SURGEONS AND APPS AS PERFORMANCE ATHLETES: A PLAN AND SYSTEM TO STAY IN THE GAME

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I HAVE NO RELEVANT FINANCIAL RELATIONSHIPS INELIGIBLE COMPANIES TO DISCLOSE.

AM I A PERFORMANCE ATHLETE?

Discipline & Consistency – I follow structured routines and habits over time.

Physical Fitness – I build strength, endurance, and adaptability to stress.

Mental Toughness – I maintain focus, composure, and confidence under pressure.

Recovery Awareness – I prioritizes rest, sleep, and regeneration as much as hard work.

Nutrition & Hydration – I fuel my body intentionally for energy and repair.

Goal Orientation – I set measurable performance targets and track progress.

Coachability Connection & Use of Feedback– I seek input, adapt strategies, and grow continuously.

Balance & Longevity – I manage my load to prevent injury and sustain long-term performance.

PRESENT REALITY

Burnout and declining health are pressing concerns in medical professions.

Decline occurs due to complex work demands, long shifts and inadequate support systems.

Physicians and APPs often delay seeking care for themselves, leading to MSK injuries and mental health strain.

TROUBLING TRENDS ARE A CALL FOR ACTION

The demand for healthcare services continues to rise as the workforce strives to meet the demand.

Individuals, leaders and health systems must support the well-being of healthcare workers to rebuild and retain the workforce.

DYSFUNCTIONAL SYSTEM

Increasing administrative demands.

Increasing number of patients under care.

Grind culture is passed down and upheld.

Physicians and APPs often delay care for personal health needs.

Lack of time for breaks, meals, hydration, connection and exercise.

This system is not set up for self care routines.

FATIGUE AND FRUSTRATION

OPPORTUNITIES

Provide wellness resources on campuses.

Access Physical Therapists to screen for risks to prevent injury in clinic or in OR.

Transition from a mental model of autonomy to one of support.

Work toward a world where service and self care can co-exist.

STRATEGY

ENGAGE	Support Physicians and APPs to engage in wellbeing.
EDUCATE	Provide training and resources online and in person.
EXECUTE	Screen for issues at the workplace. Provide ease of access for services.
EVALUATE	Track outcomes and incentivize participation.
EMPOWER	Work toward wellbeing as a core value.

THE PILLARS OF HEALTH

NUTRITION

EAT TO MITIGATE DECISION FATIGUE

Size vs. energy requirement	The adult brain is ~2% of body mass but uses ~**20% of resting energy/oxygen.** (National Center for Biotechnology Information, NCBI)
Glucose use	The brain relies primarily on glucose and uses ~120 g/day at rest. Which equates to 20–25% of whole-body glucose. (PubMed Central, PMC)

HYDRATION

WATER INTAKE RECOMMENDATIONS

The target is 2.5- 3.0 L H20/day, and this has more to do with your body weight than anything else. At the bear minimum get 50% of your Bodyweight in ounces for optimal gains.

"Considering threshold values in men and women of 3.4 L·d-1 and 2.6 L·d-1, respectively, maintaining total water intake in line with National Academy of Medicine guidelines of 3.7 L·d-1 in men and 2.7 L·d-1 in women should be sufficient for most individuals in the United States to maintain 24-h UOsm < 500 mmol·kg-" [5]

European Journal of Nutrition 2023

WATER & THE BRAIN

Hydration & cognition: Mild dehydration of **≥~2% body mass** measurably **impairs attention**/executive function/motor coordination; can worsen mood and concentration. [5]

Banfi T, Coletto E, d'Ascanio P, et al. Front Neurol. 2019;10:595.

Finding	Effect Size	95% CI	Strengths	Limitations	Interpretation
Overall cognitive impairment	–0.21	[–0.31, –0.11]	Statistically significant; excludes 0; consistent direction of effect	Small magnitude; practical significance limited	Robust evidence for small impairment with DEH
Executive function	–0.24	[–0.37, –0.12]	CI excludes 0; consistent	Small ES; possible variability across tasks	Likely impaired but modest effect
Attention	**–0.52**	**[–0.66, –0.37]**	**Moderate effect; tight CI**	**Some heterogeneity; outcome/task variability**	**Strongest evidence of impairment**
Motor coordination	–0.40	[–0.63, –0.17]	Moderate effect size	Wider CI; more variability across studies	Likely impaired but less precise estimate
Reaction time	–0.10	[–0.23, 0.02]	Tested across studies	CI crosses 0; not significant	No robust evidence of impairment

MINI BREAKS & SLEEP

SLEEP LOSS & SURGICAL PERFORMANCE

Chronic restriction < 6 hours of sleep/night for 1 week can lead to neurobehavioral deficits and equates to 2 nights without sleep. Van Dongen HP et al 2004

Simulator studies show measurable decrements more errors and longer task times when sleep-deprived; complex tasks are most affected.

Short naps (5–15 min) can acutely improve vigilance for 1–3 hours Lovato N, Lack L. ,2010

ACTIVITY FOR ENDURANCE FLEXIBILITY AND STRENGTH

EXERCISE AND MOVEMENT

Activity Type	Frequency	Duration
Elevated Heart Rate (Cardio/ games)	≥150 minutes per week	Can be spread across multiple sessions (e.g., 30 min, 5x/week)
Targeted Resistance Training	2–3 times per week	30–45 minutes per session
Stretching / Flexibility/	2 times per week	≈30 minutes
Resets	Daily	2-3 minutes

COMMUNITY AND CONNECTION

POLYVAGAL THEORY- STEPHEN PORGES

Ventral Vagal (Safe/Connected): Calm, socially engaged, able to think and relate clearly

Sympathetic (Fight/Flight): Alert, mobilized for action, energy up, stress response

Dorsal Vagal (Shutdown/Freeze): Low energy, withdrawn, disconnected, protective “shut down” mode

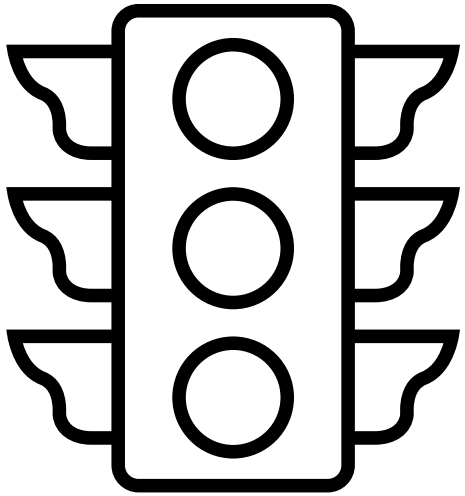
PVT IS LIKE A TRAFFIC SIGNAL

Green light (ventral vagal): We feel safe, calm, and connected. Our body is in “rest and connect” mode.

Yellow light (sympathetic): We feel stressed or anxious, ready to fight or run. This is “alert and go” mode.

Red light (dorsal vagal): We shut down, feel numb, or withdraw when things feel overwhelming.

Our nervous system automatically shifts between these states as it senses safety or danger, helping us survive but also influencing how we think, feel, and relate to others.



SAFETY OR THREAT

Moving between states is best understood as the sequence of adaptive responses to our day-to-day experiences.

This social engagement system not only provides direct social contact with others but also modulates physiological state to support positive social behavior.

This happens by exerting an inhibitory effect on the sympathetic nervous system.

IDEAS FOR RECOVERY & REGULATION

Physiological Regulation	HRV to track, Cold Plunge, Sauna
Movement & Body Awareness	Dance, Yoga, Stretch Lab, Tai Chi
Manual & Somatic Therapies	Cranial Sacral Technique, Massage, Somatic Experiencing, Acupuncture
Mind-Body Therapies	Mind Body Connection, Pain Reprocessing Theory, Polyvagal Theory

PERMISSION

THE VALUE OF SELF CARE

Reduce illness, fatigue, and pain.

Improve energy balance and mental resilience.

Save costs and lost time related to stress-related injuries.

MOVEMENTS TO REDUCE PAINS AND STRAINS

Move your shoulders and head over your toes, bring your knees forward, and allow your hips to come off the chair, then push down equally into both feet to stand up. Sit back down and repeat.

MOVEMENTS TO REDUCE PAINS AND STRAINS

Bring your elbow up to shoulder level and gently pull your arm across your body and place your hand on your opposite shoulder. Using your other hand gently support your elbow until you feel a stretch over the back of your shoulder.

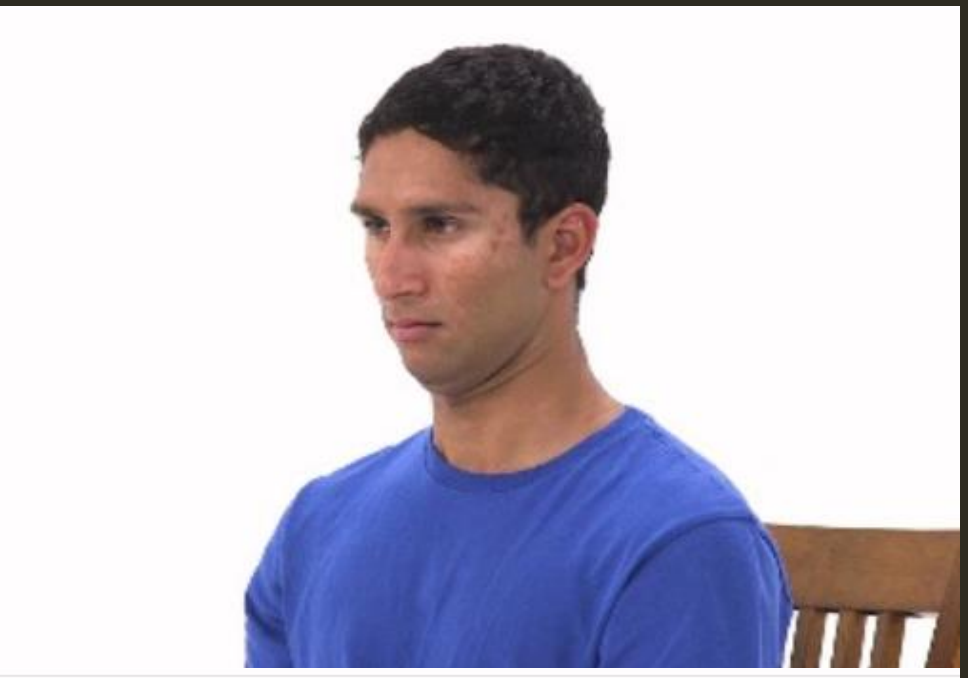
MOVEMENTS TO REDUCE PAINS AND STRAINS

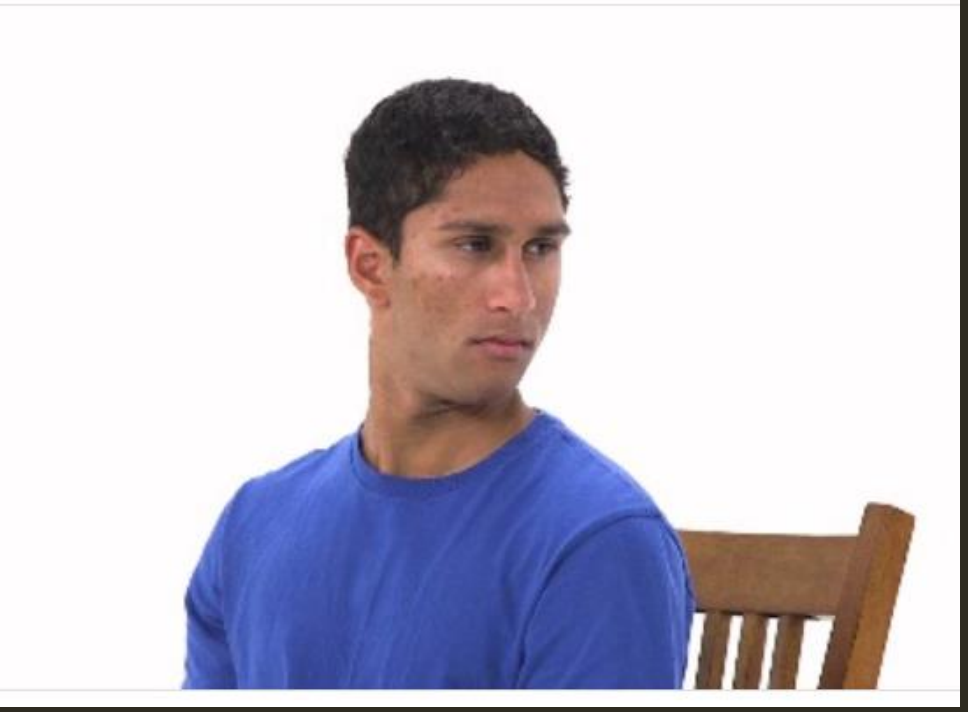
Keeping your back straight and upright, squeeze your bottom, and slowly shift your weight forward until you feel a stretch in the front of your hip and back of your lower leg.

MINI BREAK - NERVOUS SYSTEM RESETS

Take a deep breath in for a count of four, feeling your stomach expand against your hand, then take an intentional breath.

(breathe out for a count of 6).





MINI BREAK - NERVOUS SYSTEM RESETS

Gently tuck your chin and slightly press your head backward. Maintaining this position, rotate your head to one side, hold briefly, then repeat to the other side take three to four intentional breaths.

MINI BREAK - NERVOUS SYSTEM RESETS

Bend forward, letting your arms hang toward the ground until you feel a stretch in your lower back. Take three to four intentional breaths.

MINI BREAK - NERVOUS SYSTEM RESETS

Slowly arch your back and let your elbows fall out to the sides. You should feel a stretch in your chest. Move your gaze from left to right as take in three to four intentional breaths.

MINI BREAK - NERVOUS SYSTEM RESETS

Slowly move your arms straight out to your sides, overhead, and in "y" position. Tuck your chin, take 3-4 intentional breaths.

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