

Life is Your Best Medicine



Tieraona Low Dog, MD

Founder: Medicine Lodge Ranch

National Geographic's: *"Life Is Your Best Medicine," "Healthy At Home,"*
and *"Fortify Your Life"*

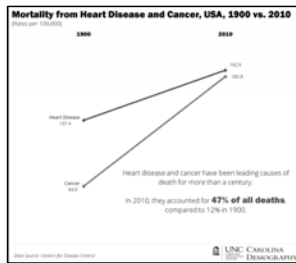
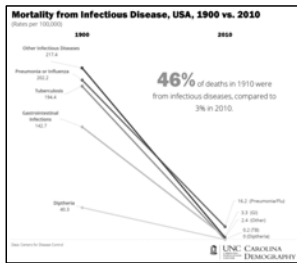
www.DrLowDog.com

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The Times They Are A-Changing



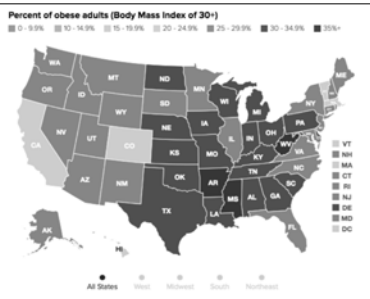
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*There are so many options, so many choices...
Americans are exploring every one of them.....*

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SCIENTIFIC
AMERICAN

PUBLIC HEALTH


The Hunger Gains: Extreme Calorie-Restriction Diet Shows Anti-Aging Results

A new study shows five days of hunger a month may reduce risk factors for aging and age-related diseases

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Caloric Restriction?



Canto is 27 year old monkey on CR diet, Owen is 29 year old on unrestricted diet.


- 25 year study University of Wisconsin: 76 rhesus monkeys ages 7-14 years, fed a diet reduced in calories by 30%.
- Disease 3 fold greater in control group.
- No evidence of diabetes in any caloric-restricted animal.
- 2-year study 218 non-obese people: current diet or 25% caloric restriction (11.7% on average).
- Statistically significant reduction in inflammatory markers, weight loss, improved mood, sleep duration, etc.

news.wisc.edu/monkey-caloric-restriction-study-shows-big-benefits-contradicts-earlier-study/
Ravussin E, et al. *J Gerontol A Biol Sci Med Sci*. 2015;70(9):1097-1104

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Fasting-Mimicking Diets (FMD)



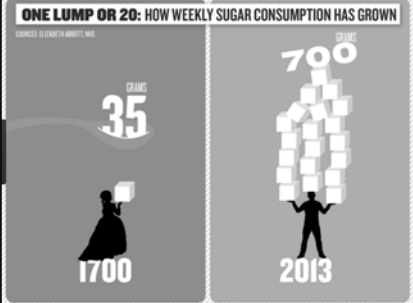
- 100 healthy participants 2 study arms tested FMD 5 consecutive days/mo for 3 months.
- 1100 caloric first day, 700 calories for 4 days (plant based, multivitamin). Ate whatever they wanted rest of the month.
- Three FMD cycles reduced body weight and total body fat; lowered blood pressure, cholesterol, triglycerides and IGF-1. Lean muscle mass remained unchanged.
- Note: 25% drop-out rate
- Effects noted 3 months AFTER study ended.

Wei M, et al. Fasting-mimicking diet and markers/risk factors for aging, diabetes, cancer, and cardiovascular disease. *Sci Transl Med* 2017; 9(377).

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ONE LUMP OR 20: HOW WEEKLY SUGAR CONSUMPTION HAS GROWN



35 CUBES 1970

700 CUBES 2013

30 teaspoons of sugar = 1 can of non-diet soda

This equals 32 pounds of sugar per year simply from 1 can soda per day

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November 2016

Sugar Industry and Coronary Heart Disease Research

A Historical Analysis of Internal Industry Documents

Credit E. Harris, DDS, MBA^{1,2}, Laura A. Schmidt, PhD, MPH, MPA^{1,2,3}, Stanton A. Glantz, PhD^{1,2,3,4}

¹ author affiliations
ajph.apophysis.com/2016/11/01/1600-1605 doi:10.1093/ajph.2016.106.1600

Editorial Comment Related Article Author Interview


Abstract

Early warning signals of the coronary heart disease (CHD) risk of sugar (sucrose) emerged in the 1950s. We examined Sugar Research Foundation (SRF) internal documents, historical reports, and statements relevant to early debates about the dietary causes of CHD and assembled findings chronologically into a narrative case study. The SRF sponsored its first CHD research project in 1963, a literature review published in the *New England Journal of Medicine*, which singled out fat and cholesterol as the dietary causes of CHD and downplayed evidence that sucrose consumption was also a risk factor. The SRF set the review's objective, contributed articles for inclusion and received drafts. The SRF's funding and role was not disclosed. Together with other recent analyses of sugar industry documents, our findings suggest the industry sponsored a research program in the 1960s and 1970s that successfully cast doubt on the hazards of sucrose while promoting fat as the dietary culprit in CHD. Policy.

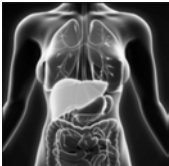
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Sugars



- Table sugar (sucrose): bond one glucose molecule and one fructose molecule
- High fructose corn syrup: 55% fructose, 42% glucose and 3% other sugars.
- Every cell in our body readily converts glucose into energy. But liver cells are one of few types of cells that can convert fructose to energy.
- Large amounts of "free" fructose taxes the liver and increases risk of non-alcoholic fatty liver disease.



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Glycemic Index/Load

Low Glycyl Diet
Calculator

- **Glycemic load** is measurement of impact of carbohydrates on **blood sugar/insulin**.
- International consensus conference: 'given consistency of scientific evidence, diets low in glycemic index/load should be promoted in the prevention and management of **diabetes** and coronary heart disease, and are particularly important in individuals with insulin resistance.'

Augustin LS, et al. Glycemic index, glycemic load and glycemic response: An International Scientific Consensus Summit from the International Carbohydrate Quality Consortium (ICQC). *Nutr Metab Cardiovasc Dis* 2015 Sep;25(9):795-815.



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Glycemic Load and Mood

- 82 healthy weight and healthy overweight or obese, adults enrolled in randomized, crossover controlled feeding study.
- Compared to a low GL diet, consumption of **high GL diet** resulted in:
 - 38% higher score for **depressive symptoms** ($P = 0.002$)
 - 55% higher score for **total mood disorder** ($P = 0.05$)
 - 26% higher score for **fatigue/inertia** ($P = 0.04$), compared to low GL diet.



Beunejoer KL, et al. *Apmis* 2016; Dec 1;127:253-258.

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Glycemic Load

Individual Food Portion

Whole Day

Low	0-10	Low	< 80
Moderate	11-19	Moderate	80-120
High	20+	High	>120

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Food	Serving Size	Glycemic Load
Grapefruit	½ large	3
Apple	1 medium	6
Banana	1 large	14
Raisins	1 small box	20
Watermelon	1 cup	8
Carrots	1 large	5
Orange	1 medium	6
Sweet potato	1 cup	17
Baked potato	1 medium	28
French fries	1 medium serving	26
Snickers	1 bar	35
Reese's cup	1 miniature	2
White table wine	5 ounces	1
Red table wine	5 ounces	1
Grape juice	6 ounces	12

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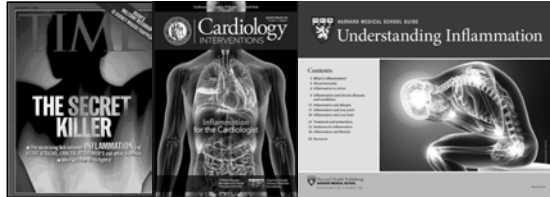
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Food	Serving Size	Glycemic Load
Spaghetti	1 cup	38
Brown rice	1 cup	23
White rice	1 cup	33
White bread	1 slice	10
Whole grain bread	1 slice	5
Bagel, cinnamon raisin	1 3.5 inch	24
Pumpernickel bread	1 slice	6
Macaroni and cheese	1 cup prepared	31
Chocolate doughnut	1 doughnut (80 g)	25
Glazed doughnut	1 doughnut (80 g)	12
Kellogg's Frosted Flakes	½ cup	20
Kellogg's Special K	1 cup	14
Post Bran Flakes	½ cup	12
Post Raisin Bran	1 cup	25

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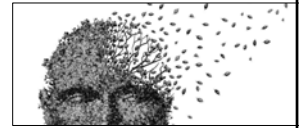
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INFLAMMATION.....



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Mediterranean Dietary Pattern Inflammation & Memory



- **Mediterranean diet associated with lower dementia risk.** Researchers used DII screener during an average follow up of 9.7 years during Women's Health Initiative Memory Study.
- **Higher inflammatory scores** significantly associated with **greater cognitive decline and earlier onset of cognitive impairment.**

Hayden KM, et al. The association between an inflammatory diet and global cognitive function and incident dementia in older women: The Women's Health Initiative Memory Study. *Alzheimer's Dement* 2017 May 19; pii: S1552-5260(17)30185-1.

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Mediterranean Dietary Pattern

- **13 meta-analyses: observational studies; 16 meta-analyses of randomized controlled trials (12,800,000 people)** investigating Mediterranean diet and 37 different health outcomes.
- Robust evidence ($p < 0.001$) show greater adherence to Mediterranean diet associated with **reduced risk of overall mortality, heart disease, heart attack, overall cancer incidence, diabetes, neuro-degenerative diseases and lower inflammatory markers.**

Dinu M, et al. Mediterranean diet and multiple health outcomes: an umbrella review of meta-analyses of observational studies and randomized trials. *Eur J Clin Nutr* 2017; May 10. doi: 10.1038/ejcn.2017.58.

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Keto Diet: Clinical Trial

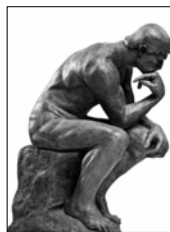
- **RCT** women with **ovarian or endometrial cancer** randomly assigned to keto diet (**70:25:5** fat, protein, and carbohydrate) or American Cancer Society diet (high-fiber, low-fat).
- **Body composition, fasting serum insulin and IGF-I** obtained at baseline and at end of 12 weeks.
- Those on keto diet **had statistically significant reduction in fasting insulin and IGF-1 levels, and greater reduction in visceral fat.**

Cohen CW, et al. A Ketogenic Diet Reduces Central Obesity and Serum Insulin in Women with Ovarian or Endometrial Cancer. *J Nutr* 2018; 148(8):1253-1260.

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Personalized Diets

- Personalized diets based on individual's genome to optimize dietary intervention and reduce disease risk is one of the opportunities and challenges frequently discussed in scientific community.
- *And it is the future.....*

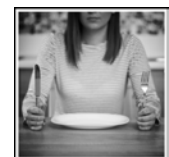


Corella D, et al. Utilizing nutritional genomics to tailor diets for the prevention of cardiovascular disease: a guide for upcoming studies and implementations. *Expert Rev Mol Diagn* 2017 May;17(5):495-513.

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Real State of Our Nutrition

- **90 million** Americans are **vitamin D** deficient (using the Endocrine Society guidelines $< 20\text{ng/mL}$)
- **30 million** are deficient in **vitamin B6**
- **18 million** people have **B12 deficiency**
- **16 million** have **vitamin C** deficiency
- 13% of Latinas, 16% of African American, 8 % white women (ages 12-49) are **iron** deficient
- Women **25-39** overall have **borderline iodine** insufficiency



CDC. 2nd National Report on the Biochemical Indicators of Diet and Nutrition in the U.S. population

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Position on Nutrient Supplementation by the Academy of Nutrition and Dietetics

- Nutrient supplementation can be used to help meet nutrient requirements for those:
 - **Older adults**
 - **Pregnant women**
 - **People who are food insecure**
 - **Alcohol dependent individuals**
 - **Strict vegetarians and vegans**
 - Those with **increased needs** due to a **health condition or the chronic use of a medication** that decrease nutrient absorption/increase metabolism or excretion.

Marra and Boyar, *J Am Diet Assoc* 2009

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Position on Nutrient Supplementation by the Academy of Nutrition and Dietetics

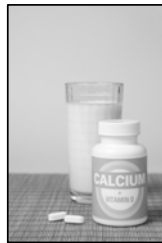
- Restricting energy intake for **weight loss/control**
- **Not consuming an adequate amount of food** to meet energy requirements as a result of poor appetite or illness
- **Eliminating one or more food groups** from their diet on a regular basis
- **Consuming a diet low in nutrient rich foods** despite adequate or excessive energy intakes.

Marra and Boyar, *J Am Diet Assoc* 2009

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Calcium and Vitamin D: Fracture

- Osteoporosis responsible more than **8.9 million fractures annually worldwide.**
- Meta-analysis National Osteoporosis Foundation: 8 studies (n= 30,970): **calcium + vitamin D produced a statistically significant 15 % reduced risk of total fractures and 30% reduced risk of hip fractures.**



Wasser CM, et al (2016). Calcium plus vitamin D supplementation and risk of fractures: an updated meta-analysis from the National Osteoporosis Foundation. *Osteoporos Int* 27: 367-376.

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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.**
- **25 randomized controlled trials (n=10,933, aged 0-95 years).**
- Vitamin D supplementation **reduced risk of acute respiratory infection** among all participants (NNT=33) and those who were **vitamin D deficient experienced the most benefit (NNT=4).**

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Vitamin D and Cancer



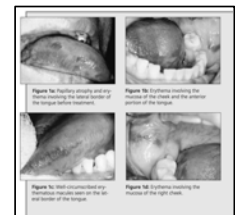
- Four cancer types benefit from supplementation during treatment: **prostate, breast, colorectal and melanoma.**
- Review: 30 studies show higher vitamin D status is **strongly associated with better breast cancer survival**
- Meta-analysis 11 studies (7718 colorectal cancer patients): **33% increase in survival** in those with highest vitamin D levels compared to lowest in patients stages 1-IV cancer.

Mahmi H, et al. Association between Blood 25-Hydroxyvitamin D Levels and Survival in Colorectal Cancer Patients: An Updated Systematic Review and Meta-Analysis. *Nutrients* 2018; Jul 13;10(7).
Kim Y, et al. *Br J Cancer* 2014; 110(11):2772-84; Jacobs EJ, et al. *J Cancer* 2016; 7(5):232-40

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Case: 41-year old Female

- **Disturbance of taste** (unable to sense flavor of variety of fruits and vegetables), fatigue after simple daily activities, **paresthesia of the anatomic structures innervated by the mandibular division of the trigeminal nerve** on her left side, disturbance of memory and slowing mental faculty. **No meds. Vegan for 2.5 years.** No significant medical or dental history.



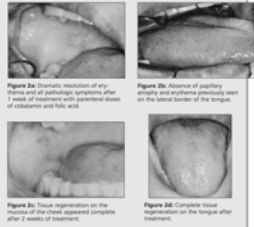
Poonies HA, et al. *J Can Diet Assoc* 2009; 75(7):533-7.

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Laboratory Tests & After Treatment

Test	Normal range (female)	Patient's values
RBC count (cells/ μ L)	3.90–5.03	1.63
Hemoglobin (g/dL)	12.0–15.5	7.2
MCV (fL)	80–100	144
Hematocrit (%)	36–45	23.4
RDW (%)	13 \pm 1.5	25
Serum folate (ng/mL)	3–16	7.73
Serum cobalamin (pmol/L)	118–716	71.8

MCV = mean corpuscular volume; RBC = red blood cells; RDW = red cell distribution width.



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Vitamin B12 Deficiency

- Meta-analysis: **80% increased risk B12 deficiency after ten months PPIs.**
- Metformin 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.**
- YET, vitamin B12 levels are **not commonly monitored with these drugs.**

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* 2015;45(4):409-16.

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

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Magnesium

- Low magnesium associated with **type 2 diabetes, metabolic syndrome, high blood pressure, inflammation, atherosclerosis, sudden cardiac death, osteoporosis, migraines, asthma, and colon cancer.**
- 48% of American consume less than RDI of magnesium; down from 56% in 2001-2002
- FDA warning: **proton pump inhibitors can cause dangerously low magnesium levels.**



Rausoff A, Weaver CM, Rude RK (2012) Suboptimal magnesium status in the United States: are the health consequences underestimated? *Nutr Rev* 70(3):153-64.

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The Need is Real and Urgent

- We need more research to determine “optimal” reference range for key micronutrients in specific populations, as well as making nutrient testing more widely available, more economical, and reimbursed by insurance and government programs.
- **Even marginal micronutrient status can adversely affect muscle, joint, and eye health, as well as the immune, cardiovascular and neurological systems.**

Marsman DJ, Belsky DW, Gregori DJ, Johnson MA, Low Dog T, Meydani S, Pigat S, Sadana R, Shao A, Griffiths JC. *Eur J Nutr*. 2018 Jun;57(52):15-34.

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Movement: *Sound Body = Sound Mind*

- Exercise and physical activity keys to long and healthy life. **Reduces risk of diabetes, heart disease, osteoporosis.**
- Movement increases blood flow to brain, release compounds that diminish pain, elevate mood and reduce tension.
- More than 400 studies show exercise can **reduce risk depression/anxiety.**



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The Need for Sleep



- Chronic sleep problems: **weight gain, obesity, diabetes (33% increased risk), heart disease, mood disorders.**
- 1 in 3 Americans** do not get sufficient sleep.
- Control blue light (consider **blue light blocking glasses**).
- Controlled-release melatonin: **2-3 mg 2 hours before bed**.
- Sleep apnea big problem.** CPAP, oral appliances, weight loss, etc.

Matheson E, et al. Insomnia: Pharmacologic Therapy. *Am Fam Physician* 2017; Jul 1;96(1):29-35.

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Brighter Mornings Make For Better Nights!



- 1989 study found when participants with SAD were exposed to **simulated sunrise** or **simulated sunrise and sunset for several days** their depression resolved or was greatly reduced.
- Dawn simulation devices: those with **hard time falling asleep**
- Pricey – *Philips Wake-Up Light* with **Colored Sunrise Simulation** is top rated.

Terman M, Schlager D, Fairhurst S, et al. Dawn and dusk simulation as a therapeutic intervention. *Biol Psychiatry*. 1989;25:966-970.

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Cognitive Behavioral Therapy

- CBT has emerged as a recommended **first-line therapy for insomnia**. Digital CBT has been shown to be effective for improving sleep, as well as mental health and well-being.
- CBT typically consists of:
 - Psychoeducation about sleep and insomnia
 - Stimulus control
 - Sleep restriction
 - Sleep hygiene
 - Relaxation training
 - Cognitive therapy



Luik AI, et al. Digital cognitive behavioral therapy for insomnia: a state of the science review. *Curr Sleep Med Rep* 2017; 3(2): 48-56

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The Basics



- Set a sleep schedule and stick to it.
- Make your bedroom dark, quiet and cool.
- Turn off electronics and/or use blue light blocking technologies.
- Watch the caffeine. Discontinue by noon if trouble sleeping.
- Power naps: can be good if 20-30 minutes in duration
- Limit alcohol intake.
- Don't go to bed hungry.
- Find ways to deal with "worries"
- Get sleep evaluation if sleep disruption and/or daytime fatigue continues

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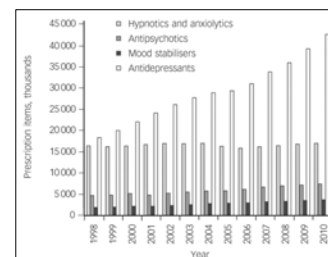
High levels of stress hormones linked to high blood pressure, high cholesterol, high blood sugar, insulin resistance, insomnia, weight gain, headaches, mood swings, depression, and increased risk of infections.

Scientists believe that prolonged elevation of stress hormones may shorten our lifespan by 15 years.



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Trends in prescriptions of major classes of psychiatric drugs 1998-2010.



Stephen Hyatt, and Joanna Moncrieff. *BJP* 2012;200:393-398

THE BRITISH JOURNAL OF PSYCHIATRY

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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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What is Your Body Telling You?



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Relax



Our anxiety does not come from thinking about the future, but from wanting to control it.

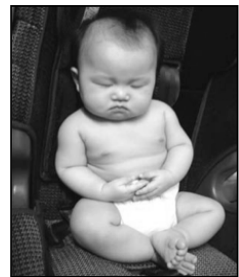
Rumi Rumi

- 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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Mindfulness Meditation

- Helps with **stress perception and pain intensity, elevates mood**. Quiets stream of thoughts.
- 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** – good for beginners with 10 minute meditations. Free.
- **Mindfulness App** – nice 5 day guided meditation program to get you started. Can be personalized and integrated into other health apps. Free.
- **Calm** – nice app for relaxation and bedtime stories....

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Loneliness, Social Isolation & Your Health

- 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 **obesity**.


Cacioppo JT, et al. *Ann N Y Acad Sci* 2011; 1231:17-22
Holt-Lunstad J, et al. *PLoS Med* 2010; 7:e1000316



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"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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Be patient with yourself. Soft growth is tender; it's only ground. There's no greater commitment.

Stephen Covey

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