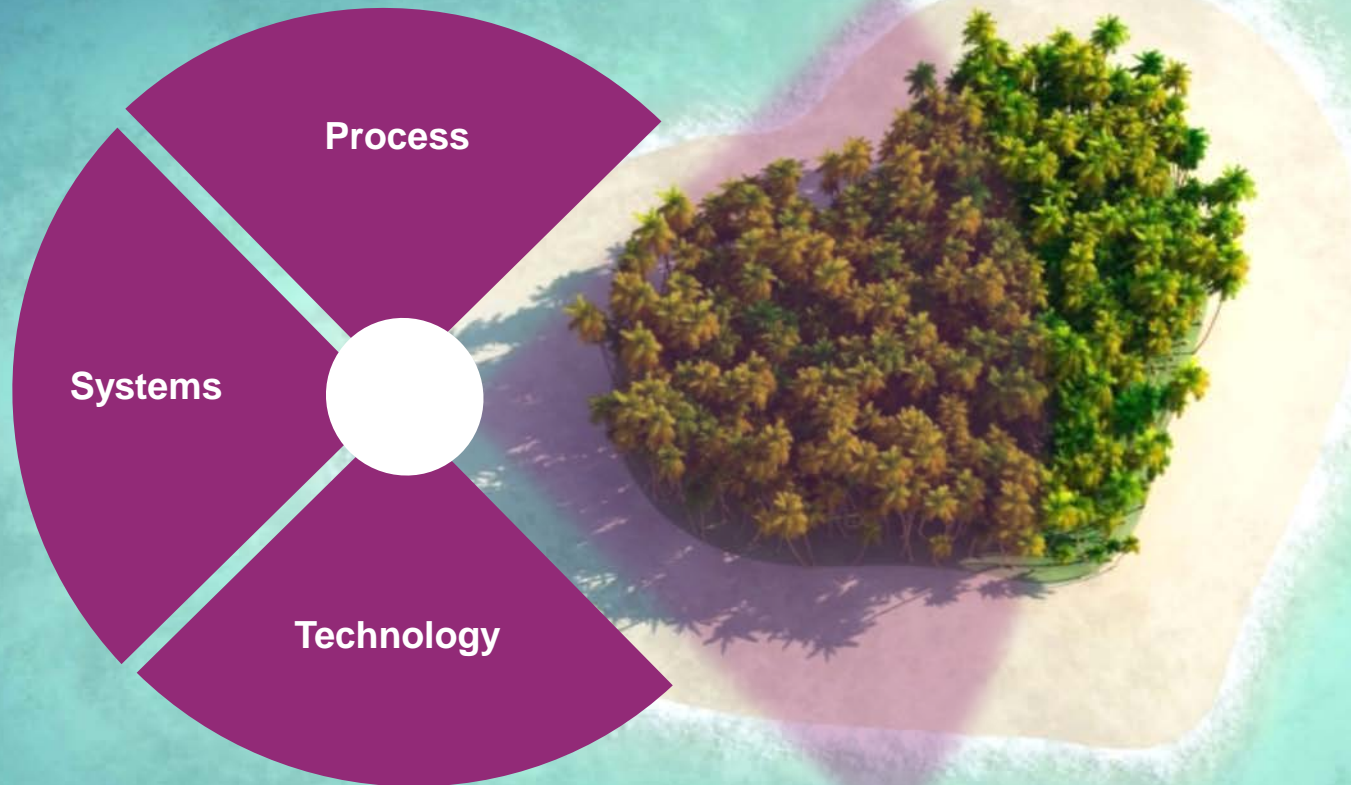




Some things cannot be spoken or discovered until we have been stuck, incapacitated, or blown off course for awhile. Plain sailing is pleasant, but you are not going to explore many unknown realms that way.

David Whyte

# Passion & Purpose embed PQ behaviours



## HEART SHARE

People know what to do, but they have to **WANT** to do it

**Processes, Systems and Technology** are performance hygiene factors, but **combining behavioural change with purpose or personal passion, embeds behaviours that can positively impact entire organisational cultures.**



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