Fitness Strategies That Are Creating World-Class Champions

Analysis by Dr. Joseph Mercola Fact Checked

February 12, 2023

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STORY AT-A-GLANCE

- Sam Calavitta, aka Coach Cal, founder of The Treigning Lab, has put together much of the health science I've been teaching over the years into a unique training program that is getting extraordinary results
- The most central strategies are those that optimize ATP production (energy production) and mitochondrial function
- ATP (the energy currency of your cells) can be produced in three ways: aerobically in the mitochondria, anaerobically in the cytosol, or through phosphocreatine. Of these, the phosphocreatine pathway is the most effective in terms of boosting athletic performance, as it allows your body to use D-ribose, adenosine and phosphate to form ATP within your body at a higher level. Near-infrared light also boosts ATP production
- Mitochondrial function must also be optimized, or energy production cannot be elevated. Effective strategies include near-infrared sauna therapy and intermittent fasting
- Other strategies that help optimize fitness and athletic performance include sun exposure, boosting NAD+ with low-dose niacinamide, a cyclical ketogenic diet, intermittent fasting or time-restricted eating, addressing elevated iron levels, methylene blue and molecular hydrogen

In the video above, I interview Sam Calavitta, aka Coach Cal, founder of The Treigning Lab. We met through a biohacking conference in the fall of 2022. One of the organizers of the event introduced me to Miesha Tate, a professional and former Ultimate Fighting Championship (UFC Women's Bantamweight champion) and mixed martial artist who in turn introduced me to Coach Cal.

He's taken much of the health science I've been teaching over the years and put it together into a revolutionary training program that is producing extraordinary results. Here, we'll review some of the strategies that can take your fitness to the next level.

Coach Cal's Unique Approach Gets Results

Calavitta himself wrestled until he turned 40, at which point he switched to Ironman competitions, which is an entirely different paradigm in terms of energy expenditure.

> *"So, I had to figure out my energy systems,"* Calavitta says. *"I used a lot of the things that you have been preaching ... in particular [strategies for] mitochondrial optimization.*
>
> *I brought a lot of those practices into the sports, I brought them into Ironman, and I was able to hybridize Ironman training along with combat sports and wrestling, and came up with a very unique way of training athletes ...*
>
> *There's a plethora of athletes who are seeking to get in to train with us ... A huge portion of the UFC and Bellator athletes are my athletes ... Almost the entire Olympic wrestling team, which this year [2022], won the first world title in wrestling in many years, beating out Russia [and] Iran.*
>
> *Wrestling and combat sports are very weight-specific programs which tie right into many of your practices with intermittent fasting, with your meticulous directions on cyclic ketogenic diet, not overdoing it and things like that ...*
>
> *The Treigning Lab is known for some of the most magnificent body transformations ever seen. And ... I appreciate your approach, [which is] 'Treat the body the way God intended, and then sit back and watch the miracle take over.' And it's been really, really neat ...*
>
> *These athletes are the toughest athletes in the world, but they're very cerebral and they appreciate being guided by expertise. And a lot of that expertise is directed by many of the things that you've taught me.*
>
> *This is a young gal who fights in an organization overseas [see video for image]. We were able to bring her down from about 154 pounds to 125 pounds without ever bastardizing her hydration status or her caloric intake, all through many of the principles that were found in your book, 'Fat for Fuel.'"*

'Proof of the Pudding'

Calavitta shows several other pictures of amazing body transformations in the video.

> *"That's the influence that you've had on a huge plethora of different athletes,"* he says. *"You do a lot of health and wellness for the general population, but I don't think you really understand the effect you've had on the world-class athletes ... those who are truly listening to and appreciate the educational pieces that you put out daily, and your steadfast fight to let people facilitate the means to allow the human body to do what it can do."*

Frankly, I was unaware that so many elite athletes were using these principles that I've been teaching, and it was a real treat to see the kinds of results a person can get if they're dedicated.

The good news is, you don't have to be a professional athlete to get similar results — you just have to have a willingness to implement and follow through. If you've ever doubted or wondered what the strategies we discuss here can actually do for you, I think you'll be inspired by Calavitta's testimony, and the before-and-after pictures of his roster of athletes.

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Optimizing Energy Production

So, what are some of the most effective strategies in Calavitta's toolbox? The most central strategies are those that optimize ATP production (energy production) in the mitochondria. This is a no-brainer, since you need optimal energy production in your cells order to perform at an optimal level physically.

> *"Basically, everything came down to 'How can I optimize ATP production in these athletes, to allow their bodies to overtake that of an opponent?'"* Calavitta says. *"It came down to understanding that ATP could be produced in three main ways. One, aerobically in the mitochondria. Two, anaerobically in the cytosol. Or three, through phosphocreatine."*

Phosphocreatine is the phosphorylated form of creatine, which rapidly mobilizes reserves of high-energy phosphates in your skeletal muscle, heart and brain. Those phosphates, in turn, recycle adenosine triphosphate, which is the energy currency of your cells.

Of these three ATP producing pathways, the phosphocreatine pathway is the most effective in terms of boosting athletic performance, as it allows your body to use D-ribose, adenosine and phosphate to form ATP within your body at a higher level. That said, your mitochondrial function must also be optimized, or this energy boost cannot occur.

Near-Infrared Sauna Therapy for Mitochondrial Optimization

There are several ways to optimize mitochondrial function, but one of the most effective, as it provides more than one benefit, is near-infrared sauna therapy. First of all, it's an effective detox strategy. Most people have toxins in their system — plasticizing chemicals, pesticides, flame retardants and heavy metals — and they need to be expelled.

Calavitta uses the Sauna Space near-infrared sauna bulbs with a wavelength of 700 to 960 nanometers. He also appreciates the science of electromagnetic field (EMF) damage, so he uses an EMF-free setup. He explains:

> *"I didn't do that until I read your book 'EMF*D.' But when I understood what actually happens — the EMF damage, due to the voltage-gated calcium channels in the body, and the [subsequent] necrosis and breakdown of the cell, I thought 'I can't be using this with my athletes and having their cells break down.'*
>
> *I want them in a state of autophagy, mitophagy and whatnot, to be able to clean out, replicate and rebuild. So, I took the far-infrared sauna, as you suggested, and outfitted it with seven of the Sauna Space bulbs, so I can get it up to 150 degrees."*

Autophagy is a really important built-in function your body has that most people fail to optimize. "Auto" means "self" and "phago" means "eat." So, autophagy is the process by which your body removes damaged cellular parts so that they can then be replaced. Autophagy is activated through fasting, exercise and near-infrared sauna, and when you're doing all three, you end up with a very efficient self-healing process.

Optimizing ATP Output With Photobiomodulation and Nutrition

Near-infrared sauna also has powerful photobiomodulation effects. As explained by Calavitta:

> *"Near-infrared light works in conjunction with chlorophyll to ... convert ubiquinone to ubiquinol in the body, thereby allowing the ubiquinol to go through the bloodstream and be*

used in a very effective manner in the electron transport chain ...

So, what I did is, I took the near-infrared light and I developed a protocol to use diindolylmethane — which is a metabolite of indole-3-carbinol, sulforaphane and chlorophyll [all of which are found in cruciferous vegetables] — and to administer the red [near-infrared] light in a very calculated fashion to put out a larger ATP production.

People say, 'How do you know that?' The thing is, I'm a mathematician, so I took your interview with Dr. Shallenberger, and I wrote the algorithm with a metabolic cart, to actually be able to calculate mitochondrial function and discreet ATP output within the human body. So, I'm not just telling you what we do with the red light, I'm telling you we can measure it, because what is measurable can be improved."

Low-Dose Niacinamide Boosts NAD+

Calavitta also uses **low-dose niacinamide** (not niacin), 50 milligrams three times a day (or four times a day for bigger athletes), to boost nicotinamide adenine dinucleotide (NAD+), a crucial signaling molecule believed to play an important **role in longevity**.

It's also important in the **building and maintenance of muscle mass**. When the NAD+ salvage pathways in muscle are impaired, mitochondrial dysfunction and decreased muscle mass ensue.

Many athletes get sold on intravenous NAD, which is extremely expensive, but oral supplementation with niacinamide has also been shown to significantly increase NAD, and at a fraction of the cost. Results doing this, he says, has been nothing short of spectacular.

"I implemented a very strict protocol, as per your suggestion, of one-sixty-fourth teaspoon, three times a day for the athletes," Calavitta says.

"Their energy levels, which I have measured on the metabolic carts — in the way of resting metabolic rate, resting energy expenditure, metabolic efficiency crossover, as well as fat substrate and carbohydrate substrate use for fuels — have all been skyrocketing as a result of using this practice. My athletes call it the fountain of youth, and I myself use it."

Sun Exposure for Vitamin D Optimization

Calavitta's athletes also get an hour of sun exposure every day, which is the easiest and most effective way to optimize your vitamin D level, and then some. I think it's one of the top two or three things everyone needs to do.

"I understand completely how this is going to be a game changer in my guys. I can't have them going out there with low vitamin D. For my athletes, I want their vitamin D [level] between 80 ng/mL and 100 ng/mL.

I've actually seen athletes whose vitamin D levels were 21 ng/mL, and when we raised them up to the 80s and 90s, their performance absolutely went through the roof and were completely optimized. We try to steer clear of the supplementation with the D3-K2-magnesium cascade, if we can ... So many people don't understand that the D3 without the K2 is not going to end up, possibly, in the right tissues."

Putting It All Together for Optimal Fuel Synthesis

Another practice Calavitta's athletes have embraced is the cyclical ketogenic diet detailed in my book, "**Fat for Fuel**."

"High-level athletes, with the amount of energy expenditure they have, there are certain things that have to be cycled in, otherwise we're going to get a down-regulation in thyroid hormone, and I can follow that directly," Calavitta says.

> *"By using the cyclical ketogenic diet and the intermittent fasting protocol, along with fasted training, the red-light therapy and the nutrients, we're able to get some really fantastic pathways of fuel synthesis.*
>
> *A lot of your fuels don't just come from carbohydrates or glycolysis, but through ... thiamine. Basically, what people don't understand is that through many different pathways, even to be able to work within the mitochondria ... you have to have thiamine in there ...*
>
> *So, all of these principles, the supplementation, [it's about] reaching the mitochondria from an optimized performance of the facilities that are available to it ...*
>
> *One of the first things that I do with my athletes is reduce the linoleic acid (LA) [and] balance the ratios between omega-3s and omega-6s ... We're supposed to have, at best, a 3-to-1 [omega-3 to omega-6] profile. An outlier would be 6-to-1, and Americans are on average, anywhere from a 25-to-1 to 50-to-1 ratio. So, that's a big one."*

He also checks iron levels to make sure they're not elevated and he understands the important interplay and symbiotic relationship between **iron and copper**. As detailed in previous articles, more often than not, if you're told you have low iron because your ferritin level is low, the real problem is copper deficiency, as copper deficiency prevents the proper recycling of iron.

Depending on their individual situation, an athlete may be placed on a blood donation schedule if iron is high, and if low on copper, copper-rich foods are added to their diet. Whole food vitamin C is an excellent choice if your copper needs a boost, such as acerola cherry and amla berry.

> *"So, being able to put all these pieces together, at the level that we have here ... with all of the means that we've mentioned on this podcast, we're able to see a complete picture of an individual, to enable their God-given potential to go to a level that is basically unsurpassable,"* Calavitta says.

Other Tips and Tricks

Two additional strategies Calavitta has embraced are:

- Supplementing with methylene blue, which I think is one of the most exciting products available, with respect to mitochondrial function, especially for those who are tired all the time.

  While it does not address the foundational cause of the problem, it's a phenomenal crutch when you're in a pinch or just need to get over a hump, as results are felt very rapidly, typically well within a couple of hours. As noted by Calavitta, its main benefit is its ability to bridge the gap when there's a breakdown in the electron transport chain.

- Supplementing with molecular hydrogen tablets, to neutralize the free radical damage from ionized radiation during flights. It also helps athletes attenuate jet lag and water retention or edema. "People don't understand how much oxidative damage actually happens when you're flying," he says. "I'm in a unique position because I measure everything and I'm able to see it. And I'm able to see the [decline in] performance that comes from it."

More Information

To learn more about Coach Cal and all the performance and recovery tools he uses, check out **TreigningLab.com** and sign up for his newsletter. He also has a **Treigning Lab phone app**, available for both Apple and Android.

The Treigning Lab Recovery Center, located in Placentia, California, offers a variety of services, including hyperbaric oxygen therapy, full body cryotherapy, infrared light therapy, compression boots, hair and tissue mineral analysis and percutaneous hydrotomy.

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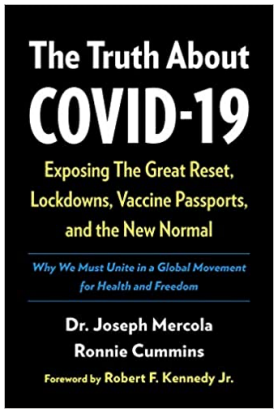

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che6583

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Wow! Dr Mercola's best practices organized and detailed by an elite athlete and trainer. Todays article may be the best compilation ever. Definitely worth downloading the pdf for reference. And thank you GUI for all the additional resources and information. Best info and recap ever!

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steelj

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Yes, this is very significant. Regardless of the issue, I always think - what are those who are the best in the world, and whose livelihoods depend on their methods, doing? Not that they're always right, for example Tom Osborne elevated Nebraska football largely because the whole institution of competitive football didn't understand the importance of lifting weights, which was obvious but the conventional wisdom couldn't see it at the time. Still, always worth a look at what the pros are doing.

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Powerful research for physical conditioning. Mitochondria are especially abundant in the organs and tissues of the body with higher energy requirements. Supplements and lifestyle changes can improve mitochondrial health by increasing the availability of proteins needed for ATP production (activation of AMPK, PCG-1a, NAD+, SIRT1. They also act as antioxidants, helping mitochondria to reduce oxidative stress and other important functions, including: signaling, differentiation, programmed cell death and control of cell growth. Related to Dr. Mercola's reports additional support for mitochondrial function includes acetyl-L-carnitine, Q10, pyrroloquinoline quinone, vitamin C, choline, NADH, -lipoic acid, -ketoglutaric acid, resveratrol, N-acetylcysteine, magnesium and a quality multivitamin and mineral complex.

In the following link more references: 33 NATURAL WAYS TO IMPROVE MITOCHONDRIAL FUNCTION.--- selfhacked.com/blog/natural-ways-to-improve-mitochondrial-function/ (2022). Regarding Q10. The most common metabolic and mitochondrial diseases (MMDs) are cardiovascular diseases, cancer, respiratory diseases, diabetes and chronic kidney diseases are a great epidemic.

Prevention of the development of mitochondrial EMM by coenzyme Q 10 is one of the basic forms of protection of human health. www.sciencedirect.com/.../B9780128198155000495 (2022).--- Targeted mitochondrial therapy with CoQ10 supplementation and rehabilitation may improve mitochondrial health and speed recovery for patients after COVID-19. pubmed.ncbi.nlm.nih.gov/34967652 (2022).--- Putting two things together: A ketogenic diet combined with exercise can improve mitochondrial function and metabolic health. journals.physiology.org/.../ajpendo.00305.2020 (2020).---

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NRPT is a combination of nicotinamide riboside and (NAD+), found in milk, and pterostilbene, a polyphenol found in blueberries, was administered to a population of 120 healthy adults between the ages of 60 and 80. The study consisted of three treatment groups: placebo, a recommended dose, and another double-dose group. The concentration of NAD + increased by approximately 40% in the group and approximately 90% in the double administration group, after 4 weeks. www.nature.com/.../s41514-017-0016-9 (2017).--- Fasting, sports and nutrition are basic pillars for longevity.

To consider also certain genes. Klotho, a natural human protein, has great potential to delay these diseases of aging. Exercise is related to the Klotho gene for longevity. Membrane Klotho acts through (FGF)-23, and regulates nitric oxide produced in the endothelium. Inactivity accelerates aging and its consequences, it is suggested as one of the main reasons for the increase in disease and mortality. The circulating s-klotho response has been shown to depend on the level of aerobic fitness: s-Klotho values were significantly higher in trained compared to untrained individuals.

The present review suggests that aerobic exercise delays the aging process by increasing Klotho gene expression, which, in turn, reduces ROS damage to the cell. pdfs.semanticscholar.org/3499/02f79e6cef77bd5b6785cc392a5455438f0d.pdf (2015).--- www.ingentaconnect.com/contentone/ben/cas/2018/00000011/00000002/art00.. (2018).--- shapeamerica.tandfonline.com/doi/abs/10.1080/02640414.2019.1626048#.Xj.. (2019).---- www.nature.com/.../s41598-022-22123-1 (2022).--- www.frontiersin.org/.../full (2022)

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Loss of cognition, kidney failure, diabetes, and cancer are things thought to be associated with the body's production of this Klotho protein. Klotho deficiency exhibit an aging phenotype. www.nature.com/.../tp201581 (2015).----- www.ncbi.nlm.nih.gov/.../PMC4176932 (2015).---- www.ncbi.nlm.nih.gov/.../PMC5592833 (2017).--- www.mdpi.com/.../705 (2022) .--- www.mdpi.com/.../239 (2023).---- Klotho has been linked to the prevention of muscle atrophy, osteopenia, and cardiovascular disease. Similar anti-aging effects have also been attributed to exercise and physical activity, helping to regenerate muscle www.ncbi.nlm.nih.gov/.../PMC4060456 (2014).---

Low serum Klotho associated with all-cause mortality among a nationally representative sample of US adults and as an effective biomarker to characterize inflammatory states academic.oup.com/biomedgerontology/article/77/3/452/6386302?login=fals.. (2022).--- www.tandfonline.com/.../07853890.2022.2077428 (2022).--- Dietary antioxidants were positively correlated with plasma S-Klotho levels after controlling for covariates. www.hindawi.com/.../3524611 (2023).---- Current experimental evidence suggests that the ketogenic diet may positively impact mitochondrial bioenergetics, mitochondrial ROS/redox metabolism, and mitochondrial dynamics. www.sciencedirect.com/.../S1357272521001308 (2021)

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Each year, more than 70% of disease-related deaths worldwide are due to chronic noncommunicable diseases; the deadliest is cardiometabolic syndrome. Cardiometabolic diseases, including atherosclerosis , hypertension, obesity, type 2 diabetes mellitus , metabolic syndrome, metabolic-cognitive syndrome, and cerebrovascular dementia , are associated with age and have in common dysregulated mitochondrial function and levels nutrient atypicals, immune, neurotrophic and metabotrophic. Berberine increased Klotho expression and protected against cardiac senescence. Berberine partially activated the Klotho/SIRT1 signaling pathway to protect against cardiac senescence.

Ferulic acid and berberine, via Sirt1 and AMPK, may act as cellular cleansing promoters of healthy longevity www.sciencedirect.com/.../S0006295221004251 (2021) www.sciencedirect.com/.../S0753332222004863 (2022) openheart.bmj.com/.../e001801.abstract (2022) D-ribose is essential for energy metabolism and forms the backbone of the vital ATP molecule that cells use to transfer energy. Cellular damage from oxidants, inflammation, and ischemia/reperfusion damage cause loss of ATP and increased vulnerability to disease.

Research has shown that taking ribose has a positive effect on ATP production in all types of muscle fibers, especially the heart. Ribose supplementation increases de novo ATP production via oxidative phosphorylation by more than 300 percent. Ribose also activates the salvage pathway, causing nucleotides to revitalize in ATP manufacturing by more than 500 percent. www.ncbi.nlm.nih.gov/.../PMC5959283 (2018) .--- www.spandidos-publications.com/.../etm.2021.9927 (2021) .--- www.ncbi.nlm.nih.gov/.../PMC8573443 (2021) .---

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Pyrroloquinoline quinone (PQQ) is a large component of mitochondrial stimulation. PQQ not only protects mitochondria from oxidative stress, but also promotes the spontaneous generation of new mitochondria within cells in the aging process, a process known as mitochondrial biogenesis. PQQ is also a powerful antioxidant capable of carrying out 20,000 catalytic conversions. PQQ is a compound found in trace amounts in plant-based foods: michaelrucker.com/.../pqq-foods . PQQ provides considerable benefits in conditions revolving around low mitochondrial function including aging, many brain and neurological diseases (for example, and many other chronic diseases).

degenerative diseases.) PQQ combined with coenzyme Q10 has shown better results. Pyrroloquinoline-quinone is more than an antioxidant, it is important in health and disease prevention michaelrucker.com/.../pqq-foods (2020).--- www.mdpi.com/.../1441 (2021).-- www.ncbi.nlm.nih.gov/.../PMC8829629 (2022).--- www.nature.com/.../s41514-022-00083-0 (2022) selfhacked.com/.../pqq-review (2022).---------- Glycine and N-acetylcysteine (GlyNAC) supplementation in older adults improves glutathione deficiency, oxidative stress, mitochondrial dysfunction, insulin resistance, inflammation, physical function, and hallmarks of aging.

academic.oup.com/biomedgerontology/article/78/1/75/6668639?login=false (2022) .----- www.mdpi.com/.../154 (2022).----- High-intensity physical training not only induces multiple adaptations that enhance the ability to counteract exercise-related ionic shifts, but also potentiates the effect of N-acetylcysteine on ionic shifts during exercise. www.mdpi.com/.../53 (2022)

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Gui, what a great team up! A fellow researcher who not only puts into action the valuable research and data Doc shares, but it's put into practice by many individuals with their unique metabolisms and personal histories, strengths, weaknesses and carefully tracked and monitored. Given the general public in the state's hero worship of athletes if anything is to move Doc's efforts to share true and solid health building, this is an area where solid basics should flow out and flourish in the General Public. Successful results in true health are real wealth. All the Dr. Fraudci or his mini-me's can dry up and blow away.

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Just, you are precise and concise in your words. Dr. Fraudci, as you have described him very well, needs a mental and physical revision for his new stage. Perhaps the "enclosure" can favor a healthy meditation. Examples of Overcoming: 5 INSPIRING ATHLETES WHO OVERCAME DISABILITIES. www.beliefnet.com/entertainment/sports/galleries/5-inspiring-athletes-.. .---------- Some more practical tips: Traditional aerobic exercise increases mitochondria, but this effect is magnified if we add strength work. High intensity intervals are also very effective for generating new mitochondria and optimizing their function.

MITOCHONDRIA - WHY THEY'RE IMPORTANT AND WHAT THEY NEED TO FUNCTION. Dr Erica Peirson. www.peirsoncenter.com/articles/mitochondria-why-theyre-important-and-w.. HOW DOES MITOCHONDRIA PRODUCE ENERGY? www.youtube.com/watch .-----https://youtu.be/39HTpUG1MwQ .----10 BEST SUPPLEMENTS FOR MITOCHONDRIAL SUPPORT. vitalizedfuture.com/best-supplements-for-mitochondria .--- VITAMINS IN MITOCHONDRIAL FUNCTION. In the biosynthesis of the component of the mitochondrial respiratory chain, coenzyme Q, depends on vitamins B 2, B 6, B 12, folic acid, pantothenic acid, niacinamide and vitamin C.

Vitamins B 1, B 2, B 6, the Niacin , biotin, folic acid, and pantothenic acid are important for metabolic pathways in mitochondrial respiration and energy production. Vitamins C, E, niacin and folic acid belong to effective free radical scavengers, they prevent the formation of mitochondrial oxidants and mitochondrial aging. Some mitochondrial diseases are related to vitamin deficiencies and can be improved with vitamin supplements. link.springer.com/.../978-1-4020-6714-3_21

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FATIGUE AND ENERGY MITOCHONDRIA AND THE 8 VITAMIN "HELPERS". Bogdan Popa, MD What are the Co-Factors "Helpers" needed for the mitochondria to make energy? 1. B-complex, meaning all of the B vitamins, but especially B1, B2 and B3. 2. Magnesium. 3.Zinc. 4. Manganese. 5. Glutathione. 6. NAD (derived from Vitamin B3).. 7. Alpha Lipoic Acid. 8. Carnitine (shuttles fat) www.ivforlife.com/fatigue-and-energy-part-mitochondria-and-the-vitamin.. MITOCHONDRIAL DYSFUNCTION AND CHRONIC DISEASE: TREATMENT WITH NATURAL SUPPLEMENTS. www.ncbi.nlm.nih.gov/.../PMC4566449 .-- DIETARY POLYPHENOLS AND MITOCHONDRIAL FUNCTION: ROLE IN HEALTH AND DISEASE.

The mechanisms underlying the polyphenols' beneficial effects include, among others, the attenuation of oxidative stress, the regulation of mitochondrial metabolism and biogenesis and the modulation of cell-death signaling cascades, among other mitochondrial-independent effects. The understanding of the chemicalbiological interactions of dietary polyphenols, namely with mitochondria, may have a huge impact on the treatment of mitochondrial dysfunction-related disorders. www.ingentaconnect.com/content/ben/cmc/2019/00000026/00000019/art00003 (2019)

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Gui, the cure for Fraudci is his "retirement" is he should be put in a Round Room and told to go find the corner.

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Just you are at the peak of creativity and originality. Fauci who is a sure liar tells us that he has found the corner Ja, Ja. Ja !!!!! .----------Carnosine is a dipeptide composed of beta-alanine and L-histidine and is present in skeletal muscle. Normally the limiting amino acid is beta-alanine. Oral beta-alanine (BA) supplementation can induce carnosine overload and this places it as a limiting factor in carnosine synthesis. However, the effect of L-histidine (HIS) supplementation on carnosine levels has not been established. In a study whose objective was to assess: 1) whether supplementation with HIS can cause an increase in carnosine; and 2) whether the combination of BA + HIS supplementation is more efficient than BA supplementation alone.

Men and women participated and were divided into three groups based on the supplementation received: BA (6g/day), HIS (3.5g/day) and BA+HIS. Before (D0), after 12 days (D12) and 23 days (D23) of supplementation, the carnosine content in soleus and gastrocnemius was assessed by H-MRS and blood samples. Muscle samples were obtained by biopsy on D0 and D23 of the vastus lateralis. The results showed that both BA and BA+HIS increased carnosine concentrations in the studied muscles, with no differences between conditions. In contrast, carnosine levels in the HIS group were not altered.

The authors confirmed that it is beta-alanine, and not histidine, that is the limiting factor in carnosine synthesis in skeletal muscle. Anserine (-alanyl-N-methyl-histidine) and ophidine/balenin (-alanyl-N-methyl-histidine) are two methylated analogues of carnosine, collectively referred to as histidine-containing dipeptides (HCDs). HCDs are present primarily in skeletal muscle and neuronal tissue and, to a lesser extent, in the heart, liver, and kidneys. Oral alanine supplementation is a popular ergogenic strategy in sports because it can increase intracellular carnosine concentration and improve high-intensity exercise performance.

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Guillermou

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The concentration of carnosine and anserine in skeletal and cardiac muscle is dependent on the circulating availability of -alanine, which in turn is controlled by -alanine degradation in the liver and kidneys. The present study highlights the importance of -alanine transamination in tissue HCD homeostasis and thus contributes to a better understanding of mammalian -alanine and carnosine metabolism. www.ncbi.nlm.nih.gov/.../PMC5009790 (2016) Studies have shown that -alanine has an important ergogenic role in sports performance. Weeks of beta-alanine supplementation significantly increase muscle carnosine concentrations.

ijn.zotarellifilhoscientificworks.com/index.php/ijn/article/view/227 (2022) A good dose of essential amino acids combined with beta-alanine to promote the production of carnosine, which neutralizes acid and helps restore proper pH levels in the muscle, thus increasing endurance and delaying the onset of muscle fatigue. In the human body, carnosine concentrations are highest in muscle tissue. However, brain tissue also has fairly high concentrations. The brain may particularly need the antiglycosylation and antioxidant effects that carnosine provides. Glycosylation, oxidative stress, inflammation secondary to oxidative stress, and protein crosslinking methylglyoxal, a product of uncontrolled glucose oxidation, contribute to the progression of Alzheimer's disease www.sciencedirect.com/.../S030100821830145X (2019) In high intensity efforts, and in continuous intermittent exercise, the beneficial evidence of Beta Alanine supplementation is strong.

In sports modalities, the evidence must be analyzed separately for each sport modality. jscr/Abstract/2019/01000/Ergogenic_Effects_of___Alanine_Supplementation_on.30.aspx (2019)

Mark as Spam | Posted On 2/12/2023 11:35:30 AM

Like Dislike

Guillermou

Joined On 4/7/2015 8:47:48 AM

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In vigorous exercise above VO2 max, carnitine supplementation stimulates the constant oxidation of free fatty acids. Another factor to take into account is that the concentration of carnitine in the muscle can vary depending on the intensity of the physical exercise. Thus, in low-intensity aerobic exercise, the concentration of carnitine does not change significantly, but during intense physical exercise, there is a decrease in muscle carnitine and its concentration does not normalize until after 1 hour of exercise. finish the exercise. The carnitine content is suggested to improve blood flow and oxygen delivery to muscle tissue through improved endothelial function.

Studies in older adults further showed that carnitine intake can lead to an increase in muscle mass and a reduction in physical and mental fatigue. Based on current studies, a role for carnitine in preventing age-associated muscle protein degradation and regulating mitochondrial homeostasis is suggested. www.ncbi.nlm.nih.gov/.../PMC5872767 (2018) "As an energy consumer, the brain is the most expensive organ we take with us," says Dr. Marcus Raichle, a distinguished professor of medicine at Washington University School of Medicine in St.

Louis. While the brain makes up just 2% of a person's total body weight, it accounts for 20% of the body's energy use, according to Raichle's research. Muscle consumes many more calories than fat tissue just by being alive, even if it's not moving. The heart, brain, kidneys, and liver are also heavy consumers of energy even at rest. The intestinal tract also spends a high amount of calories but only when it deals with digestion. www.ncbi.nlm.nih.gov/.../PMC124895

Mark as Spam | Posted On 2/12/2023 11:36:09 AM

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Guillermou

Joined On 4/7/2015 8:47:48 AM

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Aging and neurodegenerative diseases associated with age are the most important challenges for research. Several lines of evidence implicate that oxidative stress induced mitochondrial dysfunction is one of the main drivers of these processes. The brain requires more energy than other organs in the body, and consumes a large amount of oxygen resulting in excessive production of ROS. Mitochondrial dysfunction and oxidative stress can cause biochemical alterations in biomolecular components that lead to decreased functions of the neuron, therefore its death is attributed to various neurodegenerative diseases such as Parkinson's disease and Alzheimer's disease.

This review focuses on the therapeutic potential of L-carnitine and its derivative, acetyl-L-carnitine against neurodegenerative diseases. www.researchgate.net/profile/Dr-Tr-Parashurama/publication/353486681_P.. 55 (2022).— The International Society of Sports Nutrition established that the substance Creatine improves performance after high-intensity exercises, as well as subsequent recovery and injury prevention. On the other hand, it can be taken clinically in various neurodegenerative diseases, diabetes, osteoarthritis, fibromyalgia, aging, cerebral and cardiac ischemia, and depression, according to the same body.

In addition, he stated that short- and long-term supplementation is safe in healthy individuals. The brain is also positively influenced by creatine consumption, as this organ stores phosphocreatine and uses ATP to function optimally. It also improves cognitive memory and reduces mental fatigue. Creatine can help fight neurodegenerative diseases such as Parkinson's disease, amyotrophic lateral sclerosis (ALS), as well as heart attacks or memory problems related to Alzheimer's.

Mark as Spam | Posted On 2/12/2023 11:36:46 AM

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Guillermou

Joined On 4/7/2015 8:47:48 AM

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L-carnitine deficiency has been observed in many diseases, including organic acidurias, inborn errors of metabolism, endocrine imbalances, liver and kidney diseases. The protective effects of mitochondria-targeted micronutrients hold great promise for the treatment of aging and metabolism-related diseases. Prevention of nutrient deficiencies such as l-carnitine may be beneficial in maintaining metabolic flexibility through optimization of mitochondrial function. L-Carnitine and its role in the aging process. Decreasing mitochondrial function accelerates the aging process. The carnitine content in the tissue decreases with age and this is something that reduces the integrity of the mitochondrial membrane. Certain previous studies in mice have revealed that supplementing with high doses of acetyl-L-carnitine and alpha-lipoic acid leads to reduced mitochondrial breakdown.

Mice that were given them moved more and their memory performance improved. That said, it should be noted that there are no similar studies in humans, although a meta-analysis of double-blind, placebo-controlled trials suggests that acetyl-L-carnitine supplements improve memory function and reduce mental decline in adults aged elderly with mild cognitive impairment and Alzheimer's disease. In the aforementioned studies, subjects received 1,500 to 3,000 mg of acetyl L-carnitine per day for a period of 3 to 12 months. www.mdpi.com/.../htm (2022)

Mark as Spam | Posted On 2/12/2023 11:37:21 AM

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Guillermou

Joined On 4/7/2015 8:47:48 AM

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Carnitine is an ally of brain function and neurodegenerative disorders. Its activity is related to the ability to improve the metabolism of mitochondria and cholinergic neurotransmission (acetylcholine). Acetyl L-carnitine shares with L-carnitine the ability to transport long-chain fatty acids into the mitochondria and it can also "donate" its acetyl group, which is used in the Krebs cycle to obtain energy. Numerous clinical studies have shown that daily ingestion of acetyl L-carnitine counteracts the decline in brain function associated with Alzheimer's and other brain diseases.

www.ingentaconnect.com/content/ben/cpd/2020/00000026/00000012/art00005 (2020) stm.bookpi.org/.../2057 (2021) www.mdpi.com/.../htm (2022) 2. Restricted blood flow to the heart and peripheral arterial disease. Several studies have shown the efficacy of carnitine dietary supplements in treating cardiac ischemia (restricted blood flow to the heart) as well as peripheral arterial disease. Intermittent claudication is due to an inadequate supply of oxygenated blood to the legs, which in turn causes a buildup of acetyl-carnitine in the muscle. Patients afflicted with peripheral arterial disease who develop claudication experience great difficulty exercising and walking, even slowly and for short distances.

Well, research has shown that carnitine improves skeletal muscle performance in the leg. nyaspubs.onlinelibrary.wiley.com/doi/abs/10.1196/annals.1320.008 (2004) www.mdpi.com/.../htm (2020) www.cureus.com/articles/68208-effectiveness-of-propionyl-l-carnitine-s.. (2021) There is also clinical evidence of the efficacy of acetyl-L-carnitine in the treatment of acute ischemic stroke: www.hindawi.com/.../2493053 (2022)

Mark as Spam | Posted On 2/12/2023 11:38:23 AM

Like Dislike

PowerlifterX

Joined On 3/28/2016 10:16:43 PM

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What about Niacin (from inositol hexanicotinate) instead of Niacin or Niacinamide?

Mark as Spam | Posted On 2/12/2023 7:49:35 PM

Like Dislike

Cabochon

Joined On 10/7/2018 12:45:48 PM

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The good news is, you don't have to be a professional athlete to get similar results — you just have to have a willingness to implement and follow through. " We're providing people with the tools and the information they need to absolutely transform their health, and their whole body, and essentially provide this shield against almost all chronic degenerative disease, and even reverse most of the diseases they encounter. But most of them for whatever reason are just not able to integrate it into what they're doing." One of the most important skills expected of nutrition professionals is to be able to "translate" complex biochemical processes into words that the client understands and can relate to their everyday lives, in order to follow the suggested protocol.

If the client "cannot integrate it", then it usually means the professional has not done the job properly. It cannot be assumed that the time and financial resources will be available in every case. Practicalities such as shopping lists, ensuring basic understanding and sources of proteins, carbohydrates , fats and fibre are essential.

The average person hoping to lose weight, for example, will have long been indoctrinated by mainstream medicine that all fats are bad, carbs especially white ones are the mainstay of the diet, organic is a waste of money, factory farm meat is fine, and that cutting calories is the only way to lose weight. They may not understand the importance insulin, of maintaining or increasing muscle mass to maintain weight long term, nor that the type of fuel the body burns is more important than the quantity.

Reply | Mark as Spam | Posted On 2/12/2023 6:48:29 AM

Like Dislike

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epi-cure
Joined On 5/12/2012 7:02:04 PM
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Cabochon I reckon the clients inability to integrate it has as much to do with a state of mind that goes something like: Man, those are some big long words and I'm not a scientist. Do they have a video with cartoons and dirty dancing that make this easier to understand? I can't afford a trainer or life coach to walk me through stuff I don't understand. I'm waiting until they put all this into pill form. Thanks to doc and coach Cal. With this info bundle I might be a nuisance to society a bit longer now than just a day ago.

Mark as Spam | Posted On 2/12/2023 12:45:23 PM

Like Dislike

Cabochon
Joined On 10/7/2018 12:45:48 PM
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Thanks, epi-cure. The professionals role is to use their training, knowledge and understanding to ensure that the client (a) has the resources to put into practice a protocol that may improve their health and fitness within the context of their existing financial and personal circumstances. (b) present information in a way that is helpful to them. The majority of clients seeking help with health issues do not have a degree in biochemistry but simply want a bit of guidance putting theory into practice. Similarly, not every patient who consults their doctor is likely to have a medical degree.

The majority won't require cartoons nor words of one syllable to start improving their health. But you have given me a great idea. Not sure if you are familiar with the Cocomelon series for small children. It is a fun way for them to learn through song and dance. When our little one refused to sleep, we adapted one of the songs to encourage her and it worked! Adults don't require nursery rhymes, but depending on their circumstances, may need a bit of help in the practicalities of putting theory into action. This can be done in various ways: lists, images, calendars, maps and illustrations, associations, visual aids, etc.

Some of us respond better visually, which is why pretty much all websites including this one includes images. When dietary changes are needed, for example, images of healthy choices can be motivating. The Food Pyramid is a good example - as the saying goes, a picture is worth a thousand words. People learn in different ways. There is no particular merit in academic snobbery and sometimes you find that the bigger the word, the smaller the, err, mind (or some other part of the male anatomy, perhaps). https://youtu.be/DruYNHN4FYY

Mark as Spam | Posted On 2/13/2023 6:11:47 AM

Like Dislike

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epi-cure
Joined On 5/12/2012 7:02:04 PM
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Cabochon, do you know the entire 37 minutes by heart yet? Cocomelon where were you half a dozen years ago when this grandpa was trying to convert vegetables into happyfood for his adored grandkids? Curious timing this mention of song as I started out my Mercola portion of the day acknowledging the benefit of cognitive enhancement and behavior modification through song. My excuses offered were as seen through the weak-willed preemptive dismissal eyes of the literal and/or figurative couch potato. I thought it was Henry Ford but just now discovered it was Confucious who is credited with saying those who think they can and those who think they can't are both correct.

Mark as Spam | Posted On 2/13/2023 11:48:55 AM

Like Dislike

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pamanddave
Joined On 6/20/2006 1:38:48 AM
Add as Friend | Send Message

Methylene Blue works on every cell and mitochondria. Increases energy.

Reply | Mark as Spam | Posted On 2/11/2023 11:35:39 PM

Like Dislike

Olitor

Joined On 2/12/2023 3:47:38 AM

Add as Friend | Send Message

Hello pamanddave . What is the dosage for methylene blue? Thank you

Mark as Spam | Posted On 2/12/2023 3:52:45 AM

Like Dislike

Guillermou

Joined On 4/7/2015 8:47:48 AM

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In Dr. Mercola's report: THE SURPRISING HEALTH BENEFITS OF METHYLENE BLUE and in the video of Dr. Mercola: -Methylene blue helps mitochondrial respiration and improves brain energy metabolism. By doing that, it can improve cognitive performance and prevent neurodegeneration -Methylene blue is the parent molecule for hydroxychloroquine and chloroquine, off-patent drugs commonly used to treat not only malaria but also COVID-19 -Emergency rooms around the world use it, as it's the only known antidote for metabolic poisons causing methemoglobinemia, which is when a metabolic poison interferes with the transport of oxygen in hemoglobin -Methylene blue is a hormetic drug, so low doses have the opposite effect of high doses -Low doses, 0.5 mg to 1 mg per kilo of bodyweight, are recommended for nonacute, longer-term treatments.

- Methylene blue may also be effective in cases where poor blood flow prevents the delivery of oxygenated hemoglobin to the tissues. - Sometimes the electron transport chain becomes blocked or impaired, and methylene blue can prevent such blockages. - Methylene blue also activates the Nrf2 pathway and induces the transcription of other cytoprotective enzymes such as glutathione, superoxide dismutase catalase, glutathione peroxidase, phase II enzymes, heme-1 oxygenase, and many others.

Uses include the prevention and treatment of dementia, post-stroke and other brain injuries, cognitive enhancement, and the general optimization of health if you're already healthy -takecontrol.substack.com/.../methylene-blue-health-benefits (2022) - THE SURPRISING HEALTH BENEFITS OF METHYLENE BLUE- INTERVIEW WITH FRANCISCO GONZALEZ-LIMA, PH.D. -www.bitchute.com/.../XVV45KQztfmf (2022) - This review focuses on clinical trials of MB-based therapies applied to brain diseases, imaging and diagnosis of cancer, infectious diseases such as malaria or COVID-19, and cardiovascular diseases. www.pfmjournal.org/.../view.php (2022)

Mark as Spam | Posted On 2/12/2023 4:29:51 AM

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Guillermou

Joined On 4/7/2015 8:47:48 AM

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Methylene blue (MB) is a neuroprotective agent based on the efficacy of this compound demonstrated in models of Alzheimer's, Parkinson's and Huntington's diseases, traumatic brain injury, amyotrophic lateral sclerosis, depression disorders, etc. MB can act as an alternative electron transporter in the mitochondrial respiratory chain in the case of a dysfunctional electron transport chain. It also shows anti-inflammatory and antiapoptotic effects, inhibits monoamine oxidase (MAO) and nitric oxide synthase (NOS), activates signaling pathways involved in mitochondrial pool renewal (mitochondrial biogenesis and autophagy) and prevents aggregation of misfolded proteins.

. its clinical applications. activates the signaling pathways involved in the renewal of the mitochondrial complex (mitochondrial biogenesis and autophagy) and prevents the aggregation of misfolded proteins. link.springer.com/.../S0006297922090073

(2022).----- PROTECTIVE ROLE OF METHYLENE BLUE IN ALZHEIMER'S DISEASE VIA MITOCHONDRIA AND CYTOCHROME C OXIDASE content.iospress.com/articles/journal-of-alzheimers-disease/jad100414 (2015).----- Methylene blue (MB) and photobiomodulation (PBM) are two enhancers of mitochondrial function. MB is a widely studied drug with possible beneficial effects in animal models of brain disease, as well as limited studies in humans.

Similarly, PBM is a non-invasive treatment that promotes energy production and reduces both oxidative stress and inflammation, and has attracted increasing attention in recent years. MB and PBM have similar beneficial effects on mitochondrial function, oxidative damage, inflammation, and subsequent behavioral symptoms. link.springer.com/.../s40035-020-00197-z (2020).------ MAXIMIZING HEALTH SPAN WITH COMPOUNDED METHYLENE BLUE physicianspreferencerx.com/wp-content/uploads/2022/10/PPPI-Newsletter-.. (2022)

Mark as Spam | Posted On 2/12/2023 4:44:38 AM

Like Dislike

Almond

Joined On 2/26/2008 4:23:33 PM

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New paper: An estimated 13 million people worldwide killed by the COVID vaccines That's twice as many as were killed by the virus. In the US, the estimates are 670K Americans killed. Perhaps it's time to declare that the vaccines are a worldwide emergency? stevekirsch.substack.com/.../new-paper-an-estimated-13-million

Reply | Mark as Spam | Posted On 2/12/2023 3:57:08 PM

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TheFacts

Joined On 6/1/2014 10:50:27 AM

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Or at least stop pushing/advertising the damned things!! The CDC and WHO are obviously criminal organizations...

Mark as Spam | Posted On 2/13/2023 10:17:35 AM

Like Dislike

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epi-cure

Joined On 5/12/2012 7:02:04 PM

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Almond it's my turn to suggest an error of omission correction. "That's twice as many as were ALLEGEDLY killed by the virus". I know, you know, that the majority of those "virus" victims were murdered one way or another by their "custodians" and "caretakers".

Mark as Spam | Posted On 2/13/2023 11:55:25 AM

Like Dislike

Almond

Joined On 2/26/2008 4:23:33 PM

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epi and all... We can also consider that many of the testing was inaccurate and the role financial incentives for hospitals played in determining a diagnosis.

Mark as Spam | Posted On 2/13/2023 12:42:18 PM

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BCVaughn

Joined On 11/27/2011 8:51:24 AM

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A lot of great information. Thankfully the article directs people where to go for information and help on integrating these changes, unlike what I heard at the end of the video.

Reply | Mark as Spam | Posted On 2/12/2023 1:06:43 PM

Like Dislike

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mjgill1

Joined On 12/20/2010 5:38:23 PM

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Ok, this guy has either had too much coffee, or is pure energy and passion for his craft. I'll take the latter. Great interview! Being 55 yrs old, I'm not sure how much athleticism is left, but I sure do love golf and sailing. Both require reasonable levels of physical fitness, the more the better. Golf requires more than most people realize in order to be competitive. Living at Latitude 42.3 means very little sun until late May in my area. Cyclical Keto, TRE and lifting weights is already being employed, with KAATSU periodically. Is there one book that you have at this time that could give me the majority of things discussed in this interview in order to vastly improve my health and performance? Again, great interview. Just the passion alone was worth the watch.

Reply | Mark as Spam | Posted On 2/12/2023 6:16:43 AM

Like Dislike

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memeKnight1

Joined On 11/14/2011 7:03:07 AM

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Wow....just wow!

Reply | Mark as Spam | Posted On 2/12/2023 12:43:58 PM

Like Dislike

Almond

Joined On 2/26/2008 4:23:33 PM

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I figured out my energy systems. I need to set my own schedule and plan my own work so I can be productive and not frustrated. I am definitely a night person. I work very hard during the spring, summer and fall. I still work during the colder time of year, but my work changes. It is less physically demanding and I sleep more--or, at least get a full night's sleep. (As I have gotten older, I do not seem to need as much sleep, but I am also healthier.) I do more reading, studying and repair work over the winter, maybe even housecleaning and decluttering (not so much this year!). I do more cooking from scratch, rather than just eating fresh uncooked food from the garden.

Winter is a more restful and less intense time of year with a less strict schedule. Winter is the time of year I do most of my shopping and making sure my pantry and medicinary are restocked for the next year. I still do my morning exercises daily, but less strenuous work and more time for self-care that I may have neglected earlier. Winter is also a time for more socializing--except for very informal picnics and work parties we get together for the rest of the year. Some years, I feel the round of holiday parties is too much, though, after being accustomed to a quieter life. This is the way I like it and it works for me. At my age, I am probably not going to change.

Reply | Mark as Spam | Posted On 2/12/2023 12:50:59 AM

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Guillermou

Joined On 4/7/2015 8:47:48 AM

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Good practices Almond. The answer lies in the individual's circadian rhythm, the 24-hour biological cycle that dictates when we are sleepy and when we feel more energetic. From this, we divided into different chronotypes (morning larks and night owls). Breaking the rhythm (or the biological clock, as it is often called) can have unpleasant effects, ranging from sudden sleepiness to depression. While you are the most creative at night, you are definitely the most efficient in the morning. Studies show that most college students' minds aren't fully alert until later in the morning.

This is also related to the fact that the body clocks of adolescents and young adults (sound familiar?) are often set later than older generations. In fact, a Vice article describes asking a teenager to wake up at 7:30 a.m. m. as the equivalent of asking an adult to wake up at 5 am. m. www.frontiersin.org/.../full .--- www.vice.com/en/article/4x933b/early-morning-classes-are-bad-for-colle.. .---- Your genetics may help explain whether you prefer dawn or dusk. The research review suggests that ambitious and highly motivated people are more likely to be active earlier in life.

Of course, your personality traits don't necessarily cause you to get up early. You could very well make a habit of getting up early because that is what society requires for success. One study noted an association between sleep chronotype and physical activity. Early risers tended to be more physically active, while night owls tended to be less. Male night owls also spent more time sedentary. The study authors did not reach any conclusions about whether physical activity levels can affect their chronotype. www.healthline.com/health/sleep/night-owl-vs-early-bird#night-owls

Mark as Spam | Posted On 2/12/2023 5:48:09 AM

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Guillermou

Joined On 4/7/2015 8:47:48 AM

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Research shows that morning versus evening types display a classic left-brain/right-brain split. For about half of us, this isn't really a problem. It is estimated that around 50% of the population is not really oriented in the morning or at night, but somewhere in between. However, about one in four of us tend more to be bright-eyed early risers, and another in four are night owls. For them, the effects can go beyond falling asleep in front of the TV at 10 p.m. m. or being chronically late for work. Research shows that morning versus evening types display a classic left-brain/right-brain split: more analytical and cooperative versus more imaginative and individualistic.

Morning people set higher goals, plan more for the future, and have a better sense of well-being Numerous studies have found that morning people are more persistent, self-directed, and likable. They set higher goals, plan more for the future, and have a better sense of well-being. And compared to night owls, they are less likely to be depressed, drink or smoke. While early risers may achieve more academically, night owls tend to perform better on measures of memory, processing speed and cognitive ability, even when they have to perform those tasks in the morning.

Night people are also more open to new experiences and seek them out more. They can be more creative (although not always). And contrary to the maxim ("healthy, wealthy and wise"), a study showed that night owls are just as healthy and wise as early risers, and a bit wealthier. www.bbc.com/worklife/article/20171114-why-you-shouldnt-try-to-be-a-mor..

Mark as Spam | Posted On 2/12/2023 5:48:44 AM

Like Dislike

Guillermou

Joined On 4/7/2015 8:47:48 AM

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Dopamine has been shown to have circadian-like activities in the retina, olfactory bulb, striatum, midbrain, and hypothalamus, where it regulates and is regulated by clock genes in some of these areas. Dopamine is essential for the mechanisms that maintain the proper rhythm of these five areas of the brain. A group of Spanish researchers has discovered a new function of the neurotransmitter dopamine in the control of sleep regulation. Dopamine acts on the pineal gland, which is critical in dictating the "circadian rhythm" in humans, the series of biological processes that allows brain activity to adapt to the time of day (i.e., light and dark cycles).

. The pineal gland translates the light signals received by the retina and released at night and helps regulate the body's metabolic activity during sleep. . When dopamine interacts with its receptors, it inhibits the effects of norepinephrine, which means a decrease in the production and release of melatonin. Dopamine receptors only appear in the pineal gland towards the end of the night, when the dark period closes, and is an effective mechanism to stop melatonin production as the day begins and to 'wake up' the brain.

Therefore, the researchers thought that this protein may be important in the circadian rhythm, your body's daily protein cycle that regulates daily patterns of eating, sleeping, body temperature, and other functions. During the night, the pineal gland produces a hormone called melatonin that causes sleep. Melatonin is produced in response to another hormone called norepinephrine. www.eurekalert.org/.../773506 .--- www.livescience.com/21050-feel-good-brain-chemical-s-role-in-sleep.htm.. .---

Mark as Spam | Posted On 2/12/2023 7:21:37 AM

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Guillermou

Joined On 4/7/2015 8:47:48 AM

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Changes in the function of the dopamine system over time have implications for diurnal effects on dopamine-dependent learning, sleep/wake behavior, locomotor activity, reward. Controlling the production of the sleep hormone (melatonin) at the end of the day and the wakefulness hormone (dopamine) in the morning, will take care of lowering our body temperature and our heart rate at night, and even control memory consolidation during our sleep. An important element will help our biological clocks to synchronize with a 24-hour rhythm: light. Our sleep is made up of a series of cycles of approximately 90 minutes, ranging from 4 to 6 cycles per night.

Each cycle is made up of different phases: - Light sleep, which lasts about 20 minutes. - Deep sleep, which is very restful. - REM sleep (rapid eye movement), which is the period in which we dream To optimize your sleep, it's important that the time we fall asleep is as close as possible to the time we naturally begin our first cycle. In the morning we need dopamine and norepinephrine, which will be our basis to wake up and motivate ourselves. At night, we need serotonin and melatonin, which are responsible for calming and regulating sleep.

That is why it is necessary to prioritize a diet that enhances the production of these neurotransmitters at the right times of the day. www.pnas.org/.../pnas.1407935111 .---- yuka.io/.../nutrition-sleep .----- www.proquest.com/openview/078d8b37c7e063f80bf88ec6523741ff/1?pq-origsi.. (2023).---- The norepinephrine and epinephrine sleep period was characterized by a paucity of peak dopamine secretion. . These interrelationships demonstrate a common regulatory mechanism that governs sleep/wake and/or rest/activity in plasma catecholamine levels. link.springer.com/.../BF03351014

Mark as Spam | Posted On 2/12/2023 7:21:55 AM

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Guillermou

Joined On 4/7/2015 8:47:48 AM

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Cities need the contribution of nature. Our state of health is conditioned by almost 25% by the environment in which we live. People living and children growing up in urban contexts are increasingly exposed to high levels of air and noise pollution, reduced physical activity and restricted contact with nature. Urbanization continues, and up to 70% of the population is expected to live in urban areas within the next 15 to 20 years. The design and management of public space can have significant impacts not only on health and well-being but also on learning, and can influence social cohesion and equity issues in communities.

Public spaces can be designed as natural and pacified spaces to provide restorative and stress reduction, promote physical activity, play, and encourage experimentation, creativity, and critical skills in a sustainable way. In cities air pollutants are given in the lungs. Particles of polluted air cross the barrier of the lungs and navigate through the bloodstream to other organs such as the kidneys, heart, brain and bones, where they are stopped by other filters or attacked and stored by our immune system.

This accumulation of foreign particles generates a small chronic inflammation that is harmful to our body. Recently, it has been observed that these polluted air particles can also reach the placenta and the fetus, and even our brain. Various studies have shown that noise exposure is related to stress/annoyance, sleep disorders, cardiovascular problems, diabetes and obesity, premature deaths, and impaired cognitive function.

Mark as Spam | Posted On 2/12/2023 12:43:36 PM

Like Dislike

Guillermou

Joined On 4/7/2015 8:47:48 AM

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In urban or metropolitan areas, buildings, roads and parking areas built with materials that absorb and store heat have replaced green areas or open natural spaces, making them significantly warmer than rural ones. This effect is known as the “urban heat island”. Exposure to elevated temperatures is associated with increased morbidity and premature mortality, especially in children and in the elderly. Our nervous system needs contact with vegetation and water, important elements for survival. Contact with nature is essential for the psychological development of the human being.

The close relationship of millions of years of the human species with its environment has generated a deep emotional need to be close to other living beings, be they plants or animals. The scientific evidence related to the benefits for health and well-being of natural spaces, green and blue spaces, has grown in recent years driven by an emerging interest in the impact that biodiversity and ecosystem function have on life. in urban areas. Natural areas in cities are essential for the quality of life in urban areas.

Forested areas in and around our communities offer recreation, health benefits, a refuge for wildlife, and a wide range of environmental services. Whether it's small parcels on pieces of unbuildable land or large wooded areas like the Bellevue Urban Forest near Seattle, their importance is immense and too often underestimated. The following are five examples of cities that are doing it right. arbordayblog.org/urban-and-community-forestry/saving-natural-areas-in-..

Mark as Spam | Posted On 2/12/2023 12:44:14 PM

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Guillermou

Joined On 4/7/2015 8:47:48 AM

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In the United States, for population categories defined by race and county of residence, the largest gap in life expectancy was thirty-three years. Some authors have argued that inequalities in health are inextricably linked to inequalities in the basic freedom of people to function fully in society. People of different income levels have differential access to health care; they exhibit different health-related behaviors, particularly with regard to smoking, exercise, and diet. they differ in their exposure to toxic environments such as air and water pollution; they face different conditions in their first years of life, including access to nutrition and prenatal care that can affect the length of life. www.glamour.com/.../high-stressful-job-stroke-risk www.healthaffairs.org/.../hlthaff.2015.0022 (2022).----

www.mcgill.ca/epi-biostat-occh/files/epi-biostat-occh/goh_2015_harmful.. .------ 10 PRACTICAL WAYS TO IMPROVE HAPPINESS www.theatlantic.com/family/archive/2022/04/happiness-research-how-to-b..

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Almond

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Guillermo and all... The kinds of parks we need in the US are wilderness areas and the sort that you find in Europe in the center of every town where people routinely go for a walk daily. Not the play area with a mass-produced swing set and jungle gym. Not that I object to children getting fresh air and exercise, but many modern parks are ugly synthetic monstrosities. Much better to spare the activity and plan for old growth trees that will drop some kind of food--apples, nuts, carob, etc. However, municipalities do not want the work of maintaining such parks. Earlier generations saw the wisdom in this. There are hardy trees... I know of one rest area in a harsh climate where Kentucky Coffee Bean trees thrive.

Another park has old black walnut trees. They feed the wildlife and nothing grows (mowing) underneath them. Occasionally, old homestead fruit or nut trees get overlooked and remain when parks are planned. Wild berries and mushrooms along trails. (One should know laws for harvesting and whether they have been sprayed.) There are other reasons I object to building some of these parks in urban areas. The latest thing is changes in zoning laws to collect more taxes. For example, in some places, one level homes are no longer allowed--if you can build vertically, lots can be smaller, you can have more of them and collect more property tax revenue.

Then, builders will convince the city to build a park adjacent to the development at tax-payer expense. It should really be the responsibility of the developer to use a portion of the land, either for a park or for lots big enough for children to play in a backyard. This should not be a burden on tax-payers. The parks will be built as cheaply as possible, because it costs a lot more money to build restroom facilities and maintain them--so these are lacking. Without restrooms, parks become unsanitary. People also let their dogs poop everywhere. -continued-

Mark as Spam | Posted On 2/12/2023 1:32:59 PM

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Almond

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-continued- Without 24 hour surveillance and regular police on site, many become homeless camps bringing, rats, drugs and violence into neighborhoods. This is not something tax-payers want to fund. Perhaps the real solution is fewer parks and better parks. When I was young, there were counselors at every park organizing daily activities for children. They charged a small fee for some and other activities were free. These programs were $break-even$. There was always at least one responsible adult present, often 2. Mostly young people working for minimum wage. They had the same authority we give life guards and could order disruptive persons to leave the park.

Parks were safe and clean. It was considered reasonable for children to walk a mile to a park and we usually did this with the same neighborhood children we walked to school with. Some of the better parks offer a free living site and utilities for a mobile home to a person who acts as a park ranger, does some maintenance and generally keeps an eye on things. There is another solution. Many people do not see school grounds as parks. Yet, many have elaborate outdoor facilities that are not used much over the summer. (Sometimes, athletic equipment can even be checked out.) Basketball courts, roofs over hard surface areas to protect from bad weather, trees and grassy areas, benches and sometimes tables, etc.

I recall when my family would travel for a summer vacation, we would take our own food and often stop to have a picnic lunch on the front lawn of a school. There also needs to be more done to make land available for community gardens. There are many unused public areas, vacant lots and right-of-ways. Churches, businesses and apartment complexes may have land behind them that is overgrown and gone to weeds. There could be a network of homeowners who would like to see a long unused garden spot revived. Of course, there would need to be agreements about chemical use, water and liability, etc. A modest fee.

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grulla

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"Almond",..."Much better to spare the activity and plan for old growth trees that will drop some kind of food--apples, nuts, carob, etc. However, municipalities do not want the work of maintaining such parks." That's a darn shame, as the residue could simply be left on the ground as mulch. Also, don't forget the ancient Jujube trees, aka Chinese dates, that grow in (semi-) arid, alkaline soil deserts, and bares much fruit. www.willisorchards.com/.../jujube-trees ~~~ www.gardeningknowhow.com/edible/fruits/jujube/growing-jujube-trees.htm

Mark as Spam | Posted On 2/12/2023 4:04:00 PM

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GoldenFlower

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Actually, training for hand to hsnd combat goes back a long way. In the East, much of that traing,remains secret, and was learned, at the expense of millions of lives, lost in armed combat. Creating so much energy, can can lead literally to burn out. Habituation, of muscles, can also lead, ro an inabity to gain strength.

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