

## Emotional Well-Being



Tieraona Low Dog, MD

Author of National Geographic's

*"Fortify Your Life"*

*"Healthy At Home"*

*"Life Is Your Best Medicine"*

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## Before We Begin

- I want to take just a few minutes to discuss the role of some key micronutrients in health that we didn't get to cover yesterday.
- I cover this in great detail in my National Geographic Book: *Fortify Your Life*

## Why You Should Probably Take a Multi

- **90 million** Americans are **vitamin D** deficient using **Endocrine Society Guidelines**.
- **30 million** are deficient in **vitamin B6**
- **18 million** people have **B12** deficiency
- **~16 million** are deficient in **vitamin C**
- **13% of Latinas, 16% of African American black women and 8% of white women (ages 12-49)** are **iron** deficient
- Women 25-39 **borderline iodine** insufficiency



*CDC: 2<sup>nd</sup> National Report on the Biochemical Indicators of Diet and Nutrition in the U.S. population*

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- Vitamin D deficiency can lead to **musculoskeletal pain**, usually in the pelvis, shoulders, low back, and proximal muscles.
- Low vitamin D increases risk of **falls** and **gait instability**. Exercise, calcium and vitamin D supplementation all shown to **decrease falling in elders**.
- Review by National Osteoporosis Foundation concluded **calcium plus vitamin D supplementation reduced risk total fractures by 15% and hip fracture by 30%**.

## Vitamin D



*Tricco AC, et al. JAMA 2017; Nov 7;318(17):1687-1699.  
Weaver CM. Osteoporosis Int 2016 Jan;27(1):367-76*

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## Vitamin D and Respiratory Infection

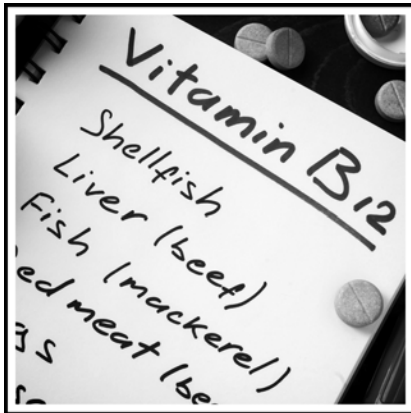


Martineau AR, et al. Vitamin D supplementation to prevent acute respiratory tract infections: systematic review and meta-analysis of individual participant data. *BMJ* 2017; 356: i6583.

- Acute respiratory infection kills ~2.65 million people/year.
- A review of 25 randomized controlled trials found that vitamin D supplementation **reduced risk of acute respiratory infection** among all participants and **those who were vitamin D deficient experienced the most benefit (NNT=4).**
- Get your **level checked** in autumn.
- **Most should take 1000-2000 IU per day.**

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Bird JK, et al. Risk of Deficiency in Multiple Concurrent Micronutrients in Children and Adults in the United States. *Nutrients* 2017; doi: 10.3390/nu9070655

Conzade R, et al. Prevalence and Predictors of Subclinical Micronutrient Deficiency in German Older Adults: Results from the Population-Based KOR-Age Study. *Nutrients* 2017; doi: 10.3390/nu9121276

## Vitamin B12 Deficiency

- Risk for deficiency increases with age: **7% ages 51–70 years and 15% >70 years are B12 deficient in US.**
- Risks include: **inadequate intake, vegan, malabsorption, medications (PPI, metformin), obesity, and aging.**
- **Decline in gastric acid secretion** occurs with **advancing age** can make it difficult to absorb food-bound B12
- **Take 6-25 mcg per day.**

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## Vitamin B12

- 2015 meta-analysis found **80% increased risk of B12 deficiency after ten months of regular proton pump inhibitor use.**
- **Metformin**, commonly prescribed for type-2 diabetes, **reduces serum B12 levels and worsens diabetic neuropathy.**
- B12 deficiency can lead to **difficulty walking, tingling/numbness** in hands and feet, **fatigue**, shortness of breath, **loss of appetite, joint pain, depression, loss of taste and smell, cognitive impairment, and dementia.**
- **If you take these medications, ask to have B12 monitored every 1-2 years.**

Jung SB, et al. Association between vitamin B12 deficiency and long-term use of acid-lowering agents: a systematic review and meta-analysis. *Intern Med J* 2015; 45(4):409-16.

Out M, et al. Long-term treatment with metformin in type 2 diabetes and methylmalonic acid: Post hoc analysis of a randomized controlled 4.3year trial. *J Diabetes Complications* 2018; 32(2):171-178.

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## Magnesium

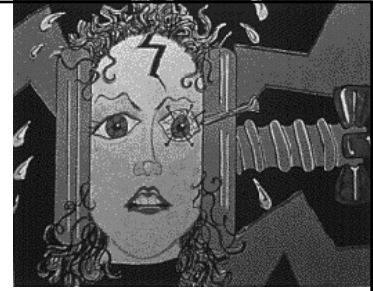
- Low magnesium associated with **type 2 diabetes, metabolic syndrome, chronic inflammation, high blood pressure, sudden cardiac death, osteoporosis, migraine, asthma, colon cancer.**
- Canadian Health Measures Survey found **9.5–16.6% of adults and 15.8–21.8% of adolescents aged 12–19 years had serum Mg concentrations below the lower cut-off of the reference interval.**
- **Low intracellular magnesium associated with depression and anxiety.** Patients with low magnesium tend to be **refractory to treatment.**



Rosano A, Weaver CM, Rude RK (2012) Suboptimal magnesium status in the United States: are the health consequences underestimated? *Nutr Rev*, 70(3): 153–64.  
Bertinato J, et al. *Nutrients* 2017 Mar; 9(3): 296

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## Magnesium for Migraines



- **Migraines impact 1 in 4 households.**
- Canadian Headache Society gave **magnesium strong recommendation for prophylaxis of migraine.**
- Dose generally **300-400 mg/d**, though some need up to 600 mg per day.
- Diarrhea most common side effect (**glycinate and citrate forms less GI complaints than oxide**). Caution with supplementation (more than 300 mg per day) in anyone with poor kidney function.

Rajapakse T, et al. Nutraceuticals in Migraine: A Summary of Existing Guidelines for Use. Headache 2016; 56(4):808-16.

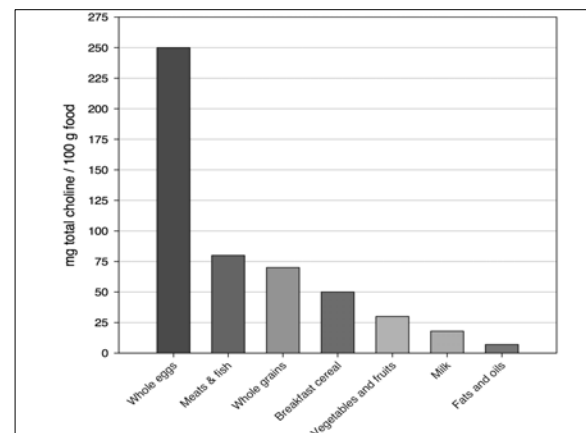
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## Choline

- Choline critical during **fetal development, influencing mood regulation, cognitive development, stress regulation and lifelong memory function.**
- Only **8-10% of adults or pregnant women meet adequate intake levels.** Those **eating eggs** had highest levels.
- Look for multi with **100-300 mg.**

Blusztajn JK, et al. Neuroprotective actions of dietary choline Nutrients 2017; Jul 28;9(8). pii: E815.

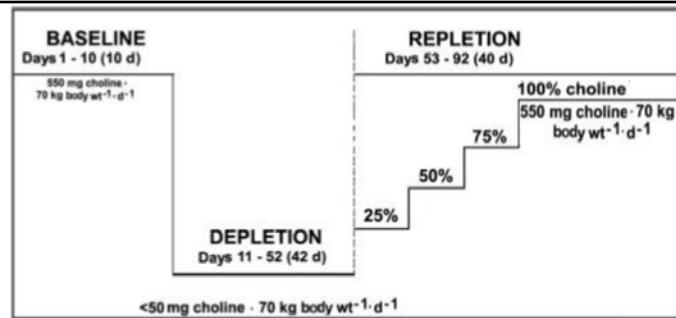
Wallace TC, et al. Nutrients 2017 Aug 5;9(8). pii: E839.



Choline in Foods: <http://nalcd.nal.usda.gov/download/47335/PDF>

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- 57 healthy adults were fed **choline-deficient diets** under controlled conditions.
- Results: **77% of men, 80% postmenopausal women, and 44% of premenopausal women developed fatty liver, liver damage, and/or muscle damage.**
- Dysfunction corrected when choline was reintroduced into diet.
- FDA daily value of **550 mg per day** set to prevent **nonalcoholic fatty liver disease**.

Fischer LM, et al. *Am J Clin Nutr.* 2007;85(5):1275-1285.

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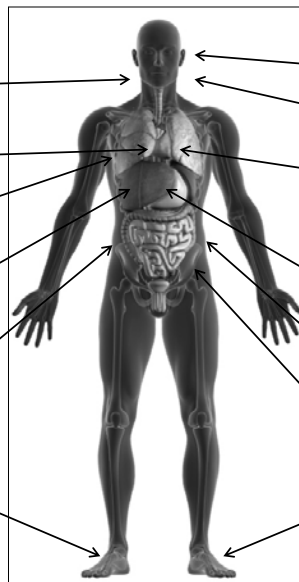
## What is Your Body Telling You?



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### Parasympathetic

- Stimulates flow of saliva
- Slows heartbeat
- Lowers blood pressure
- Stimulates release of bile and aids in digestion and elimination
- Inhibits release of stress hormones
- Increases blood flow to extremities



### Sympathetic

- Pupils dilate
- Salivary production inhibited
- Heart rate and blood pressure goes up
- Mobilize fats and glucose; make more glucose
- Inhibit digestion and elimination
- Secrete "stress" hormones – adrenalin, noradrenalin and cortisol
- Reduce blood flow to fingers and toes

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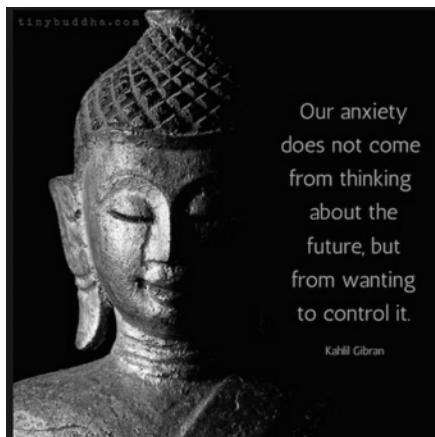
## Yoga

- The **“union of the divine,”** yoga practiced for thousands of years in India.
- Yoga incorporates **breathing exercises, different postures, stretches, and meditation** to help one gain **greater acceptance, compassion and centering.**
- Studies have found yoga to help **ease stress, anxiety, and pain, while improving mood.**



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## Self Soothing



- A good way to deal with **anxiety and high stress is to occasionally sidestep the analytical part of your brain** by practicing **relaxation, meditation and/or using guided imagery.**

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## Meditation

- Meditation excellent for **reducing stress perception** and **pain intensity**, while **elevating mood**.
- Long-time meditators have greater activation of areas responsible for **sustaining attention**, **processing empathy**, **integrating emotion** and **cognition**.
- Review of **47 trials** found that meditation improves:
  - **Anxiety**
  - **Depression**
  - **Pain**



Goyal M, et al. *JAMA Intern Med* 2014; 174(3):357-68

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## Meditation Resources

- ***Guided Mindfulness Meditation: A Complete Guided Mindfulness Meditation Program*** from Jon Kabat-Zinn
- ***Insight Timer*** - ~4,000 guided meditations from more than 1,000 teachers (self-compassion, nature, stress, podcasts and more). More than 750 meditation music tracks. Free.
- ***Headspace*** – very good for beginners with 10 minute meditations. Free.
- ***The Mindfulness App*** – nice 5 day guided mediation program to get you started. Can be personalized and integrated into other health apps. Free.

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## Exercise and Health

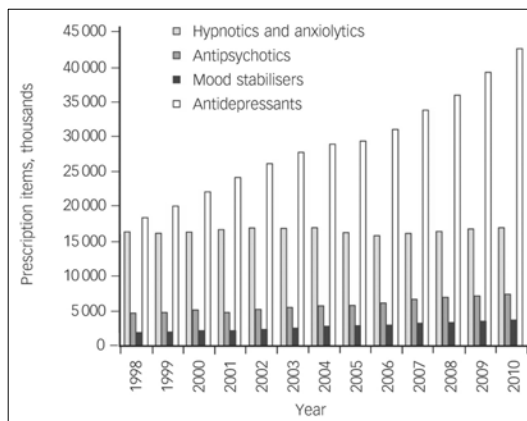
- **80 million** Americans 6 years and older are **entirely inactive**
- Relationship between physical activity and **cardiovascular, metabolic, neurological, immunological and bone health** well-established.
- **Shown to reduce the harmful effects of stressors** when performed at moderate intensities.
- Meta-analysis of **398 studies** consistently shows exercise benefits **mood, depression and anxiety**.

*Deslandes, et al. Neuropsychobiology 2009; 59(4):191-8*  
*Rebar AL, et al. Health Psychol Rev 2015; Mar 5:1-78*



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## Trends in prescriptions of major classes of psychiatric drugs 1998–2010.



Stephen Ilyas, and Joanna Moncrieff BJP  
 2012;200:393-398

THE BRITISH JOURNAL  
 OF PSYCHIATRY

- **400% increase** in anti-depressant prescriptions since 1980s. Rates of anxiety/depression in adolescents and young adults **skyrocketing**.
- JAMA review: For **severe depression**, **benefit** of medications over placebo is **substantial**; however, magnitude of benefit may be **minimal or nonexistent**, on average, for those with **mild or moderate** symptoms.

*Fournier, et al. JAMA. 2010;303(1):47-53*

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## The World Today

- We strongly emphasize **biological explanation** for depression and anxiety, as evidenced by **extensive use of antidepressants and anxiolytics**.
- There remains **little** focus on **physiological, nutritional, societal, communal, familial and spiritual underpinnings**.
- “I take my Effexor and go to a **job I hate** and then home to a house full of **kids** that are **out of control** and a husband that **barely talks to me**. Is my depression better? **Yea, I guess.**”
- **Complex world**. We often have unrealistic expectations. **Isolation** is common, **financial** problems, **lack of purpose, meaning**, a sense of **despair, hopelessness** – the world has less color and texture.

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## Loneliness, Social Isolation & Your Health

- Review found poor social relationships associated with **29% increase in risk of incident CHD** and **32% increased risk of stroke**.
- 148 studies on the effects of social isolation on health found it is:
  - As bad as **smoking** 15 cigarettes a day
  - As dangerous as being an **alcoholic**
  - As harmful as **never exercising**
  - Twice as dangerous as being **obese**



- Valtorta NK, et al Loneliness and social isolation as risk factors for coronary heart disease and stroke: systematic review and meta-analysis of longitudinal observational studies. *Heart*. 2016 Jul 1;102(13):1009-16.
- Cacioppo JT, et al. *Ann N Y Acad Sci* 2011; 1231:17-22

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*Call it a clan, call it a network, call it a tribe, call it a family.*

*Whatever you call it, whoever you are, you need one.*



*~ Jane Howard*



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Are you  
breathing  
just a little  
and calling  
it a life?

*"But until a person can say deeply and honestly, 'I am what I am today because of the choices I made yesterday,' that person cannot say, 'I choose otherwise.'"*

*Stephen Covey*



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