Integrative Approach for Patients with Intracranial Hypotension

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SIH disabling symptoms

positional headache limits upright time

nausea

brain fog

imbalance

other symptoms

the gap in time…

onset → diagnosis → treatment(s) → better

days… weeks… months… years… decades

… while waiting for ”better”

Let’s focus on what we CAN do
to improve function + quality of life
and maybe optimize outcomes

> *Integrative medicine and health reaffirms the importance of the relationship between practitioner and patient, focuses on the whole person, is informed by evidence, and makes use of all appropriate therapeutic and lifestyle approaches, healthcare professionals and disciplines to achieve optimal health and healing.*

Definition by the Academic Consortium of Integrative Medicine & Health

Key Principle:

Integrative medicine neither rejects conventional medicine nor accepts complementary therapies uncritically.

Why integrative (multi-modal) approaches ?

- simple problems respond well to single therapies
- complex, chronic diseases respond better when multiple therapies are combined
    - hypertension
    - diabetes
    - chronic pain (national shift to integrative model)
    - many other disorders

the gap in time…

onset → diagnosis → treatment(s) → better

days… weeks… months… years… decades

Goals:
- reduce severity of symptoms + improve function
- support the brain
- support ability to compensate for low CSF-volume
- support tissue healing

… an integrative approach makes sense

Integrative approaches

for patients with intracranial hypotension

- **treat underlying problem**
  - **spinal injections + surgery**
- position change
- hydration
- tincture of time
- medications (Rx and OTC)
- assistive devices (compression garments)
- address co-morbid disorders
- **nutrition**
- **supplements**
- **physical activity** + physical therapy
- **mind-body**
- sleep
- other therapies

Fatigue, brain fog

- look for and address other underlying causes
  - iron deficiency with or without anemia
  - other nutritional deficiencies
  - hormone dysfunction: hypothyroidism, hypocortisolism
- consider co-morbid diseases
- pain control
- adequate sleep
- physical activity

Nutrition

for patients with intracranial hypotension

Nutrition

- can diet
  - reduce pain ?
  - support the brain ?
  - reduce risk of depression or anxiety ?
  - support tissue healing ?

What diet ?

- **Mediterranean**
- **DASH =** Dietary Approaches to Stop Hypertension
- **MIND =** Mediterranean-DASH Intervention for Neurodegenerative Delay
- **Okinawan**
- **Nordic**
- **Traditional West African**
- **Traditional Latin American**

- **Vegetarian**
- **Vegan**
- **Paleo**
- **Ketogenic**
- **Food elimination**
  - **gluten or all grains**
  - **dairy**
  - **low FODMAP**

wading thru the confusion…

- nutrient density
  - higher intake of flavonoids correlates with risk reduction for all diseases
- too much sugar and processed grain >> insulin resistance
  - tissue repair
- diet impacts inflammation levels
  - higher pain scores
  - depression, anxiety, many chronic diseases
- gut flora *
- macronutrient ratios: FAT, CARBS, PROTEIN vs quality
  - tissue repair requires essential fatty acids + essential amino acids + co-factors

Mediterranean diet *

** the most well-studied dietary pattern*

Cardiovascular Risk Reduction

- heart disease
- stroke
- hypertension
- dyslipidemia

Lower Overall Mortality

Other Risk Reduction

- cancers
- dementia; brain aging
- Parkinson's
- obesity
- diabetes
- autoimmune diseases
- low levels of pain / disability

Mediterranean Diet Pyramid

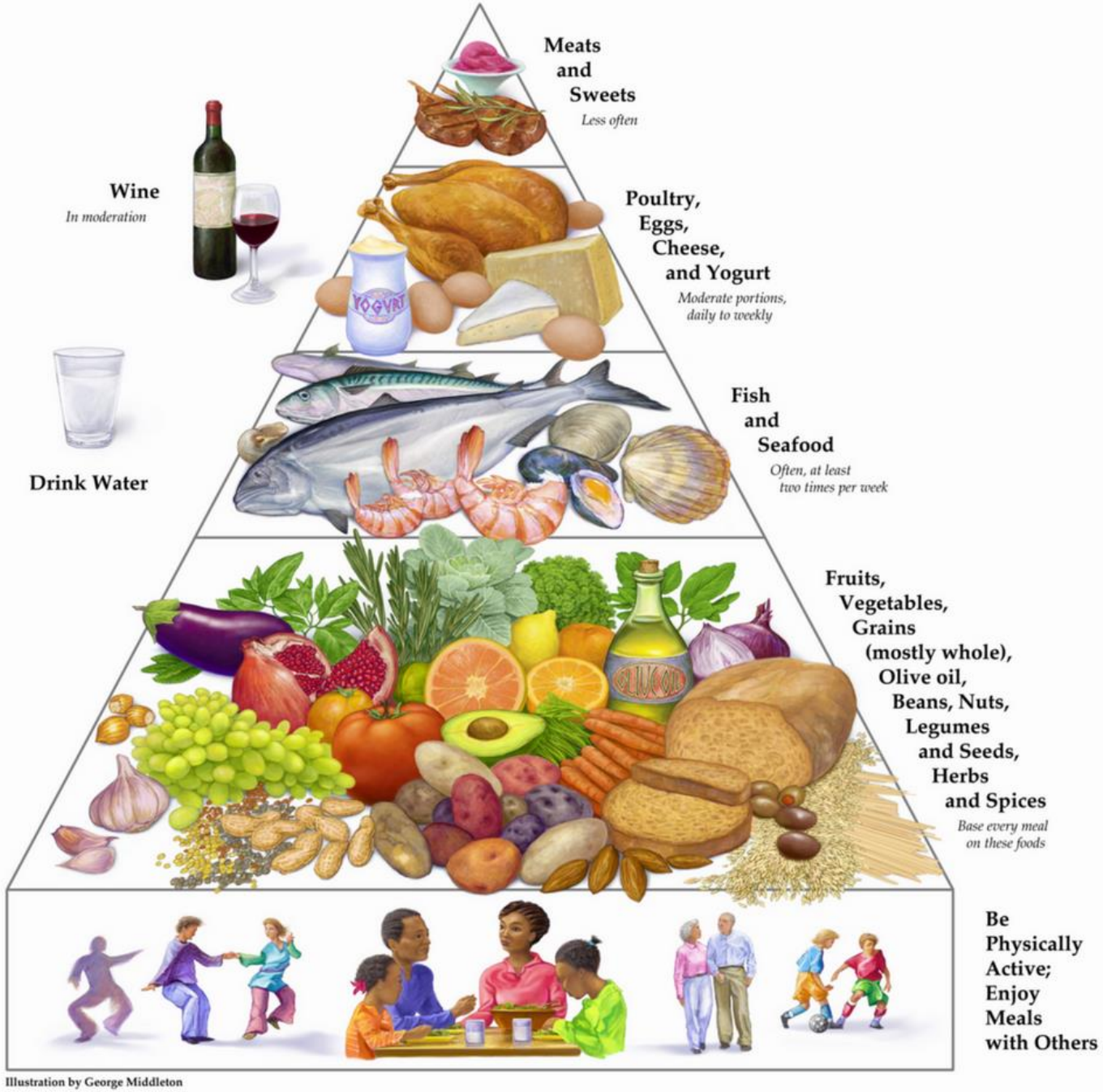


Illustration by George Middleton

Mediterranean diet features

anti-inflammatory, nutrient-dense

- abundant vegetables + fruit
- abundant legumes (beans, lentils)
- includes fish (n-3 fats); some poultry; less meat, minimal processed meats
- modest amount of dairy, mainly as cheese, yogurt; some eggs
- main oil is olive oil; low in n-6 fats (soy, corn, sunflower, safflower); modest in saturated fats; zero trans fat
- whole grains but lower in processed grains
- minimal added sugar + sweeteners
- some nuts, herbs + spices
- red wine

What to eat, or not

eat

- "eat food, not too much, mostly plants" - *Michael Pollan*
- unadulterated, minimally processed foods
- pay attention to nutrient-density
- wide variety of colors (plants)
- pay attention to glycemic load
- organic

avoid or minimize

- avoid artificial sweeteners
- avoid trans fat
- avoid food-like substances
- avoid most processed foods, meats
- minimize sugar
- minimize flour products
- minimize fried foods

What to eat (cont'd)

eat

- veggies – include cruciferous family, onion/garlic family, greens, legumes, roots, others (variety)
- fruits – include berries, variety
- include protein sourced from plants; source animal-based proteins with care
- fats – primarily olive oil
- fermented foods
- nuts & seeds
- herbs & spices

eat if desired + tolerated

- dairy (cow, goat, sheep, etc) – fermented forms preferred (kefir, yogurt, cheese)
- grains – less processed preferred; some need to eliminate gluten grains; variety (rice, quinoa, etc)
- eggs
- bone broths
- coffee, teas, chocolate
- wine

Physical Activity

for patients with intracranial hypotension

Symptoms worsened by

- upright posture
- bending
- lifting (even modest weights)
- twisting / rotation of spine
- stretching
- core engagement
- bouncing, bumps

Physical Activity Challenges

- LONG list of physical limitations
- deconditioning
  - difficult to avoid or reverse
  - might reduce ability to compensate physiologically for low CSF volume
  - worsens dysautonomia (PoTS, orthostatic intolerance)
- impaired balance is common
- strong core supports intracranial pressure but must limit core exercise
- often need to exercise in short windows of time

Physical Activity & Health Outcomes

- **cardiovascular** (BP, lipids, heart disease, stroke, **autonomic function**, **venous return**)
- **endocrine** (**insulin resistance** / diabetes, growth hormone, fat mass)
- **musculoskeletal** (**osteoporosis**, joint ROM, posture, **muscle mass / strength**)
- **neurologic** (dementia, **memory / learning**, **balance**, coordination, **sleep**, **PAIN**)
- **psychologic** (**depression, anxiety, stress**)
- **immune function** (unless exercise is excessive)
- **gastrointestinal function** (gut motility, **gut flora**)
- **mitochondrial function** (**energy**, metabolism)
- **cancer** (risk; improved survival)

Goals

more time upright

less PAIN

BRAIN benefits:

- cognition
- mood, stress
- sleep

balance

more energy

etc.

- aerobic conditioning
- core strength
- balance
- muscle strength

what exercise CAN we do?

in that gap until “better”

- work with a physical therapist to customize a program for you
  - balance restrictions and goals
- consider
  - exercise in bed is possible
  - aerobic exercise early when CSF tank is full
  - short sessions count; high intensity intervals if tolerated
  - compression garments might help

Aerobic conditioning

- walking (without or with incline)
- stair climbing
- recumbent bicycle or stepper
- pool-running

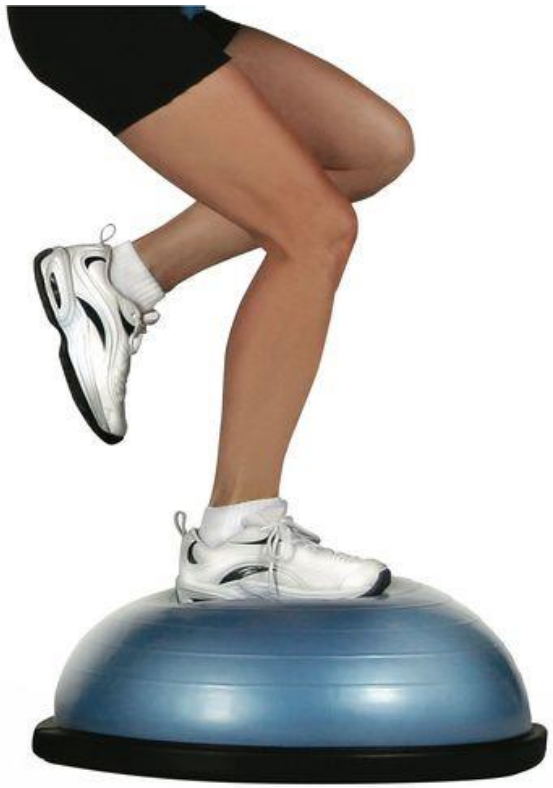
- avoid
  - running (on land)
  - swimming (spine rotation)
  - rowing

Pool-running (or walking)

- **underwater treadmill**
- **water depth to chest or shoulders**
  - hydrostatic pressure increases intracranial pressure such that upright posture is better tolerated
- **resistance jets**
  - increase workload
  - gentle balance challenge
  - gentle core engagement

Pool-running (or walking)

balance trainer



- balance
- core
- strength (lower extremities)
- (aerobic)

Balance / Core / Strength

Balance

- pool-running
- balance trainer
- Tai Chi

Core (gentle)

- pool-running
- balance trainer
- other (even in bed)

Strength / Resistance (caution)

- upper vs lower extremity
- weights +/- resistance bands

Stretching (avoid)

- avoid anything that stretches or rotates spine
- be careful with some yoga poses, pilates
- patients with heritable disorders of connective tissue – any stretching may be risky

Exercise for dysautonomia patients

PoTS - postural tachycardia syndrome
OI - orthostatic intolerance

- pool walking or running
- other pool therapy
- recumbent bicycle or stepper
- lower extremity strengthening (improve blood return)
- core strengthening