

THE IRON REPAIR MANUAL

The Science & Secrets
YOU can use to **FIGHT BACK**
Against Iron Deficiency



KRYSTAL MOORE

Anemia Survivor, Iron Warrior

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THE IRON REPAIR MANUAL

**Fatigue. Headaches. Heart Palpitations. Depression. Anxiety.
Restless Leg Syndrome. Hair Loss. Craving Ice. Brain Fog.**

What in the world do all these seemingly unrelated symptoms have in common? They are just a few of the **many** symptoms of iron deficiency.

Do you feel like you're struggling to survive, but you feel dismissed by doctors that act like you're overreacting or only prescribe drugs to mask your symptoms but don't help find the root of the problem?

If you answered yes to any of these questions, you are not alone. While these symptoms may seem random and unrelated, they all point to an extremely common, but often overlooked, nutrient deficiency. Iron deficiency and anemia affect

millions of women worldwide, yet it remains a silent and misunderstood epidemic.

In these pages, you will learn about how incredibly important iron is to your body. We'll talk about the risk factors for iron deficiency, common symptoms you may be experiencing, and how to advocate for yourself with your doctor to identify potential nutrient deficiencies that are affecting your health.

If you discover that you are iron deficient or anemic, I'll answer the questions you may have about how to effectively increase your dietary iron intake and the factors that affect your ability to absorb iron.



Lastly, I will reveal the Iron Repair Method, the science based plan to support healthy iron levels through supplementation, so that you can get back to living your life!





My iron deficiency nearly killed me.

THE IRON WARRIOR

I'm Krystal, the Founder of **Three Arrows**, and creator of The Iron Repair Method. For years, I was essentially the poster child for iron deficiency - ridiculously heavy periods, multiple pregnancies, breastfeeding, weight loss surgery. My iron deficiency

caused me to hemorrhage after one of my deliveries, receive a massive blood transfusion, endure months of IV iron infusions, and take every pill and liquid form of iron imaginable - and still feel like I was dying!

My doctors weren't any help - they'd just tell me to take iron pills and go on my way, like it was no big deal. As a mother of 3, I was desperate for a better way to heal my body, so I could function again and be the Mom my kids needed.

On a mission to take back my health, I spent three years, and hundreds of hours, digging into the scientific research that has emerged about iron. I uncovered some fascinating and important information.

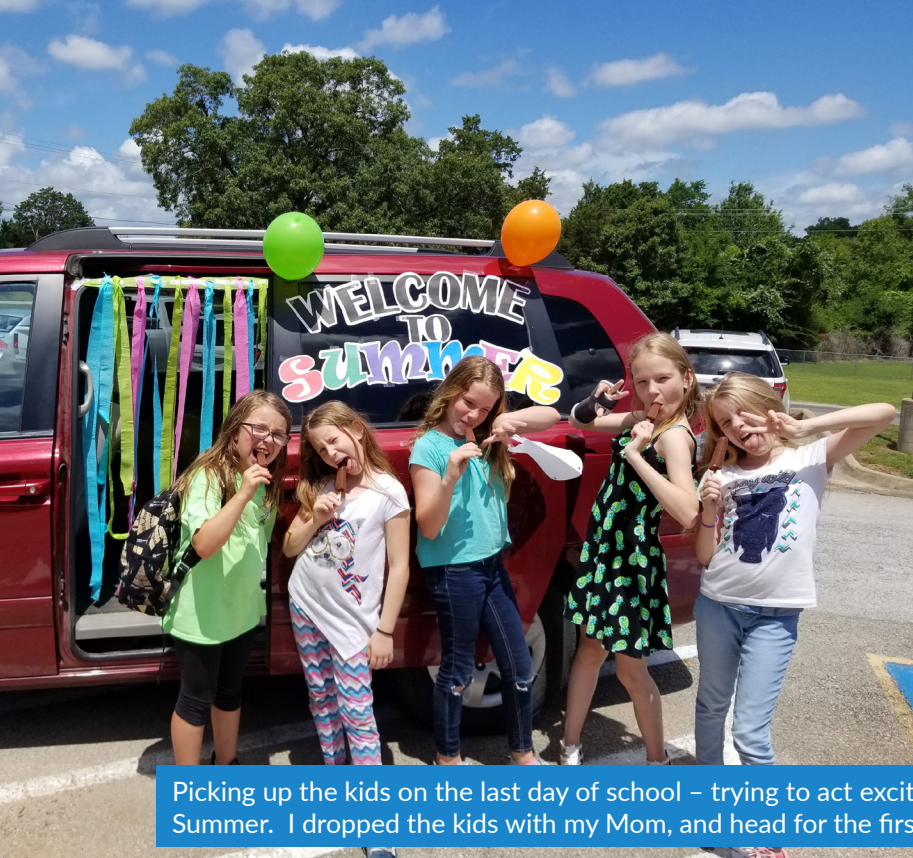
Unfortunately, iron deficiency is a very misunderstood condition. Doctors are relying on grossly outdated information when treating their patients, and supplement companies are guilty of producing cheap and ineffective solutions. So it's no wonder that you feel lost trying to navigate the confusion and actually succeed in feeling better!

I believe it's important to be a proactive player in our quest for wellness, BUT...this is incredibly



Me (dangerously anemic) before delivering surrogate twins - and after a massive blood transfusion in the ICU

challenging in a world full of questionable supplements and limited support from doctors. When you feel like you're struggling just to survive and you don't know what to do - you need help - that's why I'm here...I've been there too!



Picking up the kids on the last day of school – trying to act excited...but not sure how I was going to survive the Summer. I dropped the kids with my Mom, and head for the first of many IV iron infusions.

I know firsthand what a life-draining condition low iron can be, and what a scary and lonely feeling it is to struggle alone. My years of iron deficiency were incredibly hard, but now I am thankful for the opportunity to use that experience for good, and prevent other women from continuing to struggle the way I did. I believe that as women, mothers, wives, and daughters, we are stronger when we come together.

As a result of my research, I created Iron Repair and the Iron Repair Method to restore my own health. Then, as fate would have it, when my daughter began having long term headaches, anxiety, fatigue and scary episodes of restless leg,

I discovered she was severely iron deficient. Her misinformed doctor dismissed our concerns, insisting that her symptoms couldn't be a result of her (severe) iron deficiency, because her hemoglobin was 'normal'. That's when I put my money where my mouth was, and used the Iron Repair Method again to help my baby (she is 12...but still my baby). It's amazing how when it was my child suffering, it became incredibly important that I do

everything in my power to help her...even more so than when it was myself! The Iron Repair Method has now been used to help dozens of women in their fight against iron deficiency.

My goal in The Iron Repair Method is to be a strong ally on your journey to health and help you take back your life. We're going to dive deep into all things iron, and you'll learn how you can fight back against your iron deficiency!

Many blessings,

-Krystal Moore, Iron Warrior



After weeks of endless headaches, anxiety, and restless leg, I discovered my daughter was iron deficient. I used the Iron Repair Method to restore her iron levels.

AM I AT RISK FOR IRON DEFICIENCY?



First, let's take a look at the factors that often cause low iron. These common conditions increase the likelihood that you may become iron deficient.



Increased Iron Requirement

	I am Female
	Pregnancy
	Breastfeeding
	Menstruation
	Rapid Growth

Increased Iron Loss

	Heavy Periods
	Frequent Exercise
	Frequent Blood Donation

Decreased Intake and Malabsorption

	Gastrointestinal Disorders
	IBS, Celiac, Crohn's
	Bariatric Surgery
	Frequent Use of Antacids or PPIs
	Vegetarian or Vegan
	Frequently Drinks Tea, Coffee, Milk
	GI Ulcer or Infection
	Inflammatory or Autoimmune Disease

WHAT CAN CAUSE IRON DEFICIENCY?

BLOOD LOSS:

In pre-menopausal women, menstrual blood loss is the most common cause. In men and post-menopausal women, blood loss from the gut is the most common cause.

- ▶ Menstrual blood loss
- ▶ Blood loss from the gut
- ▶ Surgical Patients
- ▶ Kidney dialysis
- ▶ Gastric ulcers



INCREASED IRON REQUIREMENT:

Physical demands of pregnancy, rapid growth, or endurance athletics increase the iron required for healthy function.

- ▶ Pregnancy
- ▶ Breastfeeding
- ▶ Rapid growth
- ▶ Athletes



INFLAMMATION

People with certain long term inflammatory conditions frequently have iron deficiency and iron deficiency anemia as the inflammation can cause iron absorption in the gut to be blocked.

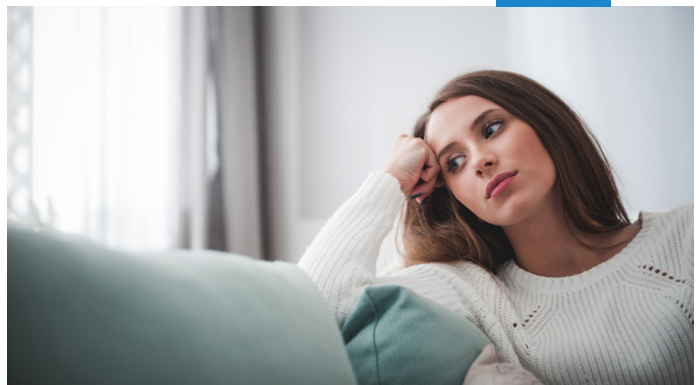
- ▶ Chronic kidney disease
- ▶ Rheumatoid arthritis
- ▶ IBD, IBS, Celiac, Crohn's
- ▶ Chronic heart failure



REDUCED ABSORPTION OF IRON (MALABSORPTION):

Those with damage to their gut have a reduced ability to uptake iron and are at risk of developing iron deficiency and iron deficiency anemia.

- ▶ Antacids, PPIs
- ▶ Partial or total removal of the gut
- ▶ Inflammatory bowel disease
- ▶ Vegetarian or Vegan



WHAT IS YOUR BODY TRYING TO TELL YOU?

There are numerous symptoms of low iron. Symptoms often worsen over time as your iron stores become depleted and can be similar to those of other conditions, making a diagnosis challenging without the appropriate blood work. Take a look to see if you are experiencing any of the common symptoms of iron deficiency.

Symptoms I Can Feel

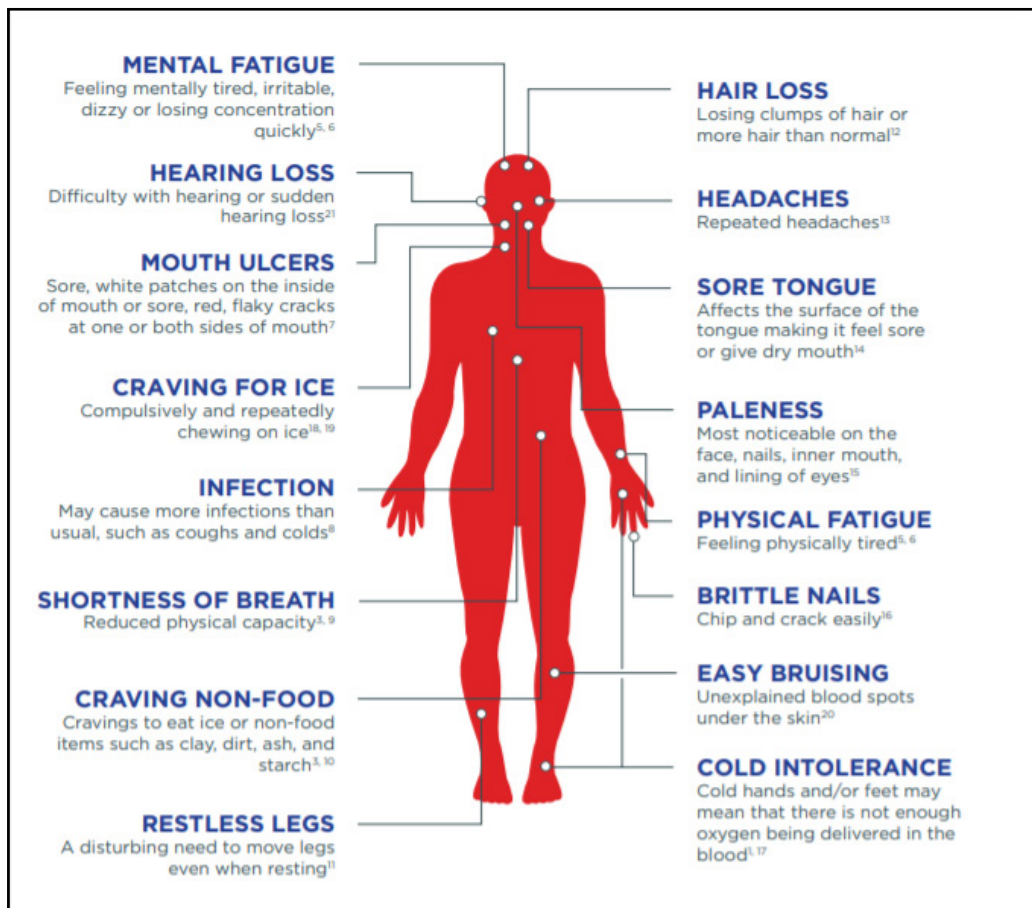
- Constant Fatigue
- Heart Palpitations
- Rapid Heart Rate
- Anxiety or Depression
- Headaches
- Brain Fog
- Dizziness
- Chewing Ice
- Restless Leg Syndrome
- Always Feeling Cold
- 'Whooshing' or Heartbeat in Ears

Symptoms I Can See

- Hair Loss
- Brittle or Spoon-Shaped Nails
- Paleness
- Easy Bruising
- Cracks or Ulcers in Your Mouth

Symptoms That Slow Me Down

- Shortness of Breath
- Susceptibility to Infections
- Loss of Energy
- Insomnia





IRON DEFICIENCY A SILENT EPIDEMIC

Iron deficiency is the most common nutritional deficiency worldwide. The World Health Organization estimates that one-third of the world population is affected by iron deficiency. It is most prevalent in menstruating, pregnant, or pre-menopausal women, and children under the age of five. In Europe for example, iron deficiency affects up to 33% of pre-menopausal women, up to 77% of pregnant women, and up to 48% of children.

Iron deficiency also often affects those with chronic inflammatory diseases and restrictive surgical procedures.

It is estimated that 13-90% of patients with Inflammatory bowel disease, and 25-50% of bariatric patients are affected by iron deficiency.

Despite the fact that iron deficiency affects millions throughout the world, it still goes unrecognized and undiagnosed far too often. Sadly, many women struggle for years with debilitating symptoms (fatigue, hair loss, headaches, anxiety, etc), without discovering the root cause of their suffering.

WHY IS IRON IMPORTANT?

Iron is an essential mineral—“essential” meaning our bodies can’t make it, and we must ingest it from food or supplements. Iron plays a key role in an incredible number of metabolic processes and bodily functions, including

- Metabolism and energy
- Muscle health
- Brain function
- DNA synthesis
- Oxygen transportation

Without enough iron, the human body cannot work properly. It is essential for the production of red blood cells and ensuring that the heart, brain, and skeletal muscles can function effectively.

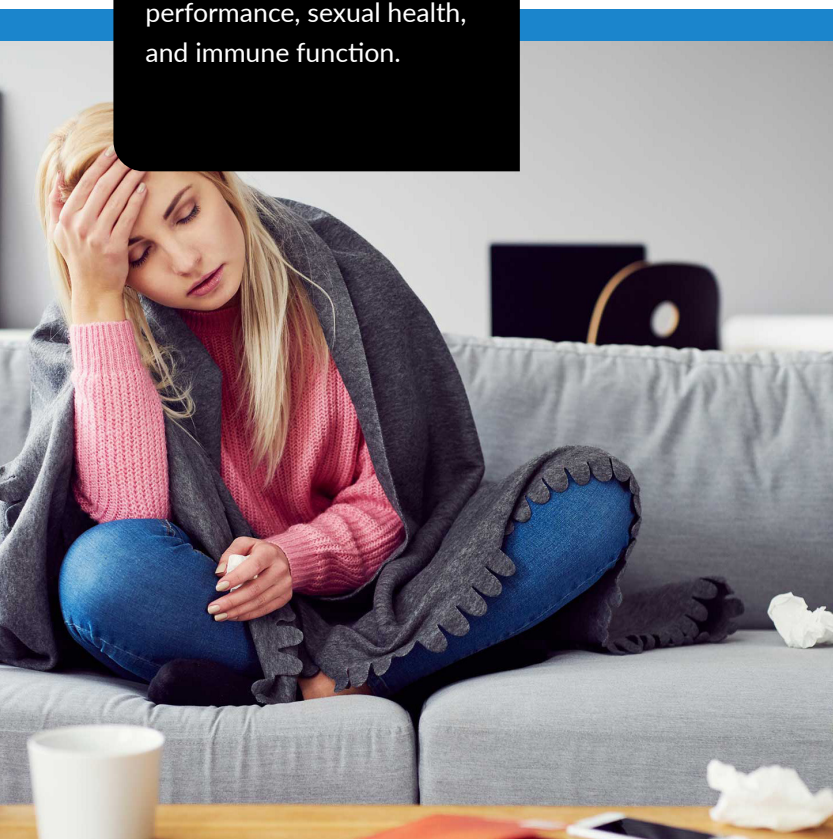
When the body’s available iron stores are low, you can feel the impact in almost all aspects of life, such as your metabolism, mental and physical health, work productivity, athletic performance, sexual health, and immune function.

IRON DEFICIENCY OR IRON DEFICIENCY ANEMIA ...WHAT’S THE DIFFERENCE?



You may have heard the term ‘anemia’ used as a general term for low iron, however, there is a clinical difference between iron deficiency and iron deficiency anemia. This distinction is important and often overlooked! We will discuss the blood tests necessary to diagnose these conditions, but first let’s talk about the different kinds of low iron.

Iron deficiency: When the body’s available iron reserves are low, as measured by serum ferritin. You can experience significant symptoms from iron deficiency {low ferritin level} and still have a hemoglobin level within the ‘normal’ range. Iron deficiency is not detected by routine lab work, and you will need to specifically request a ferritin test to identify this deficiency. Iron deficiency occurs when the level of iron stored in the body drops so low, the body can no longer create the hemoglobin needed to develop healthy red blood cells. Your body will utilize and deplete stored iron first, to keep your circulating iron level {hemoglobin} normal for as long as possible.





Iron Deficiency Anemia (IDA): Although IDA is what most people think of when they hear they have low iron status, this is actually the second stage in the progression of iron deficiency. When hemoglobin {iron circulating in the blood} and ferritin {iron reserve} levels fall below the normal range. The body is depleted of both circulating and stored iron.

Anemia of Chronic Disease: When hemoglobin {iron circulating in the blood} is low, but ferritin {iron reserve} is normal or elevated. Inflammation or infection within the body can produce a falsely elevated ferritin level. In the presence of inflammation or infection, the body locks down the reserve iron in an attempt to 'starve' whatever it interprets as a threat. This can be further evidenced by reviewing your WBC {white blood cell} count.

Iron Deficiency
=
Low Ferritin

Iron Deficiency
Anemia
=
Low Ferritin &
Hemoglobin

Iron Deficiency

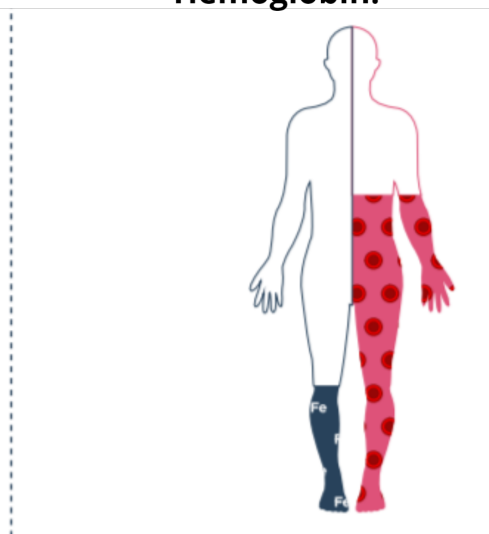
Iron Needs Exceed Intake and the Body Begins to Utilize Stored Iron.



As the body starts to lack iron, it progressively enters a stage called iron deficiency. At this point, many metabolic pathways may become affected.

Iron Deficiency Anemia

Iron Stores are Depleted and the Body Does Not Have Enough Iron to Create Hemoglobin.



If iron deficiency is not effectively managed, the body depletes its iron stores, and enters a stage called iron deficiency anemia.

HOW IS LOW IRON DIAGNOSED?

In order to properly diagnose low iron, both iron deficiency and iron deficiency anemia, your doctor will need to order several blood tests.

The challenge is, **routine blood work does not include the tests necessary to identify iron deficiency.** Doctors often simply run a CBC, or Complete Blood Count, to analyze your blood health. While a CBC can identify low hemoglobin (anemia), it is missing serum ferritin, and therefore cannot diagnose iron deficiency.

Many women experience significant symptoms of iron deficiency despite their CBC indicating a 'normal' hemoglobin level. Therefore, it is imperative to test serum ferritin, to identify potential iron deficiency.

There are several other critical tests that identify nutrient deficiencies that frequently accompany iron deficiency; B-12, folic acid, and Vitamin D. Many doctors are not accustomed to ordering these tests, so it is important that you are prepared to request them.

It is also very important to note that the reference ranges considered 'normal' for several of these tests are extremely broad, and *do not reflect the numbers needed to experience optimal health.* Sadly, many doctors are not aware of the current research confirming that the 'normal' reference ranges are grossly inaccurate and do not reflect optimal health for their patients.

For example, the 'normal' reference range for ferritin is 13-200. If your blood test reveals a serum ferritin level of 15, your doctor may consider this a 'normal' result. When in actuality, a ferritin level of 20 indicates severe iron deficiency. Rest assured - you are not overreacting or imagining things despite your doctor's indifference. Iron deficiency can and does cause significant symptoms!

Understanding these test results is a big step in discovering possible deficiencies that are affecting your health, and you are in the right place for arming yourself with this information. In the reference chart below, we have included both traditional lab reference ranges, and updated optimal ranges based on current research.

Many times, doctors aren't used to their patients being informed enough to request specific tests. If your doctor won't order the tests or you don't have insurance to cover them, visit

[ThreeArrowsNutra.com/BloodTest](https://www.threearrowsnutra.com/BloodTest) for information (and a discount code) on how you can order your own lab work to review with your doctor.



IRON REPAIR METHOD

Important Blood Tests – These specific tests will help to identify common nutrient deficiencies that may be affecting your health.

THE IRON REPAIR METHOD Important Blood Tests & Optimal Levels

Blood Test	'Normal' Range	Optimal Range	My Results Date _____	My Results Date _____	My Results Date _____
Hemoglobin	12-15	13 - 14			
Ferritin	13-200	90 - 100			
Serum Iron	60-170	110 - 140 mcg/dL			
Transferrin %	20-50%	35% F 45% M			
TIBC	240-450	~ 300			
WBC	4-11	5 - 6			
B-12	180-900	~ 800 pg/mL			
Folic Acid	2-20	14 - 17 ug/L			
Vitamin D	30-100	60 - 90 ng/mL			

*Print this page & keep for your records.

Visit the Link Below for an Explanation of Each Test.

ThreeArrowsNutra.com/BloodTest



WHAT DO THESE BLOOD TESTS MEAN?

CBC: (Complete Blood Count) Used to evaluate your overall blood health and detect a wide range of disorders. Your CBC results will include these factors for establishing iron status:

- ▶ **Hb or Hgb** (hemoglobin). This is the protein in your blood that holds oxygen and transports carbon dioxide from your organs and tissues back to your lungs. Low hemoglobin level indicates anemia. (dehydration can cause a falsely elevated hgb level) Normal 12-15 **Optimal 13-14**
- ▶ **White blood cells (WBCs)**. These help to fight infections. If you have high WBC levels, it tells your doctor you have inflammation or infection. Inflammation can cause a falsely elevated ferritin level. Normal 3.8-10.8 **Optimal 5-6**

Ferritin: Ferritin stores iron in the body. Ferritin is tested to identify the storage capacity of iron in the body. Low Ferritin indicates iron deficiency. Normal 15-300 **Optimal 90-100**

Serum Iron: Measures the circulating iron in your blood. Serum is the liquid that's left over from your blood when red blood cells and clotting factors have been removed. The serum iron test can reveal abnormally low or high blood iron levels. Normal 60-170 **Optimal 110**

Transferrin %: (TSAT) Transferrin is the primary carrier protein throughout the body, kind of like an iron 'taxi' that picks up iron that's been absorbed. Low Saturation % means the 'taxi' has more room to pick up iron. Normal 20-50% **Optimal 35%(Female) 40-45%(Male)**

Total Iron-Binding Capacity (TIBC) Total Iron-Binding Capacity is a measure of all the proteins (transferrin) available for transporting iron around the body. If TIBC is high, it means your body has a lot of available transferrin circulating looking for iron to transport into the blood. Normal 240-450 mcg/dl **Optimal ~300 mcg/dl**

Vitamin B-12: Necessary for numerous bodily processes, including nerve function, the production of DNA and red blood cells. Symptoms of B-12 deficiency include heart palpitations, fatigue, hair loss, vision problems, pale skin fatigue. Normal 180-900 **Optimal >800**

Folate: Necessary for cell division and formation of red blood cells. Normal 2-20 **Optimal 14-17**

Vitamin D3: Essential for the proper growth and formation of teeth and bones. Vitamin D deficiency symptoms can include low immunity, bone & joint pain, depression, fatigue. **Normal 30-100 Optimal 60-100**

Iron, B-12, and folate are like the Three Musketeers; these nutrients work synergistically, as each one plays a vital role in healthy red blood cell production.

Vitamin D is a common nutrient deficiency that in addition to causing unpleasant symptoms, plays an integral role in regulating hepcidin levels. (We will discuss the importance of hepcidin in a later chapter.)

Many times, doctors aren't used to their patients being informed enough to request specific tests. If your doctor won't order the tests or you don't have insurance to cover them, visit [ThreeArrowsNutra.com/BloodTest](https://www.threearrowsnutra.com/BloodTest) for information (and a discount code) on how you can order your own lab work to review with your doctor.

I AM IRON DEFICIENT - NOW WHAT?!

We have discussed risk factors, identified common symptoms of iron deficiency, and you have reviewed your blood results with your doctor. It is important to identify the cause of your iron deficiency. Sometimes the root cause of your low iron is easy to identify, as in cases of heavy menstrual bleeding, pregnancy, or gastric bypass. Other times the culprit is not as obvious, and you must work with your doctor to identify and treat the root of the problem.

Hopefully it's a relief to know why you've been feeling so bad! Now, together with your doctor's supervision, we're going to help you fight back against iron deficiency and start feeling better - you're an Iron Warrior now!



IRON IN YOUR DIET

WHAT YOU SEE IS NOT WHAT YOU GET

When fighting iron deficiency, it is important to increase your iron intake. This can be done through diet, supplementation or, in extreme cases, intravenous iron infusions may be necessary.

Unfortunately, iron is a pretty tricky nutrient. Raising your iron levels isn't as simple as "eat more iron - feel better".

Get up, grab a food item or iron supplement from your pantry, and take a look at the nutrition facts panel. At the bottom of the label, locate iron and the percent daily value of iron present in the food/supplement.

While it might seem that this would make it easy to know whether you're meeting your daily requirements for iron, it is not quite that simple. **The iron content on the label is not the amount of iron your body absorbs.** There are a number of factors that influence how well your body does, or does not, absorb iron. Our bodies often absorb only a small fraction of the iron we consume.



The good news? Being armed with some important iron insight can help you reach your iron goals!

TWO TYPES OF IRON - HEME & NON-HEME

In both food and supplements, iron is present in two distinct forms: heme iron and non-heme iron. First, we will discuss iron in the foods we eat.

Heme iron is found in meat, fish, and poultry. Only foods derived from animal sources provide heme iron (though they also provide nonheme iron as well). Heme iron is the most bioavailable form of iron, as up to 40% of it is readily absorbed by your body.

Good food sources of **heme** iron include:

- ▶ Beef
- ▶ Lamb
- ▶ Venison
- ▶ Pork
- ▶ Chicken
- ▶ Fish such as halibut, haddock, perch, salmon or tuna
- ▶ Shellfish such as clams, oysters and mussels

Red meats like beef, lamb and venison contain the highest amounts of heme iron as compared to pork or chicken which contain lower amounts of heme.



Non-heme iron primarily comes from plant sources and is present in grains, vegetables and fortified foods. This is the form added to foods enriched or fortified with iron.

It's estimated that the majority of our dietary iron intake comes from the non-heme form, while a smaller percentage comes from heme iron. In terms of its bioavailability, non-heme iron is absorbed much less efficiently (2-5%) than heme iron, because its absorption is inhibited by a number of factors. (We will discuss the factors that decrease non-heme absorption in the next section.)

Good sources of **non-heme** iron include:

- ▶ Fortified cereals, rice, wheat and oats
- ▶ Dark green leafy vegetables like spinach and kale
- ▶ Dried fruits like raisins and apricots
- ▶ Beans (kidney, lima, Navy)
- ▶ Nuts and seeds
- ▶ Tofu
- ▶ Lentils
- ▶ Whole grains
- ▶ Peanut butter
- ▶ Brown rice



IT'S ALL ABOUT ABSORPTION - WHAT INTERFERES WITH IRON ABSORPTION?

The challenge facing those looking to improve their iron status is the fact that non-heme iron has quite a low absorption rate, and if you can't absorb it, you can't use it.

Despite the fact that heme iron is more effectively absorbed, a large portion of the iron found in the average diet is derived from non-heme sources. Therefore, it is essential to understand the factors that enhance and inhibit our absorption of non-heme foods.

WHAT FACTORS CAN BLOCK OR INHIBIT **NON-HEME** ABSORPTION:

- ▶ **Medications:** Non-heme iron requires an acidic environment for optimal absorption. Medications that reduce the amount of acid in the stomach such as antacids or proton pump inhibitors can lead to low non-heme iron absorption. Examples: Tums, Prevacid, Nexium, Omeprazole.
- ▶ **Phytates and Fiber:** Phytate compounds have a significant effect on the amount of non-heme iron that is absorbed from a meal, and can reduce non-heme absorption by 50-65%.
Examples: Almonds, walnuts, peas, soy, rice, cereal, whole grains, beans, lentils, wheat bran.
- ▶ **Oxalates:** Naturally-occurring food chemicals found in numerous food sources, and may inhibit the body's iron absorption by combining with non-heme iron to form a compound called iron oxide.
Examples: Spinach, kale, potatoes, yams, dark chocolate, raspberries, beets, nuts & seeds, oregano, basil, parsley.
- ▶ **Calcium:** (like iron) is an essential mineral, which means the body must get this nutrient from diet. As a mineral, calcium competes for the same absorption sites as iron.
Examples: Milk, cheese, yogurt, broccoli, kale, almonds, collard greens, rhubarb, tofu.
- ▶ **Tannins and polyphenols:** Biological compounds that can bind with iron, therefore making non-heme iron insoluble. Of the polyphenols, cocoa (chocolate) and tea demonstrates the most powerful iron absorption-inhibiting capabilities, in some cases up to 90%. Coffee is high in tannin and chlorogenic acid; one cup of coffee can inhibit non-heme iron absorption by as much as 60%.
Examples: Coffee, tea, chocolate, blackberries, blueberries, tomatoes, herbs, spinach, broccoli, blackberries.
- ▶ **Low stomach acid:** Non-heme iron requires an acidic environment for optimal absorption, so low stomach acidity can greatly decrease the amount of iron absorbed in your stomach. Elderly individuals or bariatric patients often have less acidic stomachs. *Frequent use of antacids or PPIs (proton pump inhibitors) can affect your stomach's iron absorption.*
- ▶ **Eggs:** Contain phosphoprotein, a compound with iron-binding capacity that can impair non-heme iron absorption. Studies have shown that one hardboiled egg can reduce the absorption of iron in a meal by as much as 28%.

HOW CAN I IMPROVE NON-HEME IRON ABSORPTION?

Don't worry - all is not lost! While the list of factors that interfere with **non-heme** iron absorption can seem a bit overwhelming, it is still definitely worth incorporating these foods into your diet. There are several steps you can take to try and increase your body's absorption of **non-heme** iron, after all, some iron is better than no iron!

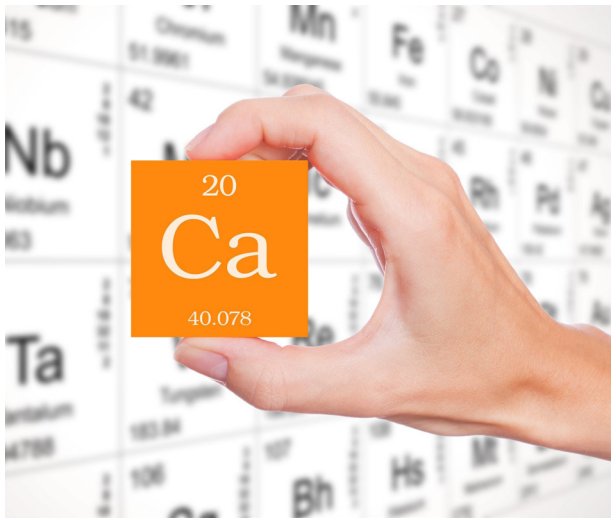


Simply meal planning a bit can help ensure that you're getting the most out of your **non-heme** iron foods.

Consider the following factors, which can enhance non-heme absorption:

- ▶ **Timing:** It's important to be aware of when you ingest the big 'iron offenders' like coffee, tea, and calcium. Try to separate these factors by at least two hours before and after an iron-rich meal or **non-heme** iron supplement.
- ▶ **Protein:** Pair your **non-heme** foods, such as veggies, grains, fortified foods, or supplements, with heme rich foods. The proteins in meat will enhance your absorption of **non-heme** iron. It is estimated that one gram of meat (about 20% protein) has an enhancing effect on **non-heme** iron absorption equivalent to that of 1 mg of ascorbic acid. For example, a meal of brown rice, broccoli, and steak includes both heme and **non-heme** iron sources.
- ▶ **Collagen Peptides:** Collagen is a protein with a very unique amino acid structure. These amino acids, including histidine, isoleucine, and lysine, have been shown to have a positive impact on iron absorption and red blood cell creation. Additionally, collagen aids in reducing inflammation within the intestines, which improves nutrient absorption.
- ▶ **Ascorbic Acid:** Consume your **non-heme** foods with acidic foods. Think of foods rich in vitamin C, citric acid, or lactic acid. For example, if you are making salad, use a citrus dressing or add yellow bell peppers to the salad. The vitamin C from the dressing and peppers will help your body absorb **non-heme** iron from the greens.
- ▶ **Sufficient Vitamin D:** This vitamin has a strong correlation with iron status by reducing inflammation in the body. Supplementation with Vitamin D3 has been shown to decrease hepcidin production by up to 34%.*

WHAT FACTORS CAN BLOCK OR INHIBIT *HEME* ABSORPTION:



Heme iron is more bioavailable than non-heme, and is not significantly affected by dietary influences.

Calcium is the only dietary factor considered to affect both heme and non-heme absorption. While the effect of calcium is not as significant on heme absorption, it is still wise to be aware that it can play a role in absorption and plan your meals accordingly.

HOW CAN I IMPROVE HEME IRON ABSORPTION?

- ▶ **Protein:** In the diet, heme iron naturally accompanies the protein in meat
- ▶ **Collagen Peptides:** Collagen is a protein with a very unique amino acid structure. These amino acids, including histidine, isoleucine, and lysine, have been shown to have a positive impact on iron absorption and red blood cell creation. Additionally, collagen aids in reducing inflammation within the intestines, which improves nutrient absorption.
- ▶ **Sufficient Vitamin D:** This vitamin has a strong correlation with iron status by reducing inflammation in the body. Supplementation with Vitamin D3 has been shown to decrease hepcidin production by up to 34%.*



IRON SUPPLEMENTATION



The Good, The Bad, & The Ugly

When administered correctly, iron supplementation is the fastest and most effective way to improve your iron status, and should be a part of the tool kit of anyone struggling with iron deficiency, especially when paired with an iron-rich diet. As with diet, iron supplements are available in two forms - heme and **non-heme**. Let's take a look at the different kinds of supplements available.

NON-HEME IRON SUPPLEMENTS

The vast majority of traditional iron supplements use **non-heme** iron, and they have an extremely low absorption rate of 2-5%. These synthetic iron salts are cheap to manufacture and purchase. You can identify **non-heme** supplements through the type of iron contained within: ferrous fumarate, ferrous bisglycinate chelate, ferrous gluconate, mineral bound *S. cerevisiae*, polysaccharide iron.

Absorption of **non-heme** iron supplements is negatively impacted by the same influences we discussed with dietary iron, perhaps on a larger scale due to higher dosage amounts. It is often recommended to take **non-heme** supplements on an empty stomach, or allow at least two hours before or after a meal before taking the supplement to increase the likelihood of absorption.

Non-heme supplement absorption is inhibited by common foods such as: tannins in coffee, tea, and chocolate, calcium in milk, cheese, and yogurt, oxalates in spinach, phytates in beans and whole grains, and phosphoprotein in eggs. Absorption is also blocked by antacids or proton pump inhibitors that work to decrease the acidity of the stomach.

Unfortunately, **non-heme** iron supplements frequently cause significant and unpleasant side effects including constipation, nausea, heartburn, and cramping. This is because when **non-heme** iron is ingested, your body must dissolve and convert the iron molecule into a form that it is able to absorb. Due to the multitude of factors that affect **non-heme** iron absorption, our bodies are not good at this process.

Iron supplements may contain a large dose of iron, but only a small

percentage of the **non-heme** iron is effectively converted and absorbed (approximately 2-5% on average). The remainder of the unabsorbed iron remains in the gut as free-floating reactive iron ions which create the intestinal distress you experience after taking **non-heme** supplements.

Additionally, since **non-heme** iron requires an acidic environment for absorption, **non-heme** supplements are often paired with vitamin C. The challenge with this practice is that the high percentage of unabsorbed reactive iron molecules paired with the acidity of vitamin C causes inflammation and oxidation in the stomach, which causes discomfort and increases the body's hepcidin production. Elevated hepcidin levels dramatically decrease iron absorption. (We will discuss the importance of hepcidin in the next section.)

HEME IRON SUPPLEMENTS

In both food and supplementation, **heme** iron is considered the body's preferred iron source, as it has a 30-45% absorption rate on average. **Heme** is bioavailable in its natural state, which means it is absorbed whole and does not need to be converted to enable absorption. As with diet, **heme** supplements are animal derived and can be in the form of desiccated liver and organ meats, or heme iron polypeptide.

Dietary influences do not have a significant impact on **heme** absorption, therefore **heme** iron supplements can be taken with or without food. Calcium is the only dietary factor thought to affect both heme & non-heme absorption though the effect is not as profound on **heme** iron absorption. **Heme** iron does not require an acidic environment for absorption, therefore it is unnecessary to take vitamin C with these supplements.

Heme iron is absorbed through an entirely different intestinal pathway than non-heme iron. In clinical studies, **heme** supplementation has the lowest incidence of side effects reported, essentially equivalent to placebo. This is because the **heme** iron molecule is absorbed whole and does not leave free floating reactive ions within the stomach. Any **heme** molecules left unabsorbed are neutral and do not cause inflammation or gastrointestinal distress.

Aside from not causing painful side effects, there is a significant benefit to unabsorbed **heme** iron molecules remaining neutral. **Heme** iron does not cause inflammation within the intestines, and therefore doesn't trigger the body's hepcidin response.



HEPCIDIN:



THE IRON REGULATOR

WHAT IS HEPCIDIN?

Hepcidin is a polypeptide (or amino acid hormone) created in the liver that has been identified as one of the most important factors that regulates iron absorption.

Hepcidin was discovered, actually by accident, by a group of researchers around 2000...which means that in the world of science and medicine this is still a very new discovery, and it has transformed our understanding of iron absorption.

You can Think of hepcidin kinda like your body's full time Iron Bodyguard: it is designed to protect you, and it allows iron in when you need it, and blocks absorption when you don't.

But why would your body WANT to block iron absorption? Well, while iron is an essential mineral and we HAVE to have it for our bodies to function effectively...iron is actually toxic if we have too much or it's left free floating in the blood!

So our bodies have brilliantly designed safety systems in place to protect us from too iron.

Hepcidin acts like the bodyguard at the door deciding when and how much iron is allowed to enter the bloodstream.

Then, because iron is dangerous if allowed to run free in our bodies, we use iron chaperones like hemoglobin, ferritin, transferrin, and ferroportin to safely transport and store iron through the body.

HOW DOES HEPCIDIN WORK?

When hepcidin is released, it's job is to seek out iron trying to enter your system and block it from being absorbed. It does this by binding itself to ferroportin, which is the iron chaperone responsible for guiding iron absorption through the intestinal cells.

When hepcidin has wrapped itself around ferroportin it blocks iron absorption, because without ferroportin to 'open the door' iron has no way to make it past the intestines and into the bloodstream

WHAT INCREASES HEPCIDIN PRODUCTION?

In cases of iron deficiency, hepcidin production is generally low to allow for iron absorption. However, there are conditions that can trigger the release of hepcidin, thereby blocking iron absorption, even when blood iron is low.

- ▶ Infection
- ▶ Inflammation
- ▶ Intense exercise
- ▶ Vitamin D deficiency
- ▶ Iron supplementation

Did you notice that the last condition listed is iron supplementation? Unfortunately, for those struggling with iron deficiency, it's true. Traditional iron supplements and recommended dosages can trigger increased hepcidin levels and decreased iron absorption!

HEPCIDIN'S ROLE IN INFECTION & CHRONIC INFLAMMATION

Infections and pathogens require iron to grow and regenerate, so hepcidin works like a bodyguard, protecting iron from being used and abused by these 'invaders'.

Infection triggers inflammation, inflammation triggers hepcidin release from the liver, and hepcidin blocks iron absorption and sends circulating iron into storage so it is not available to be used by the infection.

Those who suffer from chronic inflammatory conditions (like IBS, Crohn's, celiac, and rheumatoid arthritis) are often iron deficient. The body senses the inflammation and triggers the liver to release hepcidin, thereby making iron unavailable.

This is an example of why blood tests may indicate a low hemoglobin level, but a falsely-elevated ferritin level. The presence of inflammation causes hepcidin to lock iron in storage as a defense mechanism, but that means it is not available to be used to support circulating blood iron. This can be further evidenced by an increased WBC count.

HEPCIDIN AND IRON SUPPLEMENTATION

Traditional guidelines for treating iron deficiency are like trying to pick a delicate lock with a large sledge hammer!

In an attempt to get more iron into their patients, many doctors prescribe high dose iron supplements. The problem is, these non-heme supplements cause oxidation and inflammation within the intestines, inflammation triggers hepcidin production, and hepcidin blocks iron absorption.

To make matters worse, doctors may try to minimize gastrointestinal side effects caused by non-heme iron supplementation, by recommending that their patients take their iron supplement 3 times per day, or in the evening with dinner. Clearly, they are not aware of the latest research on the role of hepcidin in iron absorption. These studies revealed that hepcidin levels are lowest in the morning, and generally increase throughout the day. Additionally, supplemental doses of iron over 60 mg per serving trigger hepcidin production, and each subsequent dose further increases hepcidin levels.

When supplementation triggers hepcidin, it takes approximately 48 hours for hepcidin levels to return to baseline. Therefore, if you take a large dose of iron three times per day, you have increased your hepcidin levels each time, and significantly decreased your ability to absorb the iron.

Ultimately, you endure significant side effects, can't absorb the iron, and remain iron deficient. Not the best system, right?

WHAT DECREASES HEPCIDIN PRODUCTION?

Fortunately, there are a few factors that have been identified to assist in keeping hepcidin levels lower, to encourage iron absorption.

- ▶ Optimal Vitamin D levels
- ▶ Reduce inflammation
- ▶ Low iron levels (iron deficiency)



I am proud of you.

I know that was a LOT of information to wade through. By reaching this point, you have armed yourself with the knowledge to make a powerful impact on your health!

I realize that there are a lot of factors to consider when fighting your iron deficiency, and you may be feeling overwhelmed, or not entirely sure what to do with all this new knowledge. Don't worry...we're still in this together.

I am excited to share the **Iron Repair Method** with you! I created the Iron Repair Method to harness the best of science and nature to fight back against our iron deficiency! Before I share the method, it's important that I share how how and why I created **Iron Repair**.



THE IRON REPAIR STORY - STRUGGLE, SURVIVAL, AND CREATING A REAL SOLUTION

MY ANEMIA ALMOST KILLED ME...



Iron deficiency made me to spend years feeling like the life was slowly draining out of my body. It felt hopeless. Supplements made me miserable...so I'd stop taking them and simply just try to survive. I wanted to feel better, I wanted to have energy to be the woman and Mom I knew I was on the inside...so out of desperation, I started seeking answers.

As I spent hundreds of hours pouring through research and clinical studies, I discovered I actually enjoy geeking out on the science! I knew there must be a way to use all the scattered puzzle pieces of information to restore my health...and I set out to do just that!

When I learned that there was another kind of supplement, with ten times the absorption rate of all the traditional non-heme supplements I had tried without the horrid side effects...I was **MAD!** How had I never heard of this, why hadn't my doctors ever told me?!

To my surprise when I went looking, the options were extremely limited and the supplement I needed didn't exist. I knew non-heme supplements were not effective, but even the few **heme** supplements I found weren't what I was looking for. The problems with existing **heme** supplements are:

▶ **Liver & organ capsules:** to achieve even a small heme iron dose, you have to take a handful of capsules per serving, and I certainly didn't want to take 6 capsules per serving.

- ▶ **Compressed tablets:** tablets are extremely common in the health and nutraceutical markets, and we often don't think twice about taking a tablet. The problem with tablets is that they are compressed so tightly during the manufacturing process that they don't dissolve effectively in the gut. If the tablet doesn't dissolve correctly you can't absorb its contents.
- ▶ **Artificial fillers & excipients:** used by manufacturers to lubricate their machinery or make it possible to compress the ingredients in a tablet.
- ▶ **Synthetic colors & coatings:** used to make tablets more visually appealing. It is thoroughly unnecessary to add artificial colors and dyes to supplements.
- ▶ **Cheap active Ingredients:** vitamins like B-12 and folate are important co-factors in creating healthy red blood cells, but when I looked at the ingredient list of the supplements available I found the cheap synthetic versions. Cyanocobalamin (the synthetic form of B-12) and folic acid are cheap to manufacture, but not bio available in our bodies. Supplement companies know there are better options, but they choose profit over the people they serve by using cheap ingredients our bodies can't use!

FINAL TWIST OF FATE.

I did my best to use what I'd learned to seek out and cobble together the ingredients I needed - *it actually started working & my iron levels began improving* for the first time in years...but it was an expensive and frustratingly complicated process.

As fate would have it, my daughter started having chronic headaches that lasted for weeks, anxiety, and scary episodes of restless leg syndrome...I discovered she was severely iron deficient.

I didn't want to waste time cobbling stuff together - I needed the best possible iron supplement to help her feel better NOW.

That's when I knew it was time to take all that I had learned about iron supplements and create a real solution!

After all, I Believe When You Know Better...You Do Better!

There are so many of us struggling with iron deficiency, and if the supplement we need doesn't exist...then *it must be up to me to make sure it does!*

I spent 3 years obsessively researching and searching the globe for answers. I assembled a team of nutritionists, chemists, and cutting edge manufacturing partners and we began formulating a supplement that contains the most bio available, responsibly sourced ingredients that are designed to make a positive impact in the lives of those of us struggling with iron deficiency.

I am so excited to finally share Iron Repair with you!





Revolutionary. Re-Invented.

Formulated for Maximum Absorption.*

**"I created Iron Repair to be a powerful tool
in our FIGHT against Iron deficiency"**

**- Krystal Moore,
Anemia Survivor & Three Arrows Founder**

There were certainly roadblocks and resistance on the path to creating a completely new supplement (at times it felt like David and Goliath), but I was determined to design the best possible solution, and refused to compromise or take shortcuts.

I searched the globe for innovative ingredients, hired a team of chemists, nutritionists, and doctors and together we created **Iron Repair**, a bio available, responsibly sourced, and truly re-invented iron supplement.

WHAT MAKES IRON REPAIR DIFFERENT?

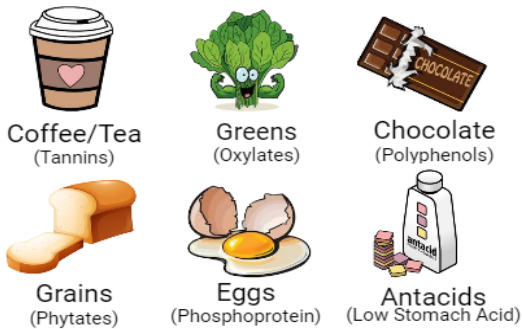
- ▶ **Harnesses the BioAvailability of Heme Iron :**
Heme supplementation has 10x the absorption of traditional non-heme supplements. Heme has been clinically proven to be exceptionally effective at improving iron status with minimal side effects.
- ▶ **Contains the Most Bio Available Ingredients:**
Folate & B-12 are essential for healthy red blood cell production. Iron Repair includes innovative ingredients in the most bio active and cell identical forms...so your body can actually use them.
- ▶ **Contains No Artificial Colors, Excipients, or Fillers:**
What we put in our bodies is important, especially when trying to improve our health. Iron Repair doesn't include the questionable junk that other supplements do, and has an ingredient panel you can feel good about.
- ▶ **Offers Innovative Delivery:** Say goodbye to the big compressed tablets that are full of artificial junk and don't dissolve where they're supposed to. Iron Repair is delivered in a clean gelatin capsule, which ensures the ingredients are available where they're needed.

I am so excited to share Iron Repair with you!

If you would like to be part of the Iron Repair Revolution and fight back against your iron deficiency, please visit www.ThreeArrowsNutra.com

What Makes Iron Repair Different?

Heme Absorption is NOT Affected By:



Take WITH or WITHOUT Food

Gentle on the Stomach



Heme

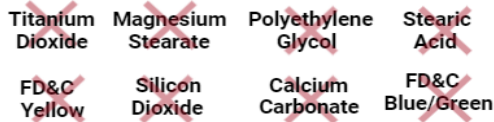
Absorbed Whole in Natural Form; Remains Neutral in the Gut.



Non-Heme

Must Be Converted to Allow Absorption; Creates Reactive Iron Ions in the Gut.

NO Artificial Colors or Fillers



Heme Iron DOES NOT Need Vitamin C For Absorption

Iron Repair vs. "The Other Guys"



Heme

*Easily Absorbed in Natural Form**

Non-Heme

*Must be Converted into Absorbable Form**

✓ **Bioavailable Heme Iron**

- ✓ Minimal Side Effects - Easy on the Stomach
- ✓ Take With or Without Food
- ✓ Does Not Require Vitamin C
- ✓ Natural Non-GMO Bovine Source
- ✓ Absorption Inhibited by: Calcium >300 mg Serving

✗ **Non-Heme Iron:** Ferrous Fumarate, Ferrous Sulphate, Ferrous Gluconate, S. Ceresvisiae, Ferrous Bisglycinate Chelate, Polysaccharide Iron

- ✗ Painful Side Effects Include: Nausea, Constipation, Cramps, Heartburn
- ✗ Take on an Empty Stomach
- ✗ Requires Vitamin C For Absorption
- ✗ Synthetic Iron Salts
- ✗ Absorption Blocked by: Calcium >150 mg Serving, Milk, Coffee, Tea, Wine, Chocolate, Cheese, Beer, Leafy Greens, Eggs, Nuts, Yogurt, Seeds, Beans, Whole Grains, Antacids

HOW MANY DOSES DOES IT TAKE TO EQUAL ONE IRON REPAIR?

Iron Repair Vs. Other Supplements

Iron Repair has
10x
the Absorption Rate
of Traditional Supplements**

Which Means You'd Have to Take a
LOT of Those 'Other' Supplements to
Equal the ABSORBED Iron in
ONE Iron Repair!

**3% non-heme absorption & 37% heme absorption rate.
Clinical Study on the Iron Absorption from Heme and Nonheme Iron. Nutritional Sciences 9(4) November 2006 pp 295-300.

Iron Content	Heme Iron	Methyl B-12	Methyl Folate	Clean Capsule	To Equal the ABSORBED Iron From ONE Iron Repair
20 mg	✓	✓	✓	✓	1 capsule
<i>Heme Iron</i>					
3 mg	✓	✓	✗	✗	10 capsules
<i>Dessicated Liver</i>					
26 mg	✗	✗	✗	✗	10 capsules
<i>S. Cerevisiae</i>					
22 mg	✗	✗	✗	✗	10 capsules
<i>Brown Rice Chelate</i>					
65 mg	✗	✗	✗	✗	4 capsules
<i>Carbonyl Iron</i>					
10 mg	✗	✗	✗	✗	10 capsules
<i>Ferrous Gluconate</i>					

IRON REPAIR *HemePlus*



The Three Musketeers
of Healthy Blood
Heme Iron + B12 + Folate

IRON REPAIR *Simply Heme*



Heme Iron
Pure & Simple




THE IRON REPAIR METHOD

SCIENCE BEHIND THE METHOD

The Iron Repair Method integrates the latest scientific research with the power of Iron Repair, and creates a roadmap to fight back against iron deficiency. The timing and inclusion of each component works synergistically with one another to improve the effectiveness of the method as a whole.

The Iron Repair Method harnesses:

- ▶ **Iron Repair:** Thoughtfully designed to provide the superior bioavailability of heme iron, in a dose that does not trigger hepcidin production. This revolutionary iron supplement provides innovative ingredients including:
 - **Heme Iron** - This natural iron is preferred by the body, and is absorbed through an entirely different pathway than non-heme iron. Heme absorption is not blocked by dietary influences, and doesn't cause the gastrointestinal distress that non-heme iron supplements do.
 - **Vitamin B-12 (Methylcobalamin)** - Essential in red blood cell production, this is the same form found in our food and cells. Unlike the more commonly used cyanocobalamin, methyl B-12 is the more biologically active form.
 - **Folate** - Enzymatically active, and cell identical folate. This innovative ingredient is delivered in the optimal bio available form to promote healthy red blood cell production
 - ▶ **Strategic Timing:** Hepcidin is a major factor in iron absorption, therefore timing supplementation to capitalize on the natural fluctuations of hepcidin is crucial.
 - ▶ **Amino Acids:** The specific amino acids in collagen peptides have been identified as crucial components in healthy red blood cell production. Collagen also aids in reducing inflammation within the intestines thereby improving nutrient absorption.
 - ▶ **Vitamin D3:** This vitamin deficiency has a strong correlation with iron status. Supplementation with Vitamin D3 has been shown to decrease hepcidin production by up to 34%.
- 

THE IRON REPAIR METHOD**

Sample Daily Schedule

This schedule is for a 150 lb individual with blood work confirmed iron deficiency.

According to the American Society of Hematology, the daily range of heme iron for a 150 lb person would be approximately 68-136 mg heme iron per day, or 3-7 capsules of Iron Repair.

(To determine your approximate daily range of iron intake, according to the ASH, visit www.ThreeArrowsNutra.com/calculate)

In the Morning, When Hcpidin is Naturally Lowest

- Iron Repair:** Take 1-2 Iron Repair capsules
 - Can be taken with or without food
- Collagen Peptides:** 1 scoop of Collagen Peptides - Provides pure source of protein & amino acids, supports healthy red blood cell production, increases nutrient absorption, and reduces inflammation within the gut.*
 - Collagen is easily added to coffee (you can safely enjoy your morning coffee again with Iron Repair, because heme iron is not affected by the tannins in coffee!)
 - You can also enjoy Collagen Peptides in smoothies, eggs, tea, oatmeal, baked goods, jello, etc.
- Vitamin D3:** Vitamin D supplementation has been proven to lower hepcidin levels by 34% for up to 24 hours after ingestion.*



At Mid-Day or Lunchtime

- Iron Repair:** Take 1-2 Iron Repair capsules
- Can be taken with or without food

In the Evening or at Dinner

- Iron Repair:** Take 1-2 Iron Repair capsules
- Can be taken with or without food

The Iron Repair Method harnesses the latest scientific research in iron absorption with the power of Iron Repair. It is important to remember that restoring healthy iron levels is not a quick process, as it takes time for your body to create new healthy red blood cells.

**This sample daily schedule is provided as an informational & educational tool. It is not intended to be medical advice, or replace the advice of a medical practitioner.

Work with your doctor, using the blood tests recommended in the Iron Repair Manual, to monitor improvement in your blood results and ensure optimal progress.

Recommended Use For IRON REPAIR



Take 1-2 Capsules; Separate doses by 2-3 hours
(or as Directed by Doctor)



Take *With* or *Without* Food



Stay Hydrated
Take This Opportunity to Drink a Big Glass of Water



Take Consistently to see Improvement



Work With Your Doctor to Ensure Iron Reaches
Optimal Levels

HOW DO I TAKE IRON REPAIR? 🔍

♥ When Beginning Iron Repair, Start Slowly

Why: Your body has been through a lot as a result of iron deficiency.

You're probably excited to get started & begin feeling better, but it's important to give your body time to adjust to a new supplement.

Start by taking 1 Iron Repair capsule per day to ensure your body tolerates it well, then work your way up to a higher dose, if needed.

♥ Take 1-2 Capsules Per Dose - If additional doses are needed, separate by at least 2-3 hours

Why: Our bodies are designed with a safety system in place to protect us from too much heme iron.

Heme absorption is a 'saturable pathway', that just means that when all the absorption sites are full your body won't allow any more in.

Iron Repair's dosage is formulated with that safety system in mind. Therefore, by allowing at least 2-3 hours between each dose, your body is able to maximize absorption and minimize waste

♥ Take WITH or WITHOUT Food

Why: Heme absorption is much more 'user friendly' than non-heme iron! Heme iron absorption is not blocked by the MANY things that interfere with non-heme absorption.

Iron Repair is NOT blocked by coffee, tea, eggs, phytates, polyphenols, magnesium. Feel free to enjoy your coffee & tea again. (I often take my Iron Repair with my coffee & **Collagen** each morning)

Also, heme does NOT require an acidic environment for absorption. This means that you don't need to take mega doses of Vitamin C. Another great benefit is that those on acid reducers are able to absorb heme iron.

The only factor that may interfere with heme absorption is calcium, in amounts over 300 mg/serving. This just means that modest amounts of calcium in the foods you eat aren't a problem, but make sure to separate a large dose calcium supplement from your Iron Repair

♥ Take Consistently to See Improvement

Why: When dealing with iron deficiency, it takes time to restore your iron levels.

Our bodies work hard to keep circulating iron (hemoglobin) optimal, so that is the first place your body will send iron.

Once the body feels that hemoglobin is stable, it will begin to send iron to replenish its storage (ferritin).

This process takes time, especially if the cause of your iron deficiency has not been addressed. Be patient with your body & continue to take Iron Repair consistently.

♥ Work With Your Doctor to Ensure Healthy Iron Levels

Why: Knowledge is power.

Being an active participant in your health by working with your doctor & monitoring your blood work will help to ensure you reach healthy & optimal levels.

YOU ARE AN IRON WARRIOR NOW!

You are Powerful. You have armed yourself with the knowledge & tools to FIGHT BACK against your iron deficiency.

I am honored to be on this journey with you...welcome to the Tribe!

Check out the Tribe Success Tools & connect with other Iron Warriors at www.ThreeArrowsNutra.com/Warrior

Connect with Krystal & the Three Arrows Tribe!

Instagram:

@ThreeArrowsNutra

Facebook:

www.facebook.com/ThreeArrowsNutra

YouTube:

KrystalMoore - IronWarrior



Come Join the Tribe on Social
@ThreeArrowsNutra



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DISCLAIMER

**These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent disease.*

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