

# The KIWI: Keeping It Well Initiative



**Dartmouth**  
GEISEL SCHOOL OF MEDICINE

## WHO WE ARE

We are a group of eight fourth year students at Geisel School of Medicine at Dartmouth. We are going into internal medicine, emergency medicine, psychiatry, neurology, child neurology, and general surgery.

We understand the complexity of the topic of wellness, that it holds a different meaning for each of us and that frankly, most of us probably know how to best take care of ourselves when given the time. Nonetheless, we sincerely hope that this wellness workbook can serve as a guide to reinforce our wellness toolboxes and build to our wellness reserve. It doesn't hurt to learn some evidence-based fun facts along the way.



Our group leaders are Catherine Florio Pipas, MD/MPH and Maggie Minnock, MBA.

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Copies of this workbook can be downloaded at no cost from:  
<https://geiselmed.dartmouth.edu/students/programs/wellness/>

## DEDICATION

*To those dear to us whom we have lost*

*To those who thought they were alone*

*To those who knew about physician burnout and chose medicine anyway*

*To all of us entering and continuing in the healthcare profession*

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## INTRODUCTION

The afternoons and evenings when I could just sit with my patients were the only moments when I felt fully alive. I remembered how I loved them, how the humanity shared among us gave us the will and the ability to celebrate life. Who cared about wires and tubes when we had laughter?

Outside these rooms, I looked like my normal self, but felt like I was walking through a mental haze. I could sit through a lecture or read a chapter of text, trying so hard to absorb something, and retain nothing at all.

I was asked to love with little to give. It can be hard to say no when you're expected, as a relative, friend, or colleague, to be easy to talk to, caring, wise, non-judgmental, and every other fluffy adjective that implies emotional availability. Why else did we enter medicine? In trying to learn and give every day despite struggling myself, I stumbled into a self-perpetuating semi-conscious wakefulness that left me too tired to reflect constructively, much less dig my way out.

Over the years I have learned that burnout is real, and that I was not alone in any aspect of this experience. The haze, the fatigue, and the way content seemed to roll off my memory like water on goose feathers are all common. The feeling of being required to do for family and friends what was draining the life from me was quite common. Anhedonia--also common. Sitting with patients as a sure way to reconnect, in hope and joy, to our own humanity--common.

For more than two decades, the ubiquity of burnout, a syndrome described as physical or emotional exhaustion, depersonalization, and a feeling of lack of efficacy, has fueled a crisis within healthcare. A national study from 2011 to 2014 showed that the prevalence of burnout among physicians has increased 9% to ~60% (1). Mounting evidence links burnout to outcomes involving cardiovascular disease (2), shorter life expectancy, alcohol use (3), depression, suicide (4); higher institutional costs due to physician turnover (5) and decreased productivity; and impaired patient safety through medical errors (6), worsened doctor-patient communication (7), and decreased patient satisfaction (8). Causes include numerous bureaucratic tasks, extended hours, and cumbersome EMRs producing inefficient workflow; lone ranger, workaholic, and perfectionist personality traits that drive us to put unhealthy levels of pressure on ourselves (9), and a medical culture wherein we are expected to routinely sacrifice our well-being to care for our patients.

Almost all of us have faced or will face some degree of burnout. As rising interns, we explored data regarding why

## INTRODUCTION

burnout happens and what, from a personal to an institutional level, seems to help. This booklet is our way of sharing notes with fellow students, medical residents, nurses, medical assistants, interns, PA/NPs, and others: It's by no means exhaustive, but we do hope it will provide some worthwhile tools for self-care, seeking institutional change, and reaching out for help when we need it. We hope this booklet will be a useful read as new chapters begin in our medical careers, and that it will serve as a quick reference when time for self-care runs short. As young providers, we are in a unique position to begin to reverse burnout trends by

learning about its effects and seeking out healthier ways to shape our culture and by extension, better the future of healthcare for our patients and ourselves.

This booklet of 10 short chapters contains evidence-based recommendations, each geared toward individuals (diet, exercise, mindfulness, sleep, social relationships, and others) or collective and institutional measures demonstrated to enhance wellness. Happy reading, all the best with the first years of your careers, and never forget: We are not alone.

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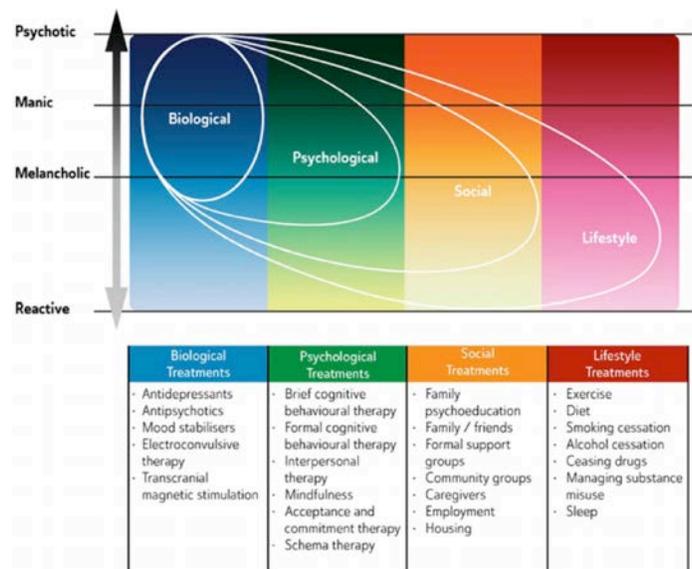
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# DIET

“Emerging and compelling evidence for nutrition as a crucial factor in the high prevalence and incidence of mental disorders suggests that diet is as important to psychiatry as it is to cardiology, endocrinology, and gastroenterology.”

- Sarris et al. 2015 Lancet Psychiatry

What does diet have to do with mental health? Surprisingly a lot. In fact, the Royal Australian and New Zealand College of Psychiatrists have officially expanded the bio-psycho-social model to the bio-psycho-social-lifestyle model and adopted it as standard-of-care for mood disorders. It makes intuitive sense. The central nervous system evolved under the same conditions as the rest of our body. Diets, physical activity, and other lifestyle practices that benefit cardiometabolic health appear to be beneficial to mental health, as well.



## At A Glance

Foods that increase oxidative stress and inflammation in the body do so as well in the central nervous system, which cause neuronal damage leading to poorer psychiatric health and cognitive function. (1) High fiber foods, probiotics (or fermented foods), and avoiding chemical preservatives improve the gut microbiome, decreasing intestinal permeability, and lowering systemic inflammation. (2) Artificial flavors negatively impact attention. (3) DB-RCTs of omega-3 fatty acids, zinc, and S-adenosylmethionine (SAME) significantly improve depression. (4) Mediterranean diets have demonstrated decreased risk for depression in epidemiological studies and have demonstrated success as a treatment for depression in one well-designed RCT. (5)

# DIET

## Basic Recommendations

*Let's be real.* Until the food system available in your hospital provides these recommendations as options, this will be hard to do. But do your best, as much as you can. Every bit counts.

### Plant foods

- Use whole grains instead of refined grains
- Eat beans or hummus once per day
- Vegetables: eat as many as you can every day. 5-9 servings, daily
  - Check out vegetarian recipes
- 1-2 oz of nuts or seeds or 2-3 TBSP of nut or seed butter daily
  - Easiest plant-based protein and healthy fat (including essential fatty acids) source around.
- Fresh fruit, especially berries, daily

### Animal products

- High-quality yogurt daily (no preservatives or artificial additives)
- Up to 7 eggs per week
- 4 oz fish up to 5x per week (no tuna, swordfish, or tilapia) 4 oz skinless chicken up to 3x per week

### Liquids

- Water, unsweetened tea, coffee, kombucha, coconut water

### Quick tricks

- Consider a Vitamix, Nutribullet, or juicer for low-glycemic index green smoothies and vegetable juices
- Garden of Life Raw Meal
  - Plant-based protein with freeze-dried veggies and fruit for 50% RDA of most vitamins and minerals
- Vitamin D is an essential neurohormone. Supplement between 1000 to 3000 IUs daily if you spend time most of your time indoors.

### Workbook Activities:

- Many websites have shoddy evidence, but great recipes. Research some vegan, vegetarian, and paleo blogs for recipes, tips, and creative food ideas.
- Find a cooking friend or friends. Make 2-3 days worth of meals together. Then do it again for the next 4 years.
- With whole grain bread (Food for Life Ezekiel bread is always whole grain), have a nut butter (peanut, almond, or cashew butter) or seed butter (sunflower or tahini) + fermented vegetables (kim chi, sauerkraut, ginger carrot 'kraut') sandwich (eg peanut butter and sauerkraut sandwich) Sounds weird, but it is delicious and provides whole grains, healthy fats, and probiotics in an easy-to-eat sandwich.
- Green smoothie:  $\frac{1}{3}$  fruit + banana,  $\frac{2}{3}$  lacinato kale (remove the stems).
- Try low glycemic greens juice every day for a week
  - 1 green or red leaf lettuce (remove stem; it is bitter.), one large cucumber, one head of celery, some kale leaves (remove stem; it is bitter), and some spearmint.
- Try some wild-caught salmon 2-3x per week. Canned wild salmon and herring is less expensive than fresh.
- Go vegan for 1 day per week.
- Eat no sugar or processed foods (ever) or 1-3 days per week.
- Keep a food diary and share adventures with friends.

# DIET

## Further Reading for a Slightly Deeper Dive

### Oxidative Stress and Inflammation

OK, so healthful diets appear to benefit mental health. *What's the mechanism?* There are overarching mechanisms - such as oxidative stress and inflammation - and specific mechanisms - such as nutrients that are cofactors and substrates for CNS pathways. Oxidative stress from daily function and oxidizing foods causes

neuronal damage forming epitopes that cause IgG and IgM autoantibodies that impair neuroplasticity, neurotransmission, and cell survival. Low-grade inflammation increases the levels of reactive oxygen species and multiple feedback loops between inflammation and oxidative stress that impair neuronal function. (1)

### Microbiome

The microbiome is part and parcel with the biological mechanisms of mental health. Certain gut bacteria increase intestinal permeability, which allows for bacteria to "leak" through into the vascular space causing system-wide inflammation. High fiber diets increase the mucus lining of the intestines and help to reconstitute the intestinal membrane. Additionally, certain gut bacteria ferment carbohydrates producing short chain fatty acids that have

biological activity impacting cytokines, serotonin production, neurotrophic factors, and blood brain barrier integrity. Although most microbiome studies have involved animal models demonstrating impact on mood and behavior, human clinical trials have also begun with initial success. Consider taking a live refrigerated probiotic or including naturally fermented foods, such as kombucha, high-quality yogurt, raw sauerkraut, and kim chi. (2)

### Artificial Food Additives

*The hippies were right:* food additives are not good for you. In a DB-RCT published in the Lancet, researchers found that food additives (artificial colors and the preservative sodium benzoate) impaired attention spans and increased hyperactivity in otherwise healthy children. In the American Journal of Psychiatry, a meta-analysis of DB-RCTs for food additives and hyperactivity demonstrated an increase in core ADHD

symptoms in children with a clinical diagnosis of ADHD. As for chemical food preservatives, they impact the microbiome (duh, preservatives inhibit bacteria). If possible, avoid chemical preservatives in your foods. You want foods that foster healthy intestinal bacteria. So the hippies were right on this one. However, as medical students and residents, you can multi-task. You can wear deodorant and eat healthful foods at the same time. (3,6)

### Whole Diet

Epidemiological evidence has demonstrated consistently and internationally that processed foods increase depressive symptoms and whole foods - such as whole grains, beans, vegetables, nuts, and fish - decrease risk of depression and even suicide. *However, I know and you know that you'll only be convinced with an RCT.* Luckily, we have a

good one. In BMC Medicine, an RCT compared standard-of-care + seven hours of social support vs standard-of-care + dietary recommendations for a Mediterranean-style diet. By 12 weeks of intervention, the dietary group experienced a four-fold increase in remission from depression compared to the control group. (5)

## DIET

### Nutrients

In the British Journal of Psychiatry, a meta-analysis of 36 DB-RCTs demonstrated significant improvement in depressive symptoms with EPA omega-3 fatty acids with an effect size of .61. For comparison,

the effect size of SSRIs for mild depression is 0.3. Interestingly, EPA is effective for depression, whereas EPA-DHA is more effective for psychotic disorders. (7)

### Caveats

Dietary interventions will work best if one's diet is poor at baseline. If you have a good diet at baseline and are still experiencing difficulty with mood and

burnout, maintain your good diet while pursuing additional health practices and therapies, such as cardiovascular exercise, CBT, and medications.



## OK, I'm convinced. So what do I eat? Comprehensive Basic Recommendations

### Whole grains

- Whole grains provide fiber and prebiotics for improved digestion. They decrease inflammation and are serotonergic.
- Short or medium grain brown rice is classic. It takes 40 minutes to cook, and lasts for days. Chew thoroughly.
- Quinoa is versatile, high in protein, and takes 20 minutes to cook.
- Japanese soba noodles are at least 40% whole grain and contain excellent antioxidants such as rutin.
- Food for Life Ezekiel Bread is guaranteed whole grain, low glycemic index, and available nationwide.



### Beans and bean products

- Any beans or hummus
- Tofu, tempeh

# DIET

## Vegetables

- Have a balance of root vegetables, vine vegetables (eg. squash, tomato), and leafy greens
- Have a balance long-cooked (soft and sweet), lightly cooked (bright and crunchy), and raw vegetables



## Mushrooms

- Let's face it. Mushrooms are their own kingdom, like animals and plants. Humans have more genetic similarity to mushrooms than we do plants, and mushroom phytochemicals have powerful effects on physiology.
- Mushrooms have proteins and phytochemicals, such as sterols and antioxidants.
- Lentinan, a compound found in sun-dried shiitake mushrooms, is now standard-of-care as adjuvant treatment in chemotherapy for certain cancers in Japan.

## Seeds and Nuts

- Provide heart and brain healthful fats, minerals, and antioxidants
- They are easy to eat and satiating. A single handful of nuts per day reduces heart attack risk by about 20% (8,9)



## Oils

- Plant oils are healthful fats
- Sesame, sunflower, and olive oils are sources of healthy fats. Increasing olive oil in one's diet (if it replaces refined carbohydrates and unhealthy fats) has been demonstrated to reduce stroke and improve executive function cognitively in the large RCT PREDIMED trial (10, 11)

## Herbs and Spices

- Phytonutrient powerhouses

## Fruit and Avocado

- Any fruit is beneficial
- Berries are antioxidant powerhouses (but so are stone fruits, such as plums, peaches, and nectarines for much cheaper)
- Avocado is loaded with healthy fats, antioxidants, and minerals. An avocado each day lowers LDL and raises HDL. Avocado comes from the Nahuatl word, "ahuacatl" which means testicle tree, so maybe they will help you ace the urology rotation.



## Fermented foods

- Raw kombucha, high-quality yogurt, raw sauerkraut, and raw kim chi
- Consider making these products at home for pennies on the dollar
- Probiotic interventions have demonstrated benefit for depression, ADHD, autism, and schizophrenia

# DIET

## Fish

- Possibly considered the healthiest food from animal sources.
- Eat smaller fish. Avoid large fish, such as tuna and swordfish, since they are a source of bio-accumulated mercury. One can of tuna can contain more than one week's worth of the FDA recommended limit of mercury, which can reverse the healthful brain benefits of fish and even cause neurological harm. Tilapia is filled with inflammatory arachidonic acid and does not impact physiology like other healthful fish.

## Eggs

- Cholesterol is the precursor to estrogen, progesterone, testosterone, DHT, DHEA, cortisol, and aldosterone.
- Exogenous cholesterol has *not* been associated with increased heart attack risk. However, inflammatory compounds metabolized from animal foods (which also have cholesterol), such as TMAO, seem to be a major culprit. Eating predominantly plant foods alters the microbiome, such that TMAO is not produced.



## Dairy

- Focus on fermented dairy, such as natural yogurt and natural cheese
- Make sure your yogurt does not have any preservatives, added sugar, or artificial flavors.

## Poultry

- Endorsed by the Harvard School of Public Health as a healthful protein
- Consume without the skin. Chicken skin is associated with increased inflammation and higher cancer rates.



## Red Meat

- The Mayo Clinic, Harvard School of Public Health, and Kaiser Permanente recommend limiting red meat.
- If you eat red meat, please also eat copious amounts of vegetables and limit sources of processed foods, such as refined grains and sugar.

## Supplements

- Vitamin D aka cholecalciferol:
  - Buy a dropper (1000 IUs per drop) to save money and still have this important hormone.
  - Low pre- and post-natal cholecalciferol is strongly associated as a risk factor for schizophrenia and autism spectrum disorders
- Garden of Life Raw Meal
  - Made from fermented organic seed, nut, whole grain, and bean proteins with hundreds of freeze-dried vegetables and fruits, this is a whole food supplemental powerhouse, providing 50% RDA of most vitamins and minerals plus 20 grams of highly bioavailable protein.
  - This product was invented by a gastroenterologist with a focus on bioavailability from whole plant foods.

## DIET

### Vitamix, Blendtec, or Nutribullet

- Great for smoothies

### Juicers

- Focus on low-glycemic index juice
- Juice: 1 red leaf lettuce, 1 large cucumber, 1 head of celery, 2-3 leaves of kale, and spearmint
  - This recipe makes about four 12 oz jars of juice, which will remain fresh for about a week in a refrigerator. The author quadruples this recipe and in 90 minutes makes enough juice for 4 people for a week!
- Two best juicers on the market (as of January 2018):
  - <http://www.discountjuicers.com/slowstarsilver.html>
  - <http://www.discountjuicers.com/kuvingswholeelite.html>



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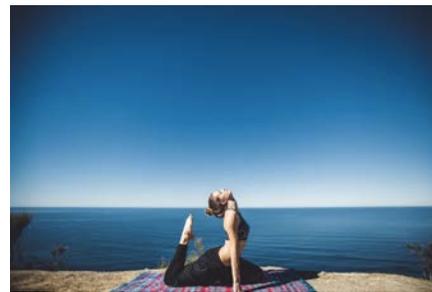
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Figure credit: Malhi GS, Bassett D, Boyce P, Bryant R, Fitzgerald PB, Fritz K, et al. Royal Australian and New Zealand College of Psychiatrists clinical practice guidelines for mood disorders. *Aust N Z J Psychiatry.* 2015;49(12):1087-206

## EXERCISE

“Exercise and application produce order in our affairs, health of body, cheerfulness of mind, and these make us precious to our friends.”

- Thomas Jefferson



### At A Glance

Exercise is divided into flexibility, strength, and endurance aka cardiovascular exercise. If you want insight into the human condition, perhaps yoga or tai chi might tap you in. If you want to look d\*mn good, perhaps strength training is your thing. But if you are talking about improved mood and cognitive performance, the evidence points in one direction: cardiovascular (CV) training. And thank goodness for that, because CV exercise is the most time-efficient style of exercise, which is perfect for busy medical students and residents. Do it for 15-30 minutes a day (or longer), and you will have booming norepinephrine, dopamine, and serotonin levels, as well as increased Brain-Derived Neurotrophic Factor (BDNF), which will maintain and regrow nerve cells and neuronal connectivity (ie improve memory and critical thinking).

### Exercise and Mood

In 2016 in the Journal of Psychiatric Research, Schuch and colleagues published a systematic review and meta-analysis of 25 randomized controlled trials (RCT) that evaluated the effectiveness of exercise for depression. After adjusting for publication bias, the effect size of exercise on depression was 1.11, equal to or higher to that of SSRIs. However, exercise and SSRIs do not have to be an either/or decision. In 2015 in the British Journal of Psychiatry, Murri and colleagues completed an RCT (n = 121) comparing sertraline vs sertraline +

aerobic exercise for Major Depressive Disorder. As expected, sertraline produced remission of depression at a rate of 40% within one year, whereas sertraline + aerobic exercise doubled the remission of depression to 80%. Except for electroconvulsive therapy, no other psychiatric intervention can produce a remission rate of 80% for MDD. Consider an all-of-the-above approach if you suffer from depression during medical school and residency.

## EXERCISE

### Exercise and Cognition

In 2014 in Neurology, Zhu and colleagues completed a prospective study that demonstrated significantly better cognition at baseline and 20 year follow up in individuals with higher cardiovascular fitness. Changes in cardiovascular fitness over the 20-year period also impacted cognitive function. In 2011 in the Proceedings of the National Academy of Sciences, Erickson and colleagues published a one-year RCT (n = 120) that evaluated

the effects of cardiovascular exercise on the central nervous system. With high definition MRIs, VO2max studies, biomarkers for BDNF, and clinical cognitive tests, Erickson et al demonstrated that cardiovascular exercise *regrew 2 years worth* of neural degeneration in the hippocampal region and improved clinical performance on cognitive tests. Yes, daily exercise will improve your USMLE scores and performance on the wards.

### Walking and Creativity

Steve Jobs was famous for his walking meetings. In 2014 in the Journal of Experimental Psychology, Oppezzo and Schwartz published the results of two trials (n = 48) that established that walking (even on a treadmill staring at a blank wall) significantly improved creative

thinking compared to sitting. Walking during meetings or before meetings will improve brainstorming and the discovery of creative solutions. So get your Steve Jobs on with walking meetings for improved team productivity.

### Activities:

- Try rowing, cycling, or using an elliptical at least 30 minutes 3-7 days per week.
- Consider purchasing a bicycle and biking to the hospital. It is perfect if you are a 15- to 30-minute bike ride to the hospital). Students have done this on their Sub-Is and away rotations to avoid renting a car... and it improve their mood and cognitive ability to boot.
- Establish some exercise friends to double up on social + exercise at one time.
- Yoga is great for mood and cognition, if it is rigorous (are you sweating?).
- Inferno Hot Pilates in WRJ is a great 1-hour exercise for Dartmouth students.

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## SLEEP

“Don’t give up on our dreams. Keep sleeping.”

-Anonymous

### Sleep stats you probably didn’t know...

- Humans are the only mammal species that voluntarily delay sleep
- 37% of Americans have admitted to falling asleep at the wheel
- 70,000,000 Americans have some form of sleep disorder
- \$100,000,000,000+ each year is lost due to medical expenses, sick leave, property damaged, reduced productivity caused by sleep deprivation

### At A Glance

**Why should we care about sleep?** Sleep deprivation leads to fatigue, cognitive slowing, impaired memory, decline in motivation, and poor performance. We need sleep to restore our bodies and our minds. In medical professionals, surveys conducted over the past 20 years have shown that interns work more hours than residents, and surgical subspecialists put in the most hours, with an average of 60-90 work hours a week (1).

In 1960, a survey study conducted by the American Cancer Society found modal sleep duration to be 8.0 to 8.9 hours, and this dropped to 7 hours in 1995 (2). According to the CDC’s 2014 US behavioral risk factor surveillance system, short sleep (<7 hours) was associated with increased rates of heart attack, coronary heart disease, stroke, asthma, COPD, depression, and diabetes among other diseases. Several cross-sectional studies have found that an

increased risk of diabetes, higher BMI, and higher glucose levels in individuals who report sleeping fewer than 7 hours (2). In a study of more than 5500 people, those sleeping less than 6 hours were 66% more likely to have hypertension than individuals getting 7-8 hours per night (3). Moreover, sleep deprivation also alters inflammation, autonomic tone, and hormones in a direction that contributes to cardiovascular disease (3).

# SLEEP

According to the American Psychological Association, adults who get at least 8 hours of sleep a night reported feeling less irritable, angry, overwhelmed, lacking in interest or motivation, losing patience or yelling at their children, skipping exercise, and increasing stress levels (4). More alarmingly, studies have shown that the fatigue of sleep deprivation of 17-19 hours or more, performance on some tests was equivalent or worse than a BAC of 0.05% with slower response speeds (5). A 24-hour call shift can increase the risk of motor vehicle accident by 168%. One fifth of all car crashes in the United States are due to

sleep deprivation. According to Dinges et al., psychomotor vigilance task (PVT) testing in sleep deprivation showed that after 20-25 hours of being awake, performance impairment is equivalent to having a BAC of 0.10%. Peak car crashes times coincided with sleep-attacks during PVT testing, at 26 hours of being awake (6). With these alarming findings, it seems like a no-brainer that we should cozy up with our pillows at this very moment. Given our hectic and demanding schedules, sometimes it is just impossible to find enough time. We hope some of the following recommendations may be useful.



## Sleep Hygiene Techniques

- Try to set similar bedtimes and wake up times, even on off days
- Improving sleep hygiene can increase our efficiency
- Unplug from electronic devices (TVs, computers, smartphones) ~30 minutes before bedtime and maybe read the next chapter of the book you've been meaning to get to

- Avoid large meals, caffeine, alcohol before bedtime
- Some physical activity during the day can help us fall asleep more easily at night
- <http://www.sleepeducation.org/essentials-in-sleep/healthy-sleep-habits>

## Shift Work

- Nap for 90 minutes right before a night shift; this helps us be more alert
- Use blackout curtains because sunlight is a potent stimulator of the circadian rhythm, avoid daylight when we get off work with dark sunglasses and go straight to bed

- Limit alcohol and caffeine intake
- Melatonin
- Light therapy (see below) in the evening for 15 - 30 minutes
- <https://sleepfoundation.org/sleep-tools-tips/tips-shift-workers>
- <http://sleepcenter.ucla.edu/coping-with-shift-work>

# SLEEP

## Light Therapy

- Timed exposure to bright light can be used to adjust our body's sleep cycle.
- During light therapy sessions, we can sit or work near a light box and the light must enter our eyes indirectly
- 3 key elements for effectiveness: intensity (10,000 lux at a distance of 16 - 24 inches from face), duration (15 - 30 minutes per

- session), timing (early in the morning is most effective for Seasonal Affective Disorder)
- Blue light can help us change sleep phases by shutting off melatonin production when used in the early morning or late night. If used during the day, it improves mood by simulating the effects of an SSRI.
- <https://www.feelbrightlight.com>

## FDA-Cleared Sleep Devices

- <https://www.fisherwallace.com>: TMS-similar device used for insomnia, depression, PTSD
- <https://ebbsleep.com>: Very new to the market (researched performed

by University of Pittsburgh School of Medicine, clinical trial of 230 patients showed improvements in latencies in stage 1 and 2 sleep)

## Medication Advice

- If taking Ambien: try 2.5 mg before trying 5 mg; note that using sedatives more than every other day can lead to habituation, dependence, and rebound insomnia.

- Trazadone is the psychiatrists' favorite sleep medication: no rebound insomnia or dependence.
- Pilot trials: meditation equivalent to CBT for insomnia (gold standard).



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## RELATIONSHIPS

"There isn't time, so brief is life, for bickerings, apologies, heartburnings, callings to account. There is only time for loving, and but an instant, so to speak, for that."

- Mark Twain

Relationships are one of the most important factors of health we can focus on in beginning residency. Numerous studies, such as Harvard's Grant Study, have found an association between high quality relationships, longevity, and greater health. Brain and cardiac health have been shown to benefit from high quality relationships. For example, one study found men with coronary artery disease with fewer social connections had a 2.4 times greater risk of death. While this risk was not attributable to disease severity, demographics, or psychological factors, the exact mechanism is unclear.

Telomeres, cortisol and oxytocin may all play a role in explaining the health benefits of relationships. Sexual intimacy and relationships have been associated with longer telomere length in certain cell populations. Many studies show that quality relationships reduce stress and cortisol levels. Relationships may also play a role in mediating improved mental health and reduced stress through the hormone

oxytocin, which is released with social bonding and sex.

However, simply having many social relationships may not be enough to benefit our health. The Grant study has shown that only secure relationships in which people could depend upon the other person in times of difficulty provided health benefits. The Grant study also found that people in toxic relationships had worse health than those who were divorced. Poor quality relationships may undermine health by contributing to stress and cortisol levels, or by having interactions with people who model unhealthy behaviors such as those tied to obesity or substance use. The relationship between modeled behavior and health outcomes may be particularly important for women. The amount of time dedicated to relationships seems to matter significantly for health outcomes as well. For example, one study that found having a spouse that works a lot was associated with a higher risk of CVD.

## RELATIONSHIPS

There are several practical ways to invest in and strengthen social relationships for those with limited time. Practicing gratitude in our relationships not only has the benefit of stronger, higher quality relationships but also has a positive effect on our sense of well-being. It doesn't take a lot of time to show your appreciation for others in small ways. Telling your partner or friend what you appreciate about them. Taking notice and saying thank you

for small things often taken for granted can positively transform a relationship. Sexual intimacy with a romantic partner doesn't have to require a lot of time. The research showing benefits from intimacy found that the benefits were attained through any form of intimate contact, so something quick like an intimate touch or kissing your partner goodbye on the way to the hospital can be an easy way to strengthen your bond.



### Recommendations/Pearls

1. Focus on strengthening at least 3 quality relationships in your life, people you can truly depend upon in difficult situations
2. Cultivate gratitude in your relationships
3. Unplug from devices and use your free time for relationships

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## PURPOSE

"A man who becomes conscious of the responsibility he bears toward a human being who affectionately waits for him, or to an unfinished work, will never be able to throw away his life. He knows the 'why' for his existence, and will be able to bear almost any 'how.'"

- Viktor Frankl

Having purpose has been associated with longevity, mental and physical health, social connectedness, and lower risk of cognitive problems and dementia later in life. The mechanism for this may be similar to relationships, with telomerase playing a role. Both relationships and a sense of purpose contribute to a sense of meaning in life. Fortunately for us in healthcare, our work has the potential to give us a sense of purpose. We are using our strengths to help others and make the world a better place. What we may need is a reminder of purpose. We may also need a reminder of our strengths and a confidence boost.

If a sense of purpose can help people like Viktor Frankl survive situations like life in a Nazi concentration camp, a sense of purpose can certainly help us to survive residency and our careers as physicians!

While some research has associated purpose with happiness, recent research suggests the contrary. People who actively seek to participate in meaningful activities, giving of themselves, tend to experience lower levels of happiness. This

may be due to the fact that people who seek out meaningful activities tend to experience higher levels of anxiety and stress. It is important that physicians realize that while giving ourselves to others may provide us with a sense of meaning, we are often very likely not to feel happy as a result. Happiness VS meaning is a very real tradeoff of which we should be aware. However, the health benefits of choosing meaning and purpose are better evidenced than any benefits from happiness.

A career in medicine has the potential to give all of use a sense of purpose, which can drive us to survive and live longer. In the midst of stressful and busy work environments, we need daily reminders of this greater purpose to keep us focused on our mission and not lose track of the big picture. We should also take care to indulge ourselves and be selfish once in a while in order to feel happy, as well as fulfilled, since it is more likely that the stress of our work as doctors is unlikely to result in happiness.

# PURPOSE

## Recommendations

1. Define and write down your values
2. Define and write down your most important goals
3. Remind yourself of your personal strengths and how you are using them to serve others
4. Reflect upon your professional role and how it can be used for this purpose
5. Be part of a community that shares your goals
6. Don't lose track of the big picture
7. Indulge yourself in some selfish things that make you happy as being a martyr will not!



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## MINDFULNESS

"Altogether, the idea of meditation is not to create states of ecstasy or absorption, but to experience being."

- Chögyam Trungpa

Practices of mindfulness have existed for ages and traversed multiple cultures, religions, and geographic regions. The concept and utility of this art has been described by leaders of nations as well as ancient religious figures, the richest members of society as well as the poorest communities, CEOs of some of the highest grossing companies worldwide as well as ascetic monks who have taken a vow of poverty and dwell in the depths of the Saharan desert. The evidence surrounding mindfulness and meditation is broader than we originally expected with benefits ranging widely. We have assembled a collection of literature that highlights some of the multifaceted benefits to the practice of mindfulness, but have not scratched the surface in presenting the breadth of data currently in existence.

There has been a presumed benefit to mindfulness and meditative practices with regard to the functioning of our immune system. Black et al describes some of these benefits in his systematic review that

analyzed more than 20 randomized controlled trials regarding the role of mindfulness in relation to the immune system. This study indicated that mindfulness meditation is associated with reductions in proinflammatory processes, increases in cell-mediated defense parameters and an increase in enzyme activity specific to preserving cell aging<sup>1</sup>.

One exciting study examined the utility of brief meditation training to improve cognition and mood. Two groups were examined, one practicing meditation training and one control group that listened to a recorded book. Measures that were assessed include mood, verbal fluency, visual coding, and working memory. Participants in the group practicing meditation training showed improvement in mood, reduced fatigue, anxiety, and increased mindfulness. Additionally, those who participated in 4 days of meditation had improved visuo-spatial processing, working memory and executive function<sup>2</sup>.

## MINDFULNESS

Further, the evidence surrounding the efficacy of mindfulness in the setting of mental wellness and illness is robust. Hoge et al reports a randomized controlled trial in which 89 individuals with DSM-IV diagnosed Generalized Anxiety Disorder (GAD) were randomized into two groups. One group (n=48) received an 8-week intervention with Mindfulness Based Stress Reduction (MBSR) course and the other group (n=41) underwent Stress<sup>3</sup>

Management Education (SME) between the years 2009-2011. According to various tests (CGI-S, CGI-I, BAI TSST stress challenge) that assess degree of anxiety and distress, both MBSR and SME groups showed reductions, yet MBSR showed greater rates of reduction than SME in response to the TSST. Overall, this study concludes that MBSR improves stress reactivity and coping in patients with GAD.



Along the same vein, Goldin et al describes the effects of Mindfulness-Based Stress Reduction on emotional regulation and social anxiety disorder. Participants of this study were compared with their baseline before and after practicing mindfulness-based stress reduction (MBSR). There was a significant improvement in anxiety, depression symptoms, and self esteem. Further, “during the breath-focused attention task, this study showed decreased negative emotion experience, reduced amygdala activity, and increased activity in brain regions implicated in attentional deployment.” This study goes on to suggest that MBSR training in patients with SAD is likely to reduce emotional reactivity, SAD-related avoidance behaviors, and clinical symptoms, while enhancing emotional regulation<sup>4</sup>.

The same mindfulness-based stress reduction practices have been administered to patients suffering from anxiety, depression, and mood disorders secondary to another underlying medical condition such as cancer. A review by

Hoffman et al evaluated 39 studies of patients who received mindfulness-based therapies and training for conditions including cancer, generalized anxiety disorder, depression, and other psychological and medical conditions. The literature indicates that across groups, there was moderate improvement in anxiety and mood symptoms. The improvements in anxiety and mood symptoms were even more robust in patients suffering from anxiety or mood disorders alone without other comorbid medical conditions<sup>5</sup>. Similarly, La Cour et al showed that MBSR exercises contributed to reductions in overall subjective reports of pain and improved pain management in patients suffering from chronic, long-lasting pain<sup>6</sup>. Lastly, Shian-Leng et al published a review that showed improved psychological health, increased subjective well-being, reduced psychological symptoms and emotional reactivity, and improved behavioral regulation of subjects who regularly participate in these mindfulness practices<sup>7</sup>.

## MINDFULNESS

Central to the mission of this workbook is to bring to attention the challenges healthcare professionals face and providing interesting data and strategies that may, in some part, curtail these trends. Healthcare providers are reporting increasing rates of burnout with increased rates of substance abuse, mood disorders, and suicide represented by this demographic as compared to the national average. After participating in mindfulness courses, both physicians and other healthcare providers had significantly improved Maslach Burnout Inventory scores, and better results

according to Emotional Exhaustion, Depersonalization and Personal Accomplishment scales. The SF12v2 scale that measures overall mental well-being also improved significantly after participation in mindfulness training course as compared to before<sup>8</sup>.

While these studies are only a mere snapshot of some of the interesting literature encouraging the use and efficacy of mindfulness and meditation practices, we also wanted to provide some practical and accessible tools and resources to assist you!

### Key Resources

#### iPhone and Android Apps

- Step-by-step instructions
  - Headspace
  - Calm
  - Guided Mind
- Meditation tracker with a selection of guided meditations
  - Insight Timer

#### Local

- Shambala Meditation in WRJ
  - <https://whiteriver.shambhala.org>
- Mindfulness-Based Stress Reduction at DHMC
  - [https://www.dartmouth-hitchcock.org/classes\\_events/eventdetail/17862726897](https://www.dartmouth-hitchcock.org/classes_events/eventdetail/17862726897)

#### National

- Vipassana 10-day silent meditation, donation only
  - <http://www.dhamma.org/en-US/index>
- Transcendental Meditation
  - The favorite of The Beatles and many other superstars
  - <https://www.tm.org>
- Mindfulness-Based Stress Reduction
  - <https://palousemindfulness.com>

#### Books:

- Wherever You Go, There You Are by Jon Kabat Zinn
- Full Catastrophe Living- Jon Kabat Zinn

# MINDFULNESS

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## ADVOCACY

“Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever has.”

-Margaret Mead

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### Advocating for Change: how do we translate our frustrations into solutions?

This section is by its nature unlike the other sections in this resource. It does not have a true “at a glance” list of recommendations due to the breadth and diversity of possible interventions. What we hope you get out of this section is a basic understanding of how to organize yourself and your colleagues to turn your ideas into systemic solutions.

Let's say we are already aware of all of the interventions we've outlined so far. We are eating as well as we can, exercising on our one day off a week, but just can't push our wellness goals any further due to roadblocks beyond our control. Some of us have clinic weeks that are poorly structured and could be streamlined to give us a half day off to go to our own medical appointments or see our partners and friends for dinner before 8 pm. Maybe we found a great solution to burnout and want to promote it beyond our group of colleagues. How do we make our solutions heard? We can't wait twenty years until we are the ones in charge.

### This is where advocacy work and political organization comes in.

Advocacy can be conducted within our medical schools, our residency programs, or on a national policy level. A full introduction to advocacy and political organization is way beyond the scope of this workbook. Instead, we offer an introduction to basic techniques and some resources to explore what others in our medical community are already doing to advocate for provider wellness:

#### Advocacy 101:

*How do we even start?*

1. Develop your idea. Who is the target group? Who are the stakeholders? What are the barriers?
2. Identify not only your team of supporters, but also your supporters who are in positions of power

# ADVOCACY

## Advocacy 101:

3. Check for sources of institutional knowledge - are there people or committees who have worked on your problem or goal in the past? What have they done, what can you use, what are their conclusions?
4. Develop an “ask” and make it SMART (sustainable, measurable, achievable, results-focused and time-bound). Here’s a printable worksheet: [http://www.hr.virginia.edu/uploads/documents/media/Writing\\_SMART\\_Goals.pdf](http://www.hr.virginia.edu/uploads/documents/media/Writing_SMART_Goals.pdf)
5. Gather further data to support your idea and approach the appropriate administrators or committees.
6. BE PERSISTENT! Anything that improves your well-being and patient care is worth patience and negotiation.

## Here are some useful resources on coalition building and community organizing:

- University of Kansas Community Toolbox  
<https://ctb.ku.edu/en/get-started>
- Ohio State University factsheet on how to build a coalition:  
<https://ohioline.osu.edu/factsheet/CDFS-3>

Since no one has time to reinvent the wheel, especially during medical training - and because knowing the precedent at other institutions is a powerful negotiating tool- here are some best practice resources:

## Universities and Medical Centers who are leading the way:

- Stanford University- first program in the country to hire a Chief Wellness Officer, Dr. Tait Shanafelt. They also have wellness program called Balance in Life through the department of Surgery.  
<https://wellmd.stanford.edu/>  
<https://med.stanford.edu/gensurg/education/BIL.html>
- Mayo Clinic- has a dedicated research center devoted to physician wellbeing:  
<http://www.mayo.edu/research/centers-programs/physician-well-being-program/overview>
- Vanderbilt University Medical School- has an innovative program dedicated to student wellness: <https://medschool.vanderbilt.edu/student-wellness/>

## ADVOCACY

### What's happening on the national front:

- The National Academy of Medicine's Action Collaborative on clinician wellbeing and resilience illustrates the major themes that institutions are working on nationwide: <https://nam.edu/initiatives/clinician-resilience-and-well-being/>

### Resources for starting advocacy work and measuring change:

- American Medical Association's Steps Forward program: <https://www.stepsforward.org/>
- Institute for Healthcare Improvement Open School: this organization has many tools and seminars (free to residents and students!) to help facilitate and measure change: <http://www.ihl.org/education/IHIOpenSchool/Pages/default.aspx>

### Student Rights at Geisel and Beyond

While working to improve your own wellness, you may need to speak up for broader systemic changes or advocate for your colleagues. Knowing your rights will allow you to communicate more confidently and effectively. LCME accreditation requires medical schools to provide safe and respectful environments for trainees and prompt responses for any medical student concerns regarding disrespect or safety. If you feel passionate about this area or have been personally affected, we encourage you to seek out the specific policies at your school or institution. Geisel's Teacher-Learner Relationship Policy holds faculty/student interactions to standards identical to DHMC's Code of Ethical Conduct and Dartmouth's Notice of Non-Discrimination, Intimidation, and Sexual Harassment. For more for Dartmouth-specific information, please reference:

<https://geiselmed.dartmouth.edu/students/programs/wellness/>

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## TOP 20 "5 MINUTE" TIPS

"Time is money"

- Benjamin Franklin

**Let's face it!** We are all living incredibly busy lives. So this section is dedicated for healthcare professionals who are in the midst of a hectic day, when things get really busy and there isn't a lot of time to truly sit down and dive into wellness. Here are some simple but effective recommendations you can do in 5 minutes that have been scientifically shown to reduce stress and promote well-being.

This section has been organized based on the sequence of the sub-topics of this workbook.



### Tip #1 - Make your own healthy meals

- ✓ The act of cooking or baking alone can boost confidence, increase concentration and provide sense of achievement. Of course, well balanced nutrition is a central component of physical and mental health<sup>1,2</sup> Recipes [here](#).
- ✓ <https://www.brit.co/easy-healthy-lunch/>

### Tip #2 - Drink a glass of water

- ✓ Let's be real. None of us drink as much as we should. Do resist your temptation of adding anything sweet or artificial.

## TOP 20 "5 MINUTE" TIPS



### Tip #3 - Eat ONE sweet snack

- ✓ Research suggest that eating or drinking sweets (with actual sugar, not sugar substitutes) may decrease the production of the stress-related hormone glucocorticoid, which has been linked to obesity and decreased immune response<sup>3</sup>

### Tip #4 - Chew a piece of gum

- ✓ Chewing gum has been shown to alleviate negative mood and reduce cortisol levels during periods acute psychological stress<sup>4</sup>



### Tip #5 - Get grooving!

- ✓ If this means going to a call room or empty bathroom, so be it!
- ✓ Physical activities like dancing are well known to boost endorphins, the natural "feel good" hormone.
- ✓ Recommendation: "Happy" by Pharrell Williams or Pink's "What About Us".

### Tip #6 - High intensity interval training (HIIT)

- ✓ Think you can't break into a sweat in 5 minutes? Think again. These quick exercises are efficient ways to building endurance, burning calories and challenge your cardiovascular system! This is truly a full body workout!
- ✓ Here are two versions:
- ✓ <https://www.youtube.com/watch?v=BR0jT6JxH-o> (intermediate)
- ✓ <https://www.youtube.com/watch?v=wLlYlKyPhRY> (more advanced)

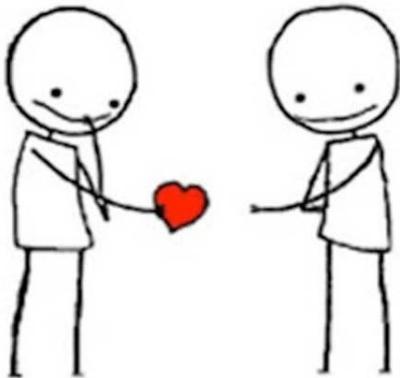


## TOP 20 "5 MINUTE" TIPS



### Tip #7 - Pursue a conversation with a family member or close friend

- ✓ As discussed in the relationship section, social supports are vital to our well-being, and has been shown to be associated with reducing negative effects of stress.<sup>5</sup>



### Tip #9 - Participate in an act of kindness

- ✓ There is truly something about doing selfless things that contributes to our sense of purpose. It can be as simple as paying for someone else's morning coffee.
- ✓ We know this may seem counter-intuitive, but it's worth trying. Besides, you might even start a pay-it-forward chain!



### Tip #8 - Tell a joke to the person next to you

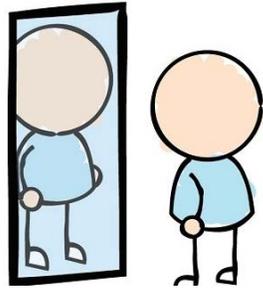
- ✓ Laughter enhances your intake of oxygen-rich air, stimulates your heart, lungs and muscles, and increases the endorphins that are released by your brain



### Tip #10 - Express gratitude

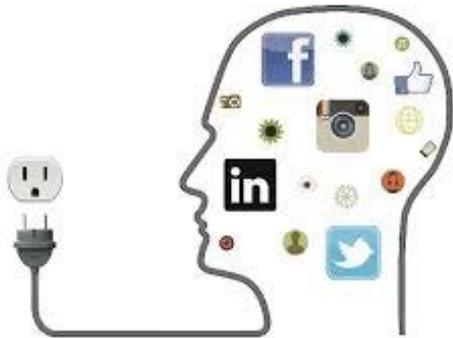
- ✓ We all have things to be thankful for, even on a bad day. Whether it's writing it down, talking to a colleague/friend or conveying it in the form of an action

## TOP 20 "5 MINUTE" TIPS



### Tip #11 - Take time to reflect

- ✓ Take a moment to be introspective on your day/month/year in the form of a journal entry, to help you gain perspective and find purpose



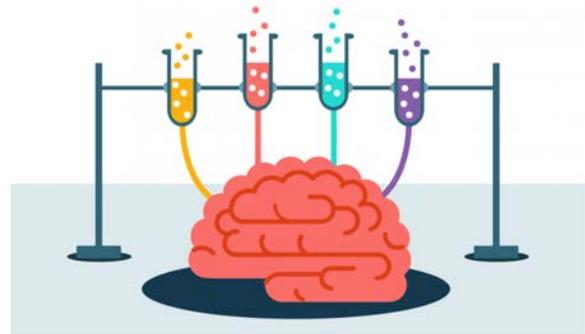
### Tip #12 -Walk away from your phone or computer screen

- ✓ Phone use and screen use has been associated with increase in stress, sleep disturbances, and depression in young adults<sup>7</sup>



### Tip #13 - Find natural lighting

- ✓ Always typing notes in the same cubicle on the wards, or in a dimly lit office?
- ✓ Studies have shown a significant direct effect for sunlight penetration on job satisfaction, intention to quit, and general well-being.<sup>8</sup>



### Tip #15 - Integrate a non-medical form of intellectual stimulation into your day.

- ✓ Try a puzzle, such as brainteaser, crossword or Sudoku Your brain will thank you!



### Tip #14 - Give yourself a massage

- ✓ This one doesn't require too much explanation. Helpful gadgets:
- ✓ [https://www.amazon.com/Reflexology-Traditional-Massage-Wooden-Massager/dp/B00CKZWUN8/ref=sr\\_1\\_4\\_s\\_it?s=hpc&ie=UTF8&qid=1518018212&sr=1-4&keywords=message+tools](https://www.amazon.com/Reflexology-Traditional-Massage-Wooden-Massager/dp/B00CKZWUN8/ref=sr_1_4_s_it?s=hpc&ie=UTF8&qid=1518018212&sr=1-4&keywords=message+tools)
- ✓ <https://www.amazon.com/Thera-Cane-JMAS5000-Massager-Green/dp/B000PRMCJU>

## TOP 20 "5 MINUTE" TIPS

### Tip #16 - Do the 4-7-8 breathing exercise

- ✓ Deep breathing has been scientifically shown to stimulate the parasympathetic system, making us calm.<sup>9</sup> Here is how it works:
  1. Exhale completely through your mouth, making a whoosh sound.
  2. Close your mouth and inhale quietly through your nose to a mental count of **four**.
  3. Hold your breath for a count of **seven**.
  4. Exhale completely through your mouth, making a whoosh sound to a count of **eight**.
  5. This is one cycle. Now inhale again and repeat the cycle **five** more times for a total of **five** breaths



### Tip #17 - Do yoga/stretching

- ✓ Both have been shown to be linked to better health and improved quality of life in certain patient populations<sup>10,11</sup>
- ✓ Stretching exercises from Mayo Clinic: <https://www.mayoclinic.org/healthy-lifestyle/fitness/in-depth/stretching/art-20047931?pg=2>

### Tip #18 - Meditate

- ✓ A 5 minute meditation can serve as a way to recharge to refocus in a busy day. Meditation can help improve mindfulness, which has been associated with reducing stress and increasing quality of life and self-compassion in health care professionals.<sup>12,13</sup>



### Tip #19 - Smile!

- ✓ Did you know that the physical act of a genuine smile can facilitate stress recovery?<sup>14</sup> Now you have no excuse not to smile!

### Tip #20 - If things get serious, please reach out for help!!

- ✓ Whether it's a friend, a colleague, mentor or a hotline. There are few things worse than suffering alone.
- ✓ National suicide prevention hotline: 1 800 273 8255
- ✓ NH suicide prevention hotline: 603 225 9000



## TOP 20 "5 MINUTE" TIPS

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