



GUIDE TO
HORMONES

ATLAS OPTIMIZATION



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Our "optimal" lab values are not intended to dictate treatment or supersede the recommendations of your health professional in any way. What we consider "optimal" lab values may differ from what your lab and your provider consider optimal for your health. Our values are not intended to dictate treatment or supersede the recommendations of your health professional in any way.

This work is separate from my work as a licensed physician. No physician-patient relationship has been made.

If you or any other person has a medical concern, you should consult with your health care provider or seek other professional medical treatment immediately.



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WHO I AM

DR. ADAM HOTCHKISS

By training I am a foot and ankle surgeon. In medicine I found that 90% of my day to day work was reactive. Patients were coming to me when preventable disease had progressed to the point where amputation was often their only choice. Rarely was I helping a healthy patient become healthier or prevent disease. I found this reality discouraging.

In my personal life, I am passionate about human optimization. I aim to enhance my personal health from every facet: physical, mental, and spiritual. I became a physician with the desire to help others do the same.

Due to this, much of my focus has changed toward overall human optimization and disease prevention via the means of health coaching. In order to better serve those who aim to optimize their health, I take a holistic approach; utilizing nutrition, exercise, physician collaborations and in-depth laboratory work to improve systemic markers and overall well-being.

I have coached well over 1000 people to optimize their hormones and reach their full potential. This ebook will give you some basic knowledge on hormones, but if you want to take a deeper more personal dive into your own health, [schedule a consult today!](#)



A T L A S

OPTIMIZATION

INTRODUCTION

A hormone is simply a signaling molecule. It is released from one part of the body and travels to another to regulate physiologic processes. Many simply associate hormones with either mood or building muscle, but in reality there are around 50 various hormones that are responsible for keeping us alive.

This book should serve as a brief overview of some of the main hormones governing optimal health, but is in no way a complete guide. Often times many hormones are overlooked, even by very great physicians. When was the last time you saw DHEA, pregnenolone, prolactin, or even a fasting insulin level on your routine lab work? Likely never. However, many of the issues clients come to me with daily are stemming from these.

For example, low libido *could be* stemming from low testosterone, but could potentially be elevated prolactin. Elevations in prolactin can, many times, be easily mitigated. But we wouldn't know there was an issue without in-depth lab work!

Additionally, symptoms like feeling tired and sluggish throughout the day may be caused by insulin resistance. A simple fasting glucose test doesn't always tell the whole



story. Fasting insulin, HbA1c, and HOMA-IR among others, should also be measured.

As you can see, hormones are very complex and may be responsible for many of the symptoms we experience daily. However, it's important to work with a trained individual that uses evidence-based methodologies to evaluate and interpret your hormone levels before giving blanket advice. Saying someone has low testosterone or "adrenal fatigue" is usually just fear-mongering and helps many online gurus and hormone clinics sell you their course or proprietary blends.

You'll see what I consider to be general optimal hormone ranges listed, and various supplement recommendations listed throughout this book. Please understand that these values may not be what is optimal for you as an individual and are merely general ranges. Some may require more or less of a given hormone for their own individual physiology. That is why it is very important to work with someone who will give custom recommendations tailored to YOU. Also, please note I personally do not sell any of the discussed supplements and I do not recommend you take any of them without the guidance of an experienced health coach or medical provider.

With that out of the way, let's dive into some of the major hormones and how to optimize them!



OPTIMIZING

Throughout this book I'll discuss various supplements and medications that *may* help to optimize levels. However, I cannot stress enough that these come secondary to diet and lifestyle! Before ever considering supplementation or medications make sure your diet and lifestyle are dialed in! If you need help with that, [reach out to us](#).

General Recommendations:

Diet: Make sure you're getting enough calories and optimal amounts of each macro and micronutrients. Work with a dietitian or a qualified nutrition coach to find the right diet for you.

Sleep: 7-9 hours a night.

Sun: 15-30 minutes of sunlight a day. Try to get sunlight in your eyes immediately upon waking.

Exercise: At least 200 minutes a week. A mixture of resistance and cardiovascular training. Working with a health coach can ensure you're following a program optimal for your goals.



TESTOSTERONE

Though it's widely known as the "male" hormone, testosterone is actually found in both sexes and plays a vital role in overall health. Testosterone is essential for sexual, neurological, and cardiovascular health. It plays a role in development, metabolism, and immune function. It's no wonder why it gets so much attention.

Optimal Ranges:

Males:

Total: 500-1000 ng/dL

Free: 20-30 ng/dL

Females:

Total: 20-80 ng/dL

Free: 1-8 ng/dL

How to Optimize:

- Vitamin D, Magnesium and Zinc are essential for production.
- DHEA is a precursor to testosterone production. Essentially an "ingredient" in production.
- Boron may help to increase free testosterone by reducing sex hormone binding globulin (SHBG).



TESTOSTERONE

-L-carnitine may increase androgen receptor density, meaning it may allow you to utilize testosterone more efficiently.

If testosterone is low you may find yourself experiencing symptoms of low energy, low libido, depression, excess fat gain, and poor recovery. You may require medical help to increase the levels. Some possible treatments may include:

-Encomiphene: a selective estrogen receptor modulator (SERM) that binds to the estrogen receptors of the pituitary gland, increasing gonadotropin (LH & FSH) release and testosterone production.

-Testosterone Replacement Therapy (TRT): the use of exogenous (made outside the body) testosterone through creams, injections, pellets, or nasal sprays.



ESTRADIOL

AKA estrogen, is known as the "female hormone" but just as important in males! Estradiol is essential for cardiovascular health, brain health, fat loss, insulin sensitivity, muscle growth, and sexual health.

Optimal Ranges:

Males:

20-40 pg/mL

Females:

30-150 pg/mL

How to Optimize:

-Vitamin D, B vitamins, Magnesium, and Zinc are essential for production.

-DHEA and Pregnenolone are precursors to estrogen production. Essentially "ingredients" in production.

-Testosterone converts to estrogen so it's essential to have adequate testosterone.



DHT

Dihydrotestosterone (DHT) is a metabolite of testosterone and essential for many of the "manly" attributes we associate with testosterone. It increases motivation, mental clarity, libido, strength, and face/body hair growth. Unfortunately on the scalp, it *may* increase hair loss.

Optimal Ranges:

Males:

20-40 pg/mL

Females:

30-150 pg/mL

How to Optimize:

-Pregnenolone and Lion's Mane may reduce 5-alpha reductase (the enzyme that converts testosterone into DHT).

Note:

Care should be taken when attempting to reduce DHT. Low DHT can result in poor mood, brain fog, diminished muscle gains, low libido, and erectile deficiency. Never take a DHT blocker for hair loss without ensuring a true elevation through lab work.



CORTISOL

Known as the "stress hormone", but is essential in many aspects of health. Helps to regulate metabolism, sleep, electrolyte balance, and immune function.

Too low or too high can cause weakness, fatigue and aberrations in blood pressure.

Optimal Ranges:

AM 6 - 18 ug/dL

PM 2 - 10 ug/dL

How to Optimize:

-Vitamin C, Zinc, and Ashwagandha may help to moderate and decrease levels.

-Pantothenic acid may help to increase levels.



GROWTH HORMONE

Essential for cellular growth, cellular regeneration and plays an essential role in body composition. Growth hormone stimulates the liver's production of insulin-like growth factor-1 (IGF-1) which is also responsible for growth and regeneration. HGH is difficult to measure through a blood test, so IGF-1 levels are most commonly used.

Optimal Ranges of IGF-1:

150-350 ng/mL

How to Optimize:

-Sleep is essential for HGH production. HGH is released during sleep, so optimizing sleep should be one's first priority.

-Growth Hormone Releasing Peptides (GHRPs) like tesamorelin and ipamorelin are injectable medications used to stimulate the pituitary's production of HGH.

Note:

To date there is no clinical research demonstrating that HGH increases muscle hypertrophy. There are, however, data that elevations in HGH and IGF-1 may increase the risk of certain cancers and may decrease lifespan.



THYROID

Thyroid hormone is essential for the regulation of metabolism. Having too little or too much thyroid hormone can lead to issues with body composition, insulin sensitivity, energy levels, heart health, mood, and hair quality. The pituitary secretes thyroid stimulating hormone (TSH) to increase production of thyroid hormone from the thyroid gland. The thyroid produces T4 which is then converted to T3 (the active form of thyroid hormone).

Optimal Ranges of TSH:

0.25 - 2.5 uIU/mL

Optimal Ranges of T4 and T3:

T4: 1.5-3 ng/dL

T3: 3.0-5.0 pg/mL

How to Optimize:

-Zinc, Selenium, and Iodine are essential co-factors for optimal thyroid health.

-Vit B12, Tyrosine, Bacopa, Forskolin have also been found to aid in thyroid function.



INSULIN

Insulin is considered a transport hormone that is secreted from the beta cells of the pancreas in response to glucose. It promotes the absorption of glucose into the tissues from the blood. If someone becomes "insulin resistant," their tissues are resistant to the effects of insulin. This leads to excess circulating glucose which can cause a host of negative health effects.

Optimal Ranges:

1.0-5.0 uIU/mL

How to Optimize:

-Caloric deficit

-Resistance training.

-Chromium, Berberine, Magnesium, and Resveratrol are OTC supplements with the most data supporting their positive effects on insulin.

-Metformin is a prescription medication called a biguanide. It upregulates the GLUT 4 receptors that help to shuttle glucose into the tissues and reduces excess glucose production from the liver.



SUMMARY

I hope this brief introduction on hormones is useful for you in your own health optimization journey. As you might imagine this does not even begin to scratch the surface, but hopefully helps to illustrate how many aspects of our health are governed by hormones.

If you're interested in taking a deeper dive into your own health and hormones, we'd love to help!

www.atlas-optimization.com

