

THE SPARK FACTOR

THE SECRET TO SUPERCHARGING ENERGY,
BECOMING RESILIENT, AND
FEELING BETTER THAN EVER

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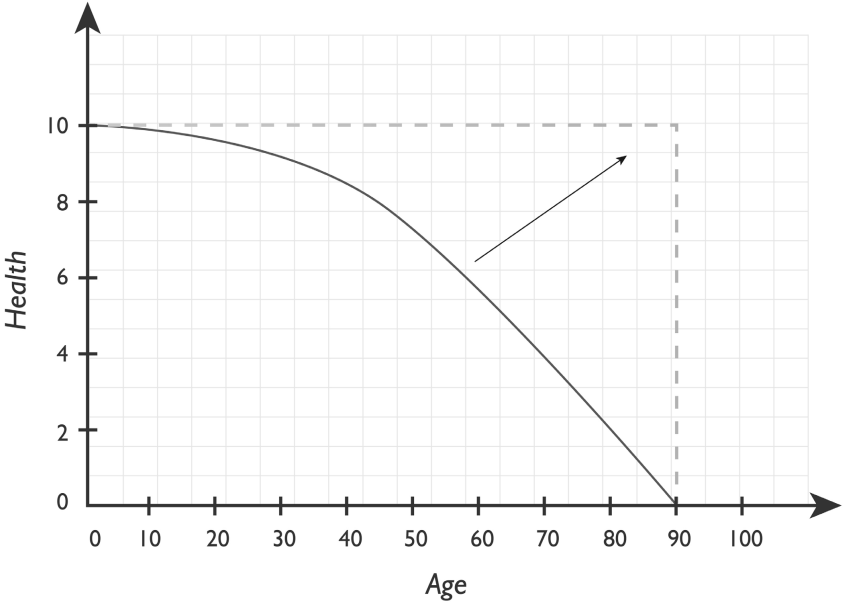
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Square off the healthspan curve



Toggleing Mitohormetic Stressors

STRESSOR	RECOVERY
Cold exposure / cold plunge	Heat / sauna
Fasting	Eating
Demanding work	Recovery
Sunlight exposure	Sleep (circadian rhythms)
HIIT (high-intensity interval training)	Rest days
Weight lifting	Massage or foam rolling
Eating low carb or dropping into ketosis (fat metabolism)	Raising your carbohydrate intake (carb metabolism)
Hypoxia (breath-holding)	Hyperoxia (breathwork, like deep breathing)
High pressure (HBOT, mountains, diving)	Normal atmospheric pressure (sea level)
Psychosocial stress	Play or quality time with loved ones

MITOCHONDRIA-PROMOTING BIOHACKS IN THIS CHAPTER

For chronic fatigue or long-haul COVID-19

- Lymphatic drainage: sweating, dry brushing, self-massage, foam rolling, walking, yoga
- Respiratory training and cough exercises
- Anti-inflammatory diet rich in colorful vegetables, fruit, legumes, fatty fish, spices, nuts, and seeds, and low in refined grains and processed food
- Ozone therapy
- Hyperbaric oxygen therapy
- Anti-inflammatory supplements: vitamin D with vitamins K₁ and K₂, melatonin at night, curcumin, pharmaceutical grade fish oil.
- Mitochondrial function enhancers: magnesium, acetyl-L carnitine, pyrroloquinoline, and coenzyme Q₁₀.
- Electrolytes, or a pinch of Himalayan sea salt in water

For lung support

- NAC
- Vitamin C
- Mullein

For preventing blood clots

- Nattokinase
- Serratiopeptidase enzymes
- High-dose pharmaceutical-grade omega-3s

For brain fog

- Desiccated grass-fed New Zealand beef brain
- High-dose, pharmaceutical-grade omega-3s

For detoxification

- Liposomal glutathione
- Binders like activated charcoal, bentonite clay, modified citrus pectin, and chlorella
- Filter your water and air at home

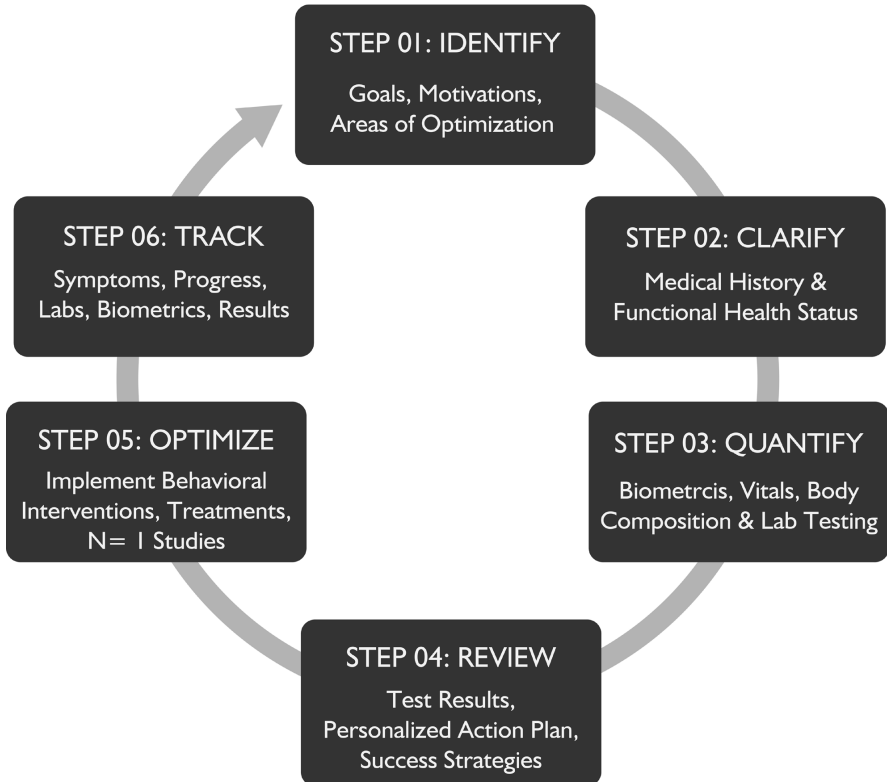
For boosting mitochondrial health and significantly reducing the risk of chronic diseases

- Quit smoking
- Eat a nutrient-rich, plant-centric diet
- Exercise regularly
- Achieve or maintain a healthy body weight
- Minimize alcohol consumption

To practice hormesis, toggle between . . .

- Cold exposure/cold plunge and heat/sauna
- Fasting and feasting
- Demanding work and recovery
- Sunlight exposure and sleep
- HIIT or cardiovascular training workouts and rest
- Weight lifting and massage or foam rolling
- Fasting/ketosis (fat metabolism) and refeeding (carb metabolism)
- Hypoxia (breath-holding) and hyperoxia (breathwork, like deep breathing)
- High pressure/mountains/diving/hyperbaric oxygen chambers and normal pressure
- Psychosocial stress and play or quality time with friends
- For xenohormesis, eat more plants, especially wild foraged plants

M3 Health Optimization Process



Creating a Routine

A.M.	P.M.
Wake up	Stop eating around six or seven P.M.
Visualization or intention setting	Wind down around eight P.M.
5 minutes of breathwork	Recovery practices (PEMF, yin yoga, acupressure mat, massage gun, or infrared mat)
15 minutes of meditation	
Brush teeth	Wash face, moisturize
Drink water	Brush teeth, tongue scrape, floss
Make coffee, tea, or elixir	P.M. supplements
Eat small snack before workout	Read
Exercise and stretching	Visualize, meditate, or pray
Shower, makeup, get dressed	Sleep
A.M. supplements	
Organize my day	

BIOHACKS IN THIS CHAPTER

- Identify what your health goals and motivations are. In what areas are you hoping to improve your health? In what ways would you like to optimize?
- Assess your medical history, family history, and subjective feeling about your current health status.
- Measure your vitals and get basic labs to get a quantitative view of your current health status.
- Make a personal action plan: What do you want to tackle first? What strategies do you want to try?
- Start implementing some simple behavioral changes in the areas you have prioritized for improvement.
- Track what you are working on (like logging food, steps, or exercise minutes, monitoring your blood sugar, etc.) to see and measure your progress.
- Create a morning and evening routine for your day, to help you tackle your goals more systematically.

How to Sit and Stand

Achieving consistent good posture isn't just about suddenly standing up straight or sitting up straight. It can involve unlearning years of habits that are ingrained in your muscles. You may have to retrain your body. It's kind of like learning a new athletic skill, but the effort is worth it.



Once you learn better posture, it becomes easier and your body starts to accommodate properly.

If you look at the illustration above, you can see how, when you slump, your muscles support your bones, but when you stand up straight, your bones support your muscles.

Posture is important when both standing and sitting. When sitting, think of your body as existing on a set of parallel and perpendicular planes in space.³⁴ Pay particular attention to these aspects of your sitting posture:

- 1. Hold your chin parallel to the ground.*
- 2. Be sure both shoulders, both hips, and both knees are at the same height. For example, don't hold one shoulder higher or sit with one knee hiked up.*
- 3. Point your knees and feet forward.*
- 4. Look straight ahead. Your eyes should be level with the center of your screen. If they aren't, adjust either the height of your screen or the height of your seat.*
- 5. Your torso and thighs should be at a ninety-degree angle, hinged at the hip, when you sit.*
- 6. Your upper and lower arms should also be at ninety degrees when you are using your keyboard or writing. If they aren't, adjust your chair or desk.*
- 7. Avoid slumping and holding your body in curves. Think in terms of nice right angles.*
- 8. Even if you use a standing desk, you can maintain these planes. Especially be sure your desk allows you to type with your arms at a right angle and your eyes looking at the middle of the screen.*

When standing, it's also important to avoid curved shapes, to keep your skeleton aligned. Here is how to use postural alignment therapy,

or PAT (a system originally developed by anatomical physiologist Pete Egoscue³⁵), to stand correctly.³⁶ The goal here is to get your shoulders over your hips, your hips over your knees, and your knees over your ankles. When standing:

- 1. Brace your stomach muscles as if someone were about to punch you, or like you are moving between two people trying not to touch them. This activates your core.*
- 2. Stand with your feet two fists-width apart—be sure you can fit two fists between your feet, at both the toes and the heels.*
- 3. Move around a bit until you feel your body settling in the center, evenly distributed over your full foot, not just on the balls or the heels. If you can lift up your toes or your heels without shifting, you aren't balanced yet.*
- 4. Lift your shoulders up, then move them back and down, as if you were putting your shoulder blades in your back pockets. (This is a small movement, in the direction of your pockets.)*
- 5. Imagine there is a string attached to the crown of your head, pulling you straight up. This will help center your head over your skeleton. Your head should not stick forward and your chin should be parallel to the ground. People often have to consciously pull their head straight back to get it over the shoulders.*
- 6. Soften your knees. Don't lock them. They should feel neutral, not stuck in place, not bent forward, and not hyperextending backward. Look in a mirror to check.*
- 7. Ask yourself: Am I on my skeleton? (Good.) Or am I hanging on my muscles? (Bad.)*
- 8. Stay here for a few minutes, noticing how it feels to stand correctly. Everything is connected and the ground supports you. Your weight is evenly distributed.*
- 9. Check this several times a day until it becomes a habit.*

EVERYDAY MOVEMENT BIOHACKS IN THIS CHAPTER

- Take every opportunity you can to move.
- Use an accelerometer to get an idea of how much you move during the day to gauge your baseline and see if you can get your steps above seven thousand per day.
- When cleaning or doing housework or yard work, see yourself as doing exercise to get enhanced benefits.
- Revamp your workstation with a standing or treadmill desk and make sure to use good ergonomics.
- Stand up and move around every thirty minutes during the day.
- Train your standing posture.
- Train your sitting posture.
- Track your blood oxygen percentage and notice when your posture is affecting your oxygen uptake.
- Do some play training. Try all ten types of movement.

How Intense: Determine Exercise Intensity

The table below can help you properly gauge your exercise intensity, or how hard you exercise:²³

	<i>Moderate Intensity</i>	<i>Vigorous Intensity</i>
HOW IT FEELS	Somewhat hard	Challenging
YOUR BODY'S RESPONSE	<p>Your breathing quickens but you're not out of breath.</p> <p>You develop a light sweat after 10 minutes.</p> <p>You can carry on a conversation, but you can't sing.</p>	<p>Your breathing is deep and rapid.</p> <p>You develop a light sweat after only a few minutes of activity.</p> <p>You can't say more than a few words without pausing for a breath.</p>
PERCENTAGE OF MAXIMUM HEART RATE	50–70% of your maximum heart rate	70–85% of your maximum heart rate
EXAMPLES	<p>Brisk walking</p> <p>Biking with light effort, about 10 mph)</p> <p>Yoga, Pilates, Barre</p> <p>Household chores such as vacuuming or mopping</p>	<p>Running</p> <p>Sports</p> <p>Biking with hard effort (about 14 mph), including a spin class</p> <p>Lifting heavy weights</p>

Sample HIIT Workouts

Walking: Repeat 3 times for a 9-minute workout

- EFFORT INTERVAL: Walk 2 minutes at 90% effort, or 5.0 mph on the treadmill
- RECOVERY INTERVAL: Walk 1 minute at normal effort, or 3 mph on the treadmill

Running, Cycling, or Swimming: Repeat 8 times in 4 minutes

- BEYOND MAXIMUM EXERTION: 20 seconds
- RECOVERY INTERVAL: 10 seconds

Calisthenics: Repeat 2 to 5 times

- WORK INTERVAL: 10 jump squats + 10 push-ups
- RECOVERY INTERVAL: 30 seconds stretching

Weight lifting: Repeat 2 to 5 times

- WORK INTERVAL: 10 back squats + 10 barbell rows
- RECOVERY INTERVAL: 30-second rest

EXERCISE HACKS IN THIS CHAPTER

- Track your resting heart rate to determine your fitness level.
- Calculate your moderate and vigorous intensity ranges.
- Track your VO_2 max to determine your cardiorespiratory fitness.
- Try some sample HIIT workouts.
- Learn basic weight-training exercises.
- Try a bodyweight workout if you can't get to the gym.
- Calculate your personal protein needs based on your activity level.
- Know your protein refueling window.
- Integrate mind-body fitness workouts.
- Plan for reducing frailty risk as you age.

DIETARY BIOHACKS IN THIS CHAPTER

- Use a food tracker to keep track of your fiber, sugar, macronutrient, and micronutrient intake.
- Get a genetic test to determine your ApoE status, to check whether you are sensitive to saturated fats.
- Ask your doctor about getting an NMR profile for advanced cholesterol testing, to get more information about your cholesterol levels.
- Avoid refined grains and lean into more whole grains, or reduce grain intake altogether if you notice it makes you feel better.
- Experiment going on and off of lectins to see how you feel.
- Test your hs-CRP and homocysteine to check for inflammation and oxidative stress. If these are high, add B-vitamins to your supplement regimen.
- Test your omega fatty acid balance. If your omega-3 fatty acids are too low, eat more fatty fish and consider supplementing with medical-grade fish oil.
- Cut back on vegetable oil! Replace it with fruit oils like olive and avocado oils.
- Quit processed meat and default to lean animal and plant protein sources.
- Supplement with choline if you don't eat eggs.
- Don't eat more than an egg a day if you do eat eggs.
- Test micronutrient and phytonutrient status to see if you have deficiencies.
- Test your genes to determine any genetic influences on your ideal diet.
- Consider food sensitivity testing.
- Experiment with different dietary patterns to find out what works best and feels best for you.

Here are some benchmarks to help you interpret and keep track of your data:

Fasting glucose

- DIABETES DIAGNOSIS: ≥ 126 mg/dL
- PREDIABETES: ≥ 100 mg/dL
- GOOD: < 100 mg/dL
- BETTER: < 90 mg/dL
- BEST: < 85 mg/dL

Peak post-meal glucose (the peak typically happens between 46 and 60 minutes after eating)

- SUGAR SPILLING INTO URINE: 160–180 mg/dL
- DAMAGE TO SMALL BLOOD VESSELS: > 160 mg/dL
- DAMAGE TO LARGE BLOOD VESSELS: > 135 mg/dL
- HEALTHY: < 120 mg/dL

Two hours after eating

- TYPE 2 DIABETES: > 200 mg/dL
- PREDIABETES: > 140 mg/dL
- GOOD: 140 mg/dL
- BETTER: < 125 mg/dL
- BEST: < 110 mg/dL

Average daily glucose (mean 24-hour glucose)

- 79–100 MG/DL (BEST)
- 89–104 MG/DL (NORMAL)

Recommended range for your blood sugar tracking app settings

- 72–110 MG/DL (IDEAL)
- 70–140 MG/DL (NORMAL)

Fasting Insulin

- STANDARD REFERENCE RANGE: <25 mIU/mL
- GOOD: < 9 mIU/mL
- BETTER: < 8 mIU/mL
- BEST: < 6 mIU/mL

BLOOD SUGAR BIOHACKS IN THIS CHAPTER

- Reduce overeating and use the fuel you're already carrying around.
- Start tracking your fasting and after-meal blood sugar with a continuous glucose monitor or a standard blood sugar test kit.
- Hack acne and reverse skin aging by reducing refined carbs and sugar in your diet to drop your insulin level below 6 mIU/mL.
- Experiment with a CGM to see what foods spike your blood sugar.
- Use your CGM to see what happens when you intermittently fast, eat different types and amounts of carbohydrates, exercise, and meditate.
- Use what you learn from your CGM to develop a personalized diet and lifestyle.
- Work on getting your fasting glucose, peak post-meal glucose, two-hour post-meal glucose, and average daily glucose into the ideal range.
- Improve your blood sugar levels by eating more low-glycemic foods, choosing fresh fruit over dried fruit, taking a tablespoon of vinegar in water before meals, eating non-starchy vegetables before starchy carbs, and eating refined or starchy carbs with protein, never alone.
- Cook and reheat starchy carbs for more resistant starch to reduce blood sugar spikes.
- Take blood-sugar-lowering supplements, especially 500 mg of berberine two or three times per day. You could also try resveratrol, gymnema, or cinnamon.
- Exercise before and/or after eating to reduce blood sugar spikes.
- Wait until you are hungry to eat, which is usually when your blood sugar drops below 85 mg/dL on your CGM.

MICROBIOME BIOHACKS IN THIS CHAPTER

- Get a gut health test from a functional doctor to assess your microbiome health, so you can address any issues you discover.
- If you have serious gut issues, find a doctor who can work with you on a 5R program.
- Live a gut-healthy lifestyle by eating mindfully, choosing high-quality food, avoiding junk, and shopping from local natural food and farmers markets.
- Eat a wide variety of foods to improve your microbiome diversity.
- Assess yourself for signs of intestinal permeability, a.k.a. leaky gut.

METABOLIC FLEXIBILITY BIOHACKS IN THIS CHAPTER

- Vary your habits, diet, exercise, and eating periods to mimic natural cycles and improve your metabolic flexibility.
- Assess your stress level and health to determine whether you are fit for fasting.
- Warm up to fasting by trying a ketogenic diet.
- Progress slowly to fasting. Start by getting in the habit of having regular mealtimes, not snacking, and eating a whole-food diet.
- Begin cutting carbs or do a ketogenic diet for one month.
- Switch your largest meal to lunch and stop eating by six to eight p.m.
- Start with a twelve to fourteen hour overnight fast.
- Don't do strenuous exercise without eating.
- Experiment with longer fasting techniques if they appeal to you.
- Be cautious if you plan to fast for more than three days, as this can cause health problems.
- Try a ketone monitoring system to test whether you are in ketosis.
- Add electrolytes and magnesium supplements to support your fast.
- Try using a fasting app.
- Ease back into eating with small digestible meals.

STRESS RESPONSE BIOHACKS IN THIS CHAPTER

- Assess whether you have feelings of underlying stress based on a compromised physical body, social network, or environment.
- Track noise pollution in your environment.
- Assess whether you may have childhood trauma or adverse childhood experiences using the ACE questionnaire on my website.
- Try therapy to help you resolve foundational stress, especially CBT, DBT, EMDR, IFS, or any other type of therapy focused on trauma.

Let's begin by assessing your stress level with a questionnaire. Read through the list of symptoms below and check off everything you have felt or experienced in the last month. There is no scoring system.¹ The purpose of this list is to start bringing your awareness to the ways stress is impacting you right now. If you have a lot of these symptoms, you have a lot of stress. If you don't have many, you're probably doing okay.

Physical Symptoms

- Stomachaches
- Sweaty palms
- Sleep difficulties
- Dizziness
- Back pain
- Tight neck or shoulders
- Restlessness
- Tiredness
- Ringing in ears
- Headaches
- Indigestion

Behavioral Symptoms

- Excessive smoking or vaping
- Bossiness
- Compulsive gum-chewing
- Attitude critical of others
- Grinding teeth at night
- Overuse of alcohol
- Compulsive eating
- Inability to get things done

Emotional Symptoms

- Crying
- Boredom
- Feeling powerless to change things
- Easily upset or edgy
- Ready to explode
- Overwhelming sense of nervousness, anxiety, or pressure
- Anger
- Loneliness
- Unhappiness for no reason

Cognitive Symptoms

- Trouble thinking clearly
- Lack of creativity
- Memory loss
- Forgetfulness
- Inability to make decisions
- Thoughts running away
- Constant worry
- Loss of sense of humor

Spiritual Symptoms

- Emptiness
- Loss of meaning
- Doubt
- Problems with forgiveness
- Martyrdom
- Magical thinking
- Loss of direction
- Cynicism
- Apathy
- Needing to prove yourself
- Lack of intimacy
- Using people

Relational Symptoms

- Isolation
 - Intolerance
 - Resentment
 - Loneliness
 - Hiding
 - Clamming up
 - Lowered sex drive
 - Nagging
 - Lashing out
 - Fewer contacts with family
 - Distrust
-
- Fewer contacts with friends

STRESS RECOVERY BIOHACKS IN THIS CHAPTER

- Assess your stress.

Strategies to improve vagal tone to increase HRV

- Vocal cord vibration
- Chanting
- Laughing
- Chewing gum

Recovery strategies

- Exposure to pulsed electromagnetic fields
- Sauna
- Address trauma
- Connect physically with loved ones
- Practice kindness and compassion
- Track your HRV to determine how well you are recovering from stress
- Try a new breathing technique, like alternate-nostril breathing, 4–7–8 breathing, or box breathing
- Hack your circadian rhythm
- Watch the sunrise and sunset
- Don't expose yourself to blue light after sundown
- Institute a consistent sleep schedule and bedtime routine
- Clean your bedroom
- Sleep with blackout curtains
- Use essential oils for sleep, especially chamomile and lavender
- Try melatonin, magnesium, glycine, and/or GABA before bed
- Track your sleep
- Work on mindfulness
- Try any type of meditation
- Get an acupuncture treatment or try an acupoint stimulation mat

- Try EFT (tapping)
- Take a CBD supplement
- For a more intensive stress intervention, check out my HPA axis dysfunction protocol on my website
- Assess whether you have the qualities of a resilient personality
- Work on improving your resilience by building your supportive social connections, working toward goals, taking care of yourself, having a sense of purpose, taking responsibility for your actions and life, engaging with life, and having gratitude for what you have now
- Think about your own hero's journey and what your life's purpose is
- If you feel you need a more aggressive and comprehensive recovery strategy, please see the **HPA Axis Protocol** on my website. This protocol lays out a detailed prescription for chronic stress and burnout, so you can recover and get back to baseline. It can take some time, and that's okay. It's worth the effort to reclaim your resilience.

MENSTRUATION: STARTS ON DAY ONE

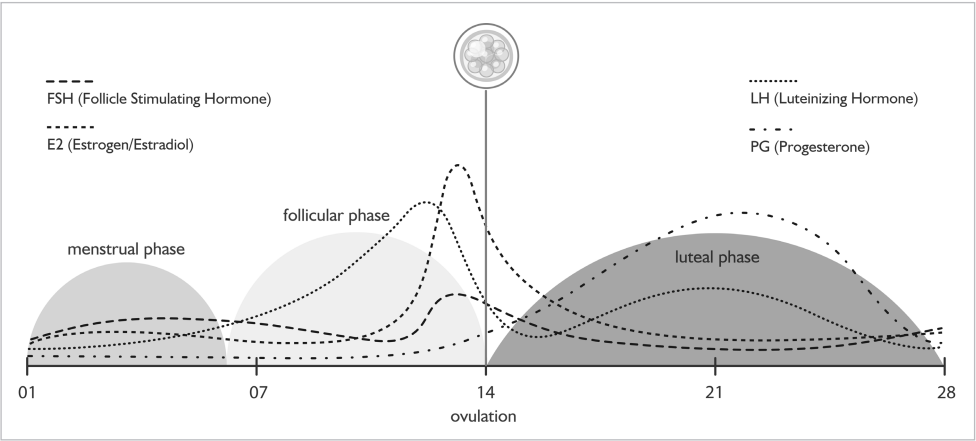


Figure 1: Phases of the menstrual cycle

Source: <https://helloclue.com/articles/cycle-a-z/the-menstrual-cycle-more-than-just-the-period>

HORMONE BIOHACKS IN THIS CHAPTER

- Track your cycle and the moon cycle to see if they match up.
- Test whether spending more time outside affects your cycle timing.
- Exercise to reduce cramps during your menstrual cycle.
- During the first week of your cycle, eat more foods rich in iron, vitamin C, and anti-inflammatory compounds, and take vitamin D.
- On days seven to thirteen of your cycle, push yourself at the gym, brainstorm new projects, and enjoy your creativity.
- On days thirteen to fifteen of your cycle, when ovulation occurs, be social, exercise moderately, and eat more fiber.
- On days fifteen to twenty-three of your cycle, plan projects, reflect, and don't push personal bests in the gym. Drink more water and take electrolytes if you are exercising a lot.
- On days twenty-four to twenty-eight, notice if you have any PMS symptoms and take PMS supplements if necessary like calcium, magnesium, omega-3s, turmeric, vitamin D, and vitamin B₆. Finish projects and reflect on your previous month. Do gentle, practice exercises like yoga and Pilates; and feed your cravings with healthy whole food.
- If you are an athlete or you're underweight, calculate your energy availability to determine how much to eat to avoid low energy availability or RED-S.
- In your twenties and thirties, assess fertility with hormone testing.
- If you have estrogen dominance, try my estrogen dominance protocol.
- Hack estrogen dominance with magnesium, calcium D-glucarate, DIM, and milk thistle.
- Fast more, or try the fasting-mimicking diet, in your forties.
- Test your hormones in your forties for signs of perimenopause.
- Track your cycle so you know when you have gone for one full year without a period and have officially achieved menopause.
- Talk to your doctor about whether HRT is right for you.
- Keep your brain healthy in your forties, fifties, and sixties with exercise and learning, and get enough protein.

SEX, BIRTH CONTROL, AND FERTILITY BIOHACKS IN THIS CHAPTER

- Try the microcosmic orbit technique to strengthen your orgasms.
- Do regular Kegel exercises to strengthen your orgasms.
- Consider whether trauma is impacting your sexual pleasure and if you think it is, work with a therapist or counselor to process your trauma.
- Consider whether hormonal birth control is right for you.
- Enhance fertility by getting enough nutrients to support fertility, eating fertility-promoting food, and not overexercising to the point of stress.
- If you don't know when or if you will decide to have children but you are fertile now, consider freezing your eggs.

Resources

There are many great resources out there that can expand your knowledge about health, mitochondria, and biohacking. I've mentioned some of these throughout the book, but there are far more than I could list, and so much to learn about your body, mind, and health. Here are some of my favorites, for further study:

8 Steps to a Pain-Free Life by Esther Gokhale

The Big Leap by Dr. Gay Hendricks

Come As You Are by Emily Nagoski

The Complete Guide to Fasting by Dr. Jason Fung

Complex PTSD: From Surviving to Thriving by Pete Walker

Diagnosis and Treatment of Chronic Fatigue Syndrome and Myalgic Encephalitis: It's Mitochondria, not Hypochondria by Dr. Sarah Myhill

Do Less: A Revolutionary Approach to Time and Energy Management for Ambitious Women by Kate Northrup

Good Morning, I Love You by Shauna Shapiro

Healing Back Pain: The Mind-Body Connection by John E. Sarno

Resources

Letting Go by David R. Hawkins

Love Drugs by Brian Earp and Julian Savulescu

Roar by Stacy Sims

Self-Compassion by Kristin Neff

She Comes First: The Thinking Man's Guide to Pleasuring a Woman by Ian Kerner

Taoist Secrets of Love: Cultivating Male Sexual Energy and
Healing Love Through the Tao: Cultivating Female Sexual Energy
by Mantak Chia

Why We Get Sick by Dr. Benjamin Bikman

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