

# The “Z” Factor

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## Warrior’s call!

As hardcore gym warriors we all know the importance of strategizing for battle!

This site is dedicated to giving you the most hardcore body building tactics and weapons for defeating our foe homeostasis! We’ve learned through various exercise techniques and multiple training articles on this site to continually shock our bodies and muscle fibers to new levels of growth and mass in the gym! We’ve learned to do this with shock techniques, muscle fiber manipulation, hyperplasia, mitochondrial density, and a whole slew of exercises!

Jacob has also covered in depth how to smash homeostasis’ twin brother catabolism with his incredible mass and cutting diet articles!

You have many of the secrets to creating your ultimate physique literally at your finger tips!

But now its time to give you the third part to the equation...The “Z” factor!

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## The Ultimate Equation of Bodybuilding

Over the past month I have come to the conclusion that each of the three core factors of body building is equally important as the other.

These three factors include *training*, *nutrition*, and *sleep*.

All of which have to be at their absolute best for optimal growth and recovery to occur! It is my firm belief that nutrition is not more important than sleep, or training more important than nutrition, or sleep more crucial than training. Indeed it is none of these combinations or any other conceivable ones. I believe each is just as critical as the other!

In essence, none of these factors is more significant than the other as all are needed to create a maximum environment of growth. As you will come to understand after reading this article, if you are lacking in the sleep department you will not be getting the best results you could have achieved from yourself as a body builder compared to being fully rested. In reality each of the three factors feeds off each other, and lacking in any of the three factors has direct consequences on the other two variables.

So, even though each of these factors is separate and requires different strategies to get 100% out of them, they are really equally important because when combined together as one they result in the complete body builder, operating at his or her greatest efficiency!

Many seem to underestimate the power of sleep. These days we are all on the fast pace. We are demanding more from our bodies and expecting them to yield maximum results on little rest. I can't emphasize how detrimental this is to us as bodybuilders!

Let me explain it in a simple analogy. You wouldn't drag race a Dodge Viper on economy fuel would you? **No way!** You'd want the best, top grade high premium fuel for that baby!

This same line of thinking applies to us as bodybuilders. If we want our physiques to mimic a finely tuned machine we need to give it the best fuel we can possibly give it! However many of us (myself included at times) are doing just the opposite. We are going into the gym and expecting to win the drag race on economy fuel. And in this sport lacking in super fuel means lacking in intensity which results in undermined growth!

## **Get your sleep.... A Wake up call!**

What is sleep?

Webster defines it as, "The periodic suspension of consciousness during which the powers of the body are restored."

That's sleep in a nutshell; however it's a little bit more complicated than that. Contrary to popular belief, our brains are actually quite active when we sleep. Sleep has a huge impact on our mental and physical health as well as our daily functioning. The actual process of sleeping is controlled by nerve-signaling chemicals, known as neurotransmitters. Neurotransmitters control whether we are asleep or awake and regulate this by the signals they receive from groups of nerve cells in the brain.

These groups of nerve cells, called neurons produce neurotransmitters, such as serotonin and norepinephrine, in the brain stem which keep some parts of the brain active while we are awake. Other neurons at the base of the brain begin signaling when we fall asleep. These neurons literally "switch off" the signals that keep us awake.

The actual act of sleeping is very complex and consists of five stages. First I'm going to give a brief description of each stage, and then I'm going to go back and tell you which one is most important to us as body builders.

## **The Sleep Cycle**

As we sleep we go through five different stages of activity. The complete sleep cycle consists of stage one, stage two, stage three, and stage four of NREM (Non-rapid eye movement sleep) and stage 5 of REM (Rapid eye movement) sleep. The stages progress in a cycle from stage one to stage 5 sleep, then the cycle repeats itself.

Sleep *typically* begins with a cycle that consists of 80 minutes of NREM sleep followed by 10 minutes of REM sleep. This 90 to 110 minute cycle is repeated four to six times each night (This depends on each person and the amount of sleep you are actually getting). With each cycle completed the amount of NREM sleep decreases and the proportion of REM sleep increases.

Each stage in the cycle of sleep has its own distinct features.

### **Stage one-**

Stage one is crucial to the whole sleeping process. During this stage, often called *light sleep*, we drift in and out of sleep and can be awakened quite easily. At first our eyes move very slowly and muscle activity in the body slows. When we are awakened from stage one we often remember fragmented images. Have you ever just started to fall asleep and you get a sensation of hitting the ground or falling off a cliff? This is actually a muscle contraction called hypnic myoclonia. This contraction occurs when we are shocked from light sleep! These "falling" sensations are similar to the sudden movements we make when we get startled.

### **Stage two-**

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As we begin leaving light sleep and enter into stage two sleep, our eye movements stop and our brain waves become much slower. However, occasional bursts of rapid waves can occur called sleep spindles.

(A *brain wave* is a fluctuation of electrical activity that can be measured by electrodes.)

### **Stage three-**

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During stage 3, extremely slow brain waves called delta waves start to appear, scattered with smaller, faster waves. This stage marks the beginning of what is called *deep sleep*.

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### **Stage four-**

Stage four is of vital importance to the body builder! Very crucial indeed! More on that later! This stage is referred to as *slow-wave sleep or SWS*.

During this stage the brain produces delta waves almost exclusively. Waking a person up during stages 3 and 4, which combined together are called *deep sleep*, is very difficult. There is no eye movement or muscle activity. People awakened during deep sleep do not adjust to reality immediately and often feel disoriented and very tired for several minutes after they wake up.

Just as an interesting fact, interference with deep sleep appears to be the main cause of sleep amnesia (REM can cause this as well though). This sleep related form of amnesia is the reason people forget telephone calls they had in the middle of the night and why we often don't remember our alarms going off in the morning if we go right back to sleep after turning them off.

### **Stage 5-**

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Another crucial sleeping stage for body builders is REM, or *rapid eye movement sleep*.

When we enter into REM sleep, our breathing becomes faster, irregular and shallow. Our eyes jerk rapidly in all directions, and our limb muscles become temporarily paralyzed. Our heart rate increases and our blood pressure rises.

This is the stage of sleep where dreams occur. We normally spend more than two hours each night dreaming. Scientists do not know much about how or why we dream. The dream experience almost always occurs during REM sleep.

REM sleep begins with signals from an area at the base of the brain called the pons. These signals travel to a brain region called the thalamus, which then relays the signals to the cerebral cortex. This is the area of the brain responsible for learning, thinking, and organizing information. These pons are also what cause the temporary paralysis of the limbs. And that's a very good thing! If not we would start "acting out" our dreams! (FYI-There is actually a rare condition called REM sleep behavior disorder in which the paralysis doesn't take place!!!)

REM sleep stimulates the brain regions used in the learning process. Like deep sleep, REM is linked with the increased production of proteins and protein synthesis. The first time we enter REM sleep normally occurs about 70 to 90 minutes during sleep. Again, a complete sleep cycle normally takes 90-110 minutes.

The first sleep cycles tend to have shorter REM periods and longer periods of Deep Sleep. As the night goes on (usually about half way through a total night sleep), we spend almost all of our sleep in stages one, two, and REM.

REM is crucial to getting a full night's rest, and being deprived of REM sleep has been shown to result in sluggishness and drowsiness the next day.

So in summary of the sleep cycle:

### **NREM sleep:**

Stage 1—the drowsy transition from waking to sleeping

Stage 2—intermediate sleep, when arousal is more difficult

Stage 3—the beginning of "deep," or slow-wave, sleep

Stage 4—the deepest sleep, when there is little contact with external sensations

### **During NREM sleep:**

1. Brain activity decreases.
2. Blood pressure decreases.
3. Respiration (breathing) decreases.
4. Heart rate slows.

### **This is then followed by REM sleep which includes:**

1. Increased brain activity
2. Increased and variable blood pressure
3. Increased and variable heart rate
4. Increased blood flow to the brain
5. Increased and variable respiration

Getting too little sleep creates a "sleep debt," in the sleep cycle which is similar to being over your limit at the bank. Eventually, your body will demand that the debt be re-paid. Our bodies don't seem to be able to adapt to getting less sleep than we need. While we may get used to a sleep-depriving schedule, our judgment, reaction time, and other functions are still impaired. This goes hand in hand with training in the gym. Too little sleep has a direct correlation to less intensity!

In summary, going through the complete sleep cycle in its totality, along with going through the number of sleep cycles our body needs each night is vital to our bodies maximum health.

### **Our Ally in the War, Slow Wave Sleep!!!**

"Slow-wave sleep is known for its restorative and growth-inducing properties, and plays a major role in maintaining our general health."

-Dr. James Maas

Slow-wave Sleep (SWS) is crucial to providing restoration and growth along with building immunity. Along with increasing alertness, energy levels and health. During SWS several things occur in our body that emphasizes this re-healing.

1. Blood supply to the muscles is increased, which aids in recovery after intense workouts or vigorous exercise.
2. The body's temperature is lowered to conserve energy.
3. Metabolic activity is at its lowest which provides the opportunity for tissue growth and repair.
4. The secretion of growth hormone is at its highest.
5. Immune system regulators increase, strengthening the immune system.

As you can see, all of these factors are play a huge role in the growth and recovery process of a body builder or any athlete.

However, for now we are going to focus on the most important of them all to us as body builders (number four)...the release of natural growth hormone.

60-90% of your daily growth hormone release happens during the first three to four hours of sleep. Some studies have shown that hard working athletes may slip into SWS faster and stay there longer than a sedentary person. This suggests that for athletes who train their body on a consistent basis, their brain responds by placing them in SWS faster and more often to allow for recovery. Meaning the majority of growth hormone could be released as quickly as three hours into sleep for hardcore body builders! This actually turns out to be to our advantage. I'll explain more about that further into the article.

The secreting of growth hormone all starts in the Hypothalamus, which is the part of the brain that receives and integrates information from the rest of the body. The hypothalamus controls the secretions of the Anterior Pituitary (A small gland located at the base of our brains), which changes depending on the requirements of the body. The Hypothalamus communicates with the Anterior Pituitary through small blood vessels.

The secretion of growth hormone comes from the combined actions of stimulatory or inhibitory hypothalamic factors released onto the Anterior Pituitary.

## **OK, so what is Growth Hormone?**

Good question. Growth Hormone, called Somatotropin, is the most vital of all growth promoting hormones. It has both developmental and metabolic effects. Growth Hormone is responsible for the growth of our bones and muscles and also assembles fat for energy use while sparing proteins from being used. For the most part however, Growth Hormones (GH) actions are indirect.

Most of our GH effects are mediated by Insulin-like Growth factor 1, or IGF-1. IGF-1 is created in the liver when stimulated by GH. In other words physiological circumstances that increase GH likewise increase IGF-1.

In regards to muscle growth IGF-1 causes muscle cells (myocytes) to raise protein synthesis, decrease protein breakdown, take up amino acids and to divide. Basically, our muscles grow when stimulated by IGF-1. More specifically, it stimulates both the differentiation and proliferation of myoblasts and also stimulates amino acid uptake and protein synthesis in muscle and other tissues.

It's important to note that bone cells also react to IGF-1 by proliferating, causing our bones to grow. Connective tissue and cartilage also increase in response to IGF-1.

Another vital time when Growth Hormone is released is following your workouts. This is why a post-workout shake is so vital! In fact, I'm willing to bet that none of you would just skip your post-workout shake! This is an extremely important time for muscle repair and growth to occur. I guarantee if you treat your pre-sleep meal just as important your gains will be off the charts! More on that issue will be coming up in the later parts of the article.

## **What happens if you don't get enough sleep as a body builder?**

- 1.** As you know GH is mostly released during SWS, so if you don't get enough your ability to metabolize glucose is lowered.
- 2.** Lowered levels of GH are related to fat tissue and reduced muscle mass and exercise capability. Body builders who only get 6-7 hours of sleep have to work twice as hard to process the same amount of fuel. So in essence recent studies have shown, that the less sleep you get the harder it is to lose weight and the harder it is to get energy for your workouts!
- 3.** Your immune system is greatly affected during sleep deprivation. GH also stimulates bone marrow growth, strengthening your immune system. Melatonin is another hormone released during sleep, and it stimulates the immune system and inhibits tumor growth. Without enough of these hormones your immune system weakens and you can get sick much easier.
- 4.** One other negative effect of sleep deprivation is premature aging. GH acts as a "youth maintenance" hormone. It keeps tissue in good condition, your skin firmer, and bones and muscles strong. As you get older your level of GH decreases and you age. Studies have shown with a lack of sleep you are actually starting this process earlier!

5. And lastly, but definitely not least, **sleep deprivation causes increased levels of cortisol in the body the next day**. As you know cortisol is our mortal enemy! It causes hypertension and stress and robs our muscles for energy! Increased levels can cause memory impairments, restrict tissue repair and growth, and increased insulin resistance!

I don't have to tell you how much of an impact that will have on you as a body builder or any type of athlete who is looking to perform at his or her best!

### **The impact sleep deprivation can have on training and nutrition!**

To restate what I said at the beginning of the article, all three of the factors of body building feed off one another.

### **That is why sleep is so vital for training!**

A lack of sleep can cause drowsiness, sluggishness, crankiness, depression, forgetfulness, and slow our reaction time. All of which will have a huge impact on our intensity in the gym. Less stamina and energy will have a direct impact on our intensity and intensity has a direct and vital impact on reaching the levels it takes to achieve new growth.

### **Sleep also plays a vital role in our nutrition!**

Without enough sleep we are literally more catabolic all day long! And you can multiply this by 2 post workout! I'm convinced without proper sleep your cortisol levels will be off the charts after a workout. Of course getting 8-10 hours of sleep every night of your life is practically impossible, but you have to make the effort to get more.

Going along the lines of nutrition, I've found that there are steps you can take to keep these higher cortisol levels in check post-workout provided you know you are going to be getting less sleep ahead of time.

Let's say you have an early appointment and you just know you're not going to get enough sleep, but you just have to get your workout in after the appointment. That's the only time you have. Believe me I understand how hectic life can get sometimes.

I find that by eating extremely complex carbs up until the night you won't be getting enough sleep, you can make your post-workout shake even more potent...Thus keeping the higher cortisol levels in check. And I mean eat as clean as you can like you're on a super cut. No simple carbs or sugar, lean protein, and complex carbs (preferably green leafy veggies) and lots of water.

This will make your post-workout shake's insulin spiking properties more potent.

Again, I want to restate how important we as body builders need to start taking sleep. It has a direct impact on our training and nutrition and I am convinced that we can't be our 100% best in the areas of training and nutrition without adequate sleep.

With all that in mind I want to sum it up with this phrase...

SLEEP = ANABOLIC STATE

### **Getting the most out of your sleep! Your nuclear arsenal for smashing cortisol, increasing anabolism, increasing the effects of growth hormone, and increasing your energy in the gym!**

Just like a nuclear weapon has multiple effects on the enemy so does pre-sleep nutrition. Nothing strikes fear into the hearts of man like nuclear weaponry, and the same holds true for catabolism and homeostasis if you take the right steps before hitting dream land!

#### **Pre-sleeping stack:**

1. Take a ZMA supplement on an empty stomach. ZMA has been shown to aid in sleep and increase hormone levels while you sleep. Jacob has written an awesome article on ZMA. [Access it here](#).
2. After the ZMA has been totally digested, about 30-60 minutes later, eat a complex and fibrous Starchy Carbohydrates or Fibrous Green Vegetables (depending on if you are cutting or bulking) such as oatmeal, a yam, a salad, or a green leafy vegetable ([see the 13 weeks to dieting for more examples of these](#)). The key is to eat a slow burning carbohydrate source here.
3. Combine that with 1 tablespoon of flax oil, 1 gram of vitamin C and 5 grams of Glutamine.
4. And lastly consume 20-60 grams of casein protein (cottage cheese is a great source) (this amount depends on your body weight and goals).

Numbers 2-4 should be taken in as one meal.

5. Hit the hay for 8 to 10 hours!

The first 3-4 hours of sleep is when we spend the majority of our time in SWS, therefore this is when GH release is at its highest. This combination will digest slowly in your stomach giving you a steady supply of muscle building nutrients as the GH is released. The Vitamin C and Glutamine will aid in tissue repair and help the body strengthen the immune system. This is a double whammy as sleep already aids in the repair of both of these.

**6.** Immediately upon awakening consume a post-wake up protein shake to put your body back into an anabolic state. REM sleep has been shown to dramatically increase catabolism in your body. Recall that by half way through the complete nights sleep cycle you are spending most of your time in REM sleep. So when you wake up you are extremely catabolic and need nutrients and vitamins right away!

Start taking this stack as serious as you take your post-workout shake and I promise you'll like what you see!

### **Final Thoughts**

Don't take sleep lightly fellow hardcore athletes! In fact take it as serious as you do working out and eating right. The rewards will be better workouts and better pay off for your dieting. Stick to the pre-sleep stack on a consistent basis and reap the rewards of your body's natural Growth Hormone release!

Good luck and get your Z's!

Adam " Old School " Knowlden