

Cold Thermogenesis 11: Paleo FX To Practice

Readers Summary

1. What happens when a Paleo Fx leader decides to test his dogma and intuition?
2. Can magnesium help you optimize health and a CT regiment?
3. Is it possible to reverse inflammation/disease within 30-45 days?

Today, I want to introduce you to someone who is a true '**Paleo leader**' by stepping up to the the challenge I put to our community at PaleoFx conference recently held in Austin, Texas. Kevin Cottrell is one of the co founders of Paleo Fx. The leaders of Paleo fx have to be commended because the conference they were able to put on in 150 days of prep time was nothing short of remarkable.

The conference exceeded all my expectations and the reviews of many attendees have been stellar. The future of this community is tied to clinical application of what the science continues to show in the literature. For assimilation of the Ancestral Lifestyle to become mainstream we need to have more clinical conferences like Paleo fx, and we need to take them globally.

Today, I am breaking new ground and presenting to you my first guest blog written by Mr. Kevin Cottrell, who has agreed to share his personal story and personal medical history with all of you so that he may help you in some way. I think what he has agreed to do here is the most noble and worthy things to do to help our community and mankind. I am indebted to him for this chance to publish his story for you to consider.

The following post is written by Kevin, in his words, to share

with you and yours, to help open your eyes and challenge your “own dogma and current intuition’ to help you reach for optimal health.

Question everything, learn something, but answer nothing.

by Kevin Cottrell

My journey to optimal health started with a major speed bump. The day was June 2, 2006 and it was a major wake up call. My wife and I were driving a U-Haul Truck along I-75 passing through Atlanta GA when my cell phone rang. I picked it up and it was the dermatologist office in Miami with my results from the biopsy of a mole removed several days earlier.

Exactly what we discussed I can't recall – I actually can't recall even navigating the truck through traffic for the next 10 minutes I was on the phone with the office discussing options as I wasn't able to comply with their request of being in the office Monday to schedule surgery. I recall being very careful about my words and my questions I was asking so as to not pique the interest of my passenger (my wife) in the truck.

This was a call you never expect to receive – a diagnosis of cancer – Melanoma to be specific – one of the deadliest forms of cancer. After I hung up the phone, I was so in denial that I completely misled my wife about the content of the call stating simply that “I needed to go in for a follow up in St Louis when we get settled from our move.” What an understatement that was, for the next 7 hours as I drove the remainder of the way to St Louis, my mind raced with questions:

“How could I have cancer, I exercise 4-5 times per week?”

“How could I have cancer, I eat reasonably healthy, don't do drugs, drink heavily, and have never smoked?”

“How could I have skin cancer? I don’t use tanning beds and certainly wouldn’t be considered someone who’s always baked or tanned?” “There really isn’t a history of cancer in my family...so, how did this happen to me?” [note: we’ll come back to this one later]

Step one in my journey required me to have major surgery and treatment for cancer in the summer of 2006 leaving my body free of the melanoma with the only memento being a large scar on my left neck that looks like I was in a bar fight or bad accident.

What was interesting about this initial step in my journey was my complete misunderstanding of what had happened and the biologic mismatches that were leading me down the path to being unhealthy and possible early demise. I was under the impression (based on conventional wisdom and treatment) that I had become victim of cancer due to things like sunburns, tanning beds and bad luck genetically.

Some sort of ‘bad luck’ lottery result. Never once was lifestyle choices and diet/nutrition mentioned by my surgeon or any of the practitioners treating me. I never recall being tested for systemic inflammation or even counseled on risk factors other than being constantly reminded to cover up and use sunscreen.

Between 2006 and 2010, I went on about my life, heeding the conventional medical advice and continued working out (lots of chronic cardio), working long hours (I would sleep for less than 6 hours typically) and eating what I thought was a fairly healthy diet of low fat and ‘heart healthy whole grains.’

The next major wake up call in my journey was my wife’s ailments. She developed chronic issues with her gall bladder and in the summer of 2010 had her gall bladder removed in a surgical procedure. Again, we followed conventional wisdom and diet recommendations and thought we were on track for a

healthy lifestyle.

After surgery, when her digestive issues didn't resolve, I queried the medical practitioners several times about diet recommendations and received limited to no help. I happened upon a Podcast by Robb Wolff in the fall of 2010 covering recommendations for someone without a gall bladder. I picked up a copy of the "Paleo Diet" book and read it cover to cover in one day. I was floored and shocked. It was such an eye opener for me about being off track from a nutritional standpoint for both myself and my wife. We began to 'clean up our diet' in the fall of 2010.

Again the phone rang...this time it wasn't a wake up call for me. It was my mother talking about the fact that my father had been diagnosed with bladder cancer and was going to have it surgically removed. He had also been struggling with high blood pressure, his weight and Type II diabetes for years.

My mother had been struggling with Ulcerative Colitis and had developed colon cancer and had her colon removed in surgery. This was not something that had previously been 'disclosed' to the kids in the name of keeping us from worrying. I asked about other incidents of cancer in the the family. Turned out my mother had cancerous growths removed from her throat when I was young and her mother and father both died from cancer. So much for my thoughts about not having cancer in the family.

My mind began to re-think/reconsider the neolithic thoughts from 2006. What if my entire framework for what I was doing in the name of being healthy was wrong? What if I was on the same track as my parents? Certainly after reading the Paleo Diet, I knew that my family was 'typical' and our diet/nutritional needs growing up as kids were way off track. What I was struggling with was whether this was just biologic bad luck and something that I was stuck being 'at risk' for based on my family's history.

My wife and I relocated from St Louis to Austin in February of 2011 and I scheduled a follow up visit with a medical practitioner with full blood work scheduled. The results shocked me again. I was told that unless I made some significant changes I was on track to becoming a Type II diabetic. My fasting blood glucose and hA1C (90 day average) levels were way too high. I might have looked reasonably good on the outside (I wasn't significantly overweight) however, my blood work showed a different picture.

This was the news I needed to go heads down with a Paleo/Primal lifestyle change. Beginning in January, my wife and I cleaned up our diet and followed a fairly strict diet based on ancestral principals. The results visually were dramatic. My wife lost 3 dress sizes and the digestive issues began to resolve. My weight didn't change significantly, however, my body fat {a7b724a0454d92c70890dedf5ec22a026af4df067c7b55aa6009b4d34d5da3c6} declined significantly from almost 30{a7b724a0454d92c70890dedf5ec22a026af4df067c7b55aa6009b4d34d5da3c6} to 17{a7b724a0454d92c70890dedf5ec22a026af4df067c7b55aa6009b4d34d5da3c6}. Progress... From a 'vanity' standpoint I was the image of Ancestral Wellness/Paleo living and success – six pack abs and all!

The picture on the left was taken in the late fall of 2010 in St Louis – prior to moving to Austin and starting the Paleo Diet. Pictures on right were taken in August of 2011.

The final aha moment was in May 2011. The phone rang again while I was on a business trip out of state. The family was told that we needed to rush to the Bay Area as my father had only a couple of days to live as he had cancer again – this time in his kidneys. Being there at the hospital at Stanford University and observing what had happened to my father was shocking. He was merely a shell of what he had been and deteriorated dramatically since I saw him in the fall.

Here's a picture of my father and myself at exactly the same age – 47 years old. Lifestyle choices and not genetics is the determining factor. He was on blood pressure and glucose medicine at this age.

What was even more shocking was observing the condition of my family vs. me and my wife. My mother was in poor shape and the picture of unhealthy. My younger brother and sister were both limping from chronic pain/injuries and certainly didn't look healthy. I thought to myself, there's something missing here? Am I doing enough to ensure longevity? I knew I needed to learn more about cancer as the prospect of going through what I had just witnessed scared the heck of our me.

I was bound and determined to take every step to avoid that at all costs.

More on my background and story can be found in a blog post on Being Primal and a Podcast interview I did with Abel James.

A Biologic “Fork in the Road” – with huge implications for longevity and long term wellness!

My quest to understand the mechanisms for cancer led me to several major ahas. The first was that inflammation was a significant factor in not only all cancer but also cardiovascular disease. Especially chronic long term inflammation. There are many factors that trigger inflammation. These factors are found in both our internal and external environments. Factors that trigger increased inflammation include excessive levels of the hormone insulin (insulin resistance), emotional stress, environmental toxins (heavy metals), free-radical damage, lack of sleep, obesity, over-consumption of hydrogenated oils, and smoking. Problems with insulin metabolism are a major contributor to

cardiovascular disease.

Inflammation causes endothelial dysfunction and activated endothelium facilitates adhesion and migration of cancer cells.

'Chronically inflamed tissues continue to generate signals that attract leukocytes from the bloodstream. When leukocytes migrate from the bloodstream into the tissue they amplify the inflammatory response.'

Then the aha moment when the inflammation research tied into my challenges well beyond the risks for cancer and brought the discussion full circle back to my metabolic challenges with insulin regulation [remember my discussion that floored me with my Austin doctor about being 'pre-diabetic' in Feb 2011]:

Scientists at the Joslin Diabetes Center in Boston, have bred a strain of mice whose fat cells are supercharged inflammation factories. "We can reproduce the whole syndrome (diabetes) just by inciting inflammation," Dr. Steve Shoelson says. This suggests that a well-timed intervention in the inflammatory process might reverse some if not all the effects of diabetes. Some of the drugs that are already used to treat the disorder, like metformin, may work because they also dampen the inflammation response. In addition, preliminary research suggests that high CRP levels may indicate a greater risk of diabetes.

'Whatever makes us become less efficient at using insulin is going to aid in the development of diabetes. Treatments for diabetes work by replacing insulin, boosting its production or helping the body make more efficient use of the hormone.'

And a final aha moment, much more recently, was discovered as I researched some additional ways to reduce chronic inflammation:

'Inflammation not only further damages the artery walls,

leaving

them stiffer and more prone to plaque buildup, but it also makes

any plaque that's already there more fragile and more likely to burst.'

A 2006 issue of the Journal of the American College of Nutrition an article showing that as consumption of magnesium fell, the levels of C-reactive protein went up. C-reactive protein, or CRP, is produced in the liver and has emerged as a strong predictor of clinical events of cardiovascular diseases, such as heart attacks and stroke, even in cases where cholesterol levels may be normal. For this reason, CRP assays may become a routine part of blood tests for determining CVD risk. CRP levels in the blood are normally undetectable or very low; high levels are strongly associated with inflammation.

There are literally hundreds of physiological reasons to proclaim magnesium the ultimate heart medicine; its involvement in hundreds of enzyme reactions is just a start. Its use as an anti inflammatory makes magnesium absolutely indispensable to not only heart patients but also to diabetics, neurological and cancer patients as well. The treatment of chronic inflammation has been problematic for medical science because most of their treatments create more inflammation. Magnesium chloride does not do this.

Virtually all the components of the Metabolic Syndrome of diabetes, high blood pressure, obesity and lipid disorders are associated with low magnesium.

Dr. Michael R. Eades

Circadian 'Man on Fire' —

Unresolved Systemic Inflammation!

Why worry about this?

“Greater than half of all sudden death from cardiac causes have no history of cardiovascular disease. In fact, over 40% of all heart attack victim autopsies show clear coronary vessels. Clearly, there is much more going on than the simple “cholesterol kills” hypothesis. It is interesting to note that the first and most common sign of cardiovascular disease in post-menopausal women is death. Yes, death. In other words, there are no signs or symptoms.” Doctor Michael Lam MD

I read this quote as part of my research and it simply blew me away. I know many of the readers of Dr. Kruse’ blog are women so you’ll want to also view this TED talk about why this is such a huge issue for you.

Okay, now I was getting somewhere. Biologically mismatched Paleo folks (especially the Crossfit set) are running around thinking they are healthy – showing no signs/symptoms and dropping dead as the first sign of any issue. This is not isolated today – Livorno soccer player Piermario Morosini died in April with no prior warning. This was the second incident in a month. Dr. Kruse referred to a patient who looked like ‘adonis’ and was a regional Crossfit competitor who presented with respiratory distress that was the first sign of cardiac ejection failure. Clearly something is amiss with these biologic mismatches.

Inflammation was clearly at the center of what needed to be addressed in my quest to avoid cancer, cardiovascular diseases and Type II diabetes. This was clearly at the center of what needed to be addressed.

I had identified a biomarker to measure and track systemic

inflammation. C Reactive Protein (Highly Sensitive) was a great way for me to assess my progress in my quest for longevity and optimal living. Now, I also discovered a new player – Magnesium – the warranted some further research as a factor to remove chronic inflammation as well.

(Dr. K says, “note to blog readers I talked about the Magnesium link in disease months ago after controversy developed at AHS 2011 here between Taubes and Guyenet”)

The good news was I knew exactly what needed to be addressed (chronic systemic inflammation) and how to measure it (hs CRP). The bad news, despite my intense focus on following the principals of ancestral wellness (Paleo Diet) and exercising, my CRP test results revealed a chronic level of inflammation over time.

HS CRP Test Results

- 8/2008 – Pre Paleo Diet (look at my before picture) – 1.0
- 2/2011 – Start of Paleo Diet (‘pre-diabetic discussion) – 2.3
- 8/2011 – Bodyfat down to 16.9{a7b724a0454d92c70890dedf5ec22a026af4df067c7b55aa6009b4d34d5da3c6} – After Photo above taken – 5.3
- 10/2011 – Bodyfat down to 10.9{a7b724a0454d92c70890dedf5ec22a026af4df067c7b55aa6009b4d34d5da3c6} – 5.6
- 3/2012 – Prior to PaleoFX event – 5.4

If I showed up in your office as a Cardiologist with this trend line, you’re going to be highly concerned about systemic inflammation and my risk for a cardiovascular incident. Conventional wisdom would put me on the fast track for some sort of pharmacological intervention. My concern was the long term risk for cancer or a cardiovascular incident, let alone metabolic syndrome and challenges. Something was still off

track with my level of inflammation.

Just Eat Real Food (JERF) like our Ancestors and all will be well, Correct? What the Ancestral Wellness as a concept doesn't address about modern biologic mismatches.

Here's the bad news in Paleo/Primal living. Despite delivering fantastic results from a 'vanity' standpoint for many (weight loss and lean good looking in shape folks), there are still unresolved issues with inflammation for many.

If you attended PaleoFX in March of 2012 and were present for the discussions about longevity vs. performance or several other masterminds, you heard first hand of Crossfitters and other 'in shape' athletes presenting with catastrophic failures – despite looking great. Lots of hand waiving from trainers and others from Physical Culture to just 'listen to your body' and from my perspective almost all of them were in complete denial of the issues of biologic mismatches. At one point, I stopped the discussion and asked the question "if the first time you have any feedback from your body you're either dead or in such dire straights, you've permanently damaged your heart, is 'just listen to your body a realistic approach?' The response – a collective 'gasp' from the audience as they got the implications. Silence from the Physical Culturists on the Mastermind panel.

Back to Biologic mismatches and how Ancestral Wellness and the Paleo Diet is not the be all solution for everyone. What is amiss? My n=1 observation is its a function of biologic mismatches. As neolithic humans, we think if a little is okay, then more is better. From my story above, you'll see several references to this:

- Chronic over-training – My early training focused on chronic cardio and I was still over-training until mid-2011.
- Sleep Issues – I used to pride myself on getting by on

- 5-6 hours of sleep and being a morning person.
- Technologic and lighting mis-matches – We think we can simply ignore Circadian Biologic cycles
- Magnesium and other mineral deficiencies [I – like most in Paleoland – had no idea about Magnesium and mineral deficiencies until recently]
- Environmental toxins (metals, bpa, etc)

In August of 2011, I began to address each of these areas (save the recent focus on Magnesium and environmental toxins). I made a comment at PaleoFX that most attendees simply missed the implications of. From the end of July to the end of October 2011, the only major change I made in my lifestyle was adding in significantly more sleep. That single change resulted in a drop in my body fat from 16.9 to 10.9 in less than 90 days.

From there, I focused on dramatically reducing the technology and lighting mismatches. This is the typical lighting (unless using a fireplace in the winter) after dark at the house. Many of the computers have a program called F.lux installed. My wife and I use goggles that block inappropriate lighting after dark. We follow a very purposeful ritual at sunset and after dark to wind down and get ready for healthy sleep. Poor sleep is a chronic problem today that results in insulin resistance and chronic inflammation. Some might scoff and make fun of these steps as being excessive and silly. That very well may be true if your focus is on **mediocre**. When seeking optimal, intense focus on all the required steps is necessary.

Still not convinced that biologic mismatches are going to get you off track? A recent study about shift work discovered some very interesting results when they subjected test subjects to biologic mismatches based on lighting and circadian timing:

“The study found that otherwise-healthy adults who were both sleep deprived and sleeping on schedules that put them at odds with their biological clocks – common problems for millions of people who work at night – made 32% less insulin, the hormone that controls blood sugar, than they do when they are well rested.

As a result, their blood sugar rose significantly. In some cases, those increases reached pre-diabetic levels.”

Despite all the aggressive steps, my systemic inflammation (based on my measured hsCRP) had not resolved as of March 2012. Something systemically was still producing chronic inflammation. Rather than trying to further tinker with my environment or going on a continue search for specific sourcing of the issue (environmental toxins, etc), I made a decision, that I was going to undertake an aggressive Cold Thermogenesis bio hack under the direction of Dr. Jack Kruse. The purpose of the biohack was to combine CT with my current lifestyle and the addition of aggressive Magnesium supplementation to put the “fire out” for good in myself.

Why Biologically aligned living combined with CT and Magnesium are your best friends for an optimal life and longevity – Super Charge Your Ancient Pathway!

So, I was ready to put the fire out and fix my chronic inflammation for good. Something was nagging at me to look into Magnesium further. After a close friend suffered a seizure a week after PaleoFX and almost died in a car crash with his wife and the resulting causative factor was severe Magnesium deficiency, I was strongly motivated to dig in and learn as much as possible. This person was also a very fit ‘Paleoite’ with a body fat below 10% as well.

Here's my top 10 ahas about magnesium and how it super charges Cold Thermogenesis and the activation of the Ancient Pathway. There is a strong feedback loop when you look at the research I've linked to in this post and below, in that most cold adapted subjects have high (above normal) levels of magnesium and are exposed (dietarily and environmentally) to sources of magnesium. The challenge today is our food sources (even from a Paleo/Primal diet) is not sufficient to provide optimal levels of magnesium due to soil depletion, lifestyle choices, . Magnesium in turn through its varied essential processes in your body ensures you get the optimal benefits of CT and your circadian biology.

1. Magnesium has been linked to optimized thermoregulation
2. Magnesium levels are tied to BAT functionality and BAT levels
3. Magnesium is needed than ATP and optimized cell membrane function
4. Magnesium is needed in order to properly metabolize EPA/DHA from **Omega 3 oils** – optimized O6/O3 level is critical for successful CT and cold adaption
5. Magnesium is involved in more than 300 key transactional biologic functions – you can't be optimal with sub-optimal levels of Mg
6. Magnesium is highly anti-inflammatory
7. Magnesium is needed for optimized Hypothalamus & Pineal Gland function – Mg is essential for optimized circadian regulation
8. Magnesium optimization results in more optimized sleep
9. Magnesium optimization has been linked to resolving leaky gut & auto-immune issues
10. Magnesium optimization is not available by simply following a diet based on Ancestral Wellness (Paleo/Primal Diet) and requires supplementation to be optimized

Bottom Line: Optimized Magnesium levels critical to

experience superior Cold Thermogenesis results. Further, the biologic benefits of testing and optimizing your Magnesium levels are too critical to overlook. Its the difference between being mediocre and optimal. Why settle for an B or a C when an A is available.

My CT Protocol – 4 Weeks Post PaleoFX

As part of Cold Thermogenesis Bio Hack, I followed the Cold Thermogenesis Protocol designed by Dr. Jack Kruse with the following modifications:

1) **Caveat one** – and this is a big one – Cold Adaption is a very specific process to each individual. I have a background in cold water search and rescue from the Pacific Ocean. During a 10 year period, I spent almost every weekend and many nights immersed in the cold Pacific ocean in a mild hypothermic state. My mind/body have been exposed to CT before and as such I was able to skip ahead so to speak.

2) Based on #1 above, I started with 50 degree water for immersions @ 2 x day for the first week 60 minutes per session. I didn't wear any socks or a hat and would immerse my hands/arms for the last 15-20 minutes of my sessions. I wore a compression shirt and compression shorts and placed a 20# bag of ice over my abdomen during the entire session. The ice pads were placed on my back mid-shoulder and remained there during the entire CT session (I used two pads and had my wife bring in the fresh one at 30 mins into the CT session). I did this for seven days straight.

3) Beginning in week #2, I shifted back to 1 X per day @ 60 minutes – most due to scheduling. Week 2 was another 7 days straight.

4) Weeks 3 & 4 continued daily sessions for 60 minutes –

increased the CT 'gradient/intensity' by decreasing the water temperature down to 45-46 degrees as a starting point by pre-cooling the water for 60-75 minutes with 40#s of ice (see picture below).

5) I would always eat a high protein meal prior to CT and drink a glass of ice water as well.

6) Beginning in week 1, I began an aggressive Mg supplementation program as follows:

- Daily A.M. – Mg Threonate @ 200mg orally / Mg Chloride Daily
- Daily P.M. – 60 minutes foot soaks w 2 oz / ZMA Supplement w 450mg Mg & 400mg Mg Glycinate.
- b) I also have added Grass Fed Beef Liver (offal) and other sources of dietary Mg into my diet.

7) After Week 4, I moved into a maintenance CT mode @ 2-3 times per week at 60 minutes each session.

8) Additional supplementation of:

- Krill Oil @ 750mg daily
- Curcumin @ 750mg
- Resveratrol @ 1000mg

CT – My HS-CRP Test Results and Summary

I found that I cold adapted fairly quickly – my supposition is that this was based on my strong familiarity with being cold/mildly hypo thermic previously. That said, I had (and still have) very strong bouts of muscle shivering. The initial week, these would last as long as 60-75 minutes as my body would re-heat/defend my core temperature and fire up my furnace. The muscle shivering returned again stronger and with longer duration as I increased the intensity of CT with

colder water.

The results – per the HS-CRP test are ‘**dramatic**’ to say the least. After a **9 month** highly elevated trend, the HS-CRP is down by more than **90%** and a level lower than the first time it was ever tested!

3/2012 – PaleoFX event – **5.4**

4/2012 – Post CT/Magnesium – **0.44**

Note: I will be completing further testing for magnesium deficiency via hair analysis in May along with an RBC test for key minerals and ratios. Look for a future blog post/discussion on the results of that.

Leave a Comment

More Support: Webinars by Dr. Kruse

- Factor X (May 2012)

Your Shopping List for this Post



<p>US Wellness Meats</p>	<p>Men's HeatGear® Compression Short Sleeve T-Shirt Tops by Under Armour</p>	<p>Uvex S0360X Ultra-spec 2000 Safety Eyewear</p>
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<p>Theramed Back Pad Dual-Temp Cold Pack</p>	<p>Now Foods ZMA</p>	<p>Life Extension Neuro-Mag Magnesium L- Threonate</p>

		
<p>Now Foods Neptune Krill Oil</p>	<p>Life Extension Super Bio-curcumin</p>	<p>Life Extension Optimized Resveratrol</p>

- [View All Recommended Products from the Cold Thermogenesis Store](#)
- [View The Epi-Paleo Store](#)

Additional Resources

- [Gnolls.org Opens The Door To Obesity Fight](#)
- [The Cold Thermogenesis Protocol](#)
- [Cold Thermogenesis 6: The Ancient Pathway](#)

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- The Epidemic of Magnesium Deficiency – Magnesium

Deficiency in Type 2 Diabetes

- A Magnesium Deficiency Increases Cancer Risk Significantly
- MAGNESIUM IN ONCOGENESIS AND IN ANTI-CANCER TREATMENT: INTERACTION WITH MINERALS AND VITAMINS
- Magnesium Deficiency and the Mind/Body Connection – Glucose Regulation and Inflammation
- Inflammation and Pain Management with Magnesium – Magnesium for Life
- Magnesium Man Blog – Morley Robbins
- Magnesium Deficiency ‘The Stealth Bomber in Chronic Disease’ – Podcast
- “Magnesium Medicine” – Mark Sircus, AC., O.M.D
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- Cold-Activated Brown Adipose Tissue in Healthy Men
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