**The Health Edge**

**Hormonal Imbalance**

**May 5, 2016**

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| Mark: | Welcome to the Health Edge, translating the science of self-care, bringing you news to use. I'm Mark Pettus, I'm in western Massachusetts and I direct medical education and our wellness and population health initiatives for western Massachusetts through Berkshire Health Systems and I am joined, as always, by my friend, colleague, Dr. John Bagnulo. John good morning buddy, it's great to see you. |
| John: | It's great to see you too Mark. |
| Mark: | We are going to address a few questions today. John, we get a lot of questions and we've very appreciative of people A just tuning into the Health Edge and then following up with questions. We try to get to as many as we can on the website but sometimes batching a few themes that come together John and addressing them in a podcast can be really helpful and I'm so amazed at how thoughtful these questions are, so we'll look at a little bit of that today. The themes are we had a lot of questions around the milk and the raw milk podcast that we did John and a few questions that I find very common as well around hormonal imbalances and we'll address that and we'll try to cover as much as we can here. |
|  | With respect to milk John and I've tried to put these in categories, but we had a question come up, it's someone who's doing a lot of homework on this and looking at what was available to them. I think they're from California is where this question came from and they were making the comparison between A2 milk from a Jersey cow that is pasteurized and given the benefits of the A2 milk that we talked about in terms of casein protein, the comparison here was an A2 source that was pasteurized versus an A1 source that was raw. We spent a lot of time talking about the benefits of good sourcing from raw milk. Yet A1 being of poor casein quality and when I looked at this question John I don't know that, at least from my perspective, I'm not aware of any good data that would allow you to make a more objective comparison between the health benefits of an A2 source that's pasteurized versus an A1 source that's raw. Probably both are better options than what you'll find commercially produced, but what's your sense on that comparison? |
| John: | That's a really tough decision, I would hate to have to make that. I'll say that may Jersey cows do have at least a small A1 component. Most Jersey's are somewhere between 60 to 80% A2 so they have some A1 casein and for our listeners to revisit this A1 casein is a fairly newer protein in the dairy world and when I say newer last couple hundred years, and it's really the byproduct of intense milk production by certain breeds. Holstein being the most notable and it's the one that's the least compatible with human physiology and there's a really great deal of evidence now and I know Mark you sent me a paper it was last week that looked at, it was done over in Asia where they had a large number of people fill out a questionnaire after they drank A1 versus A2 milk and there was very noticeable differences in everything from right cognitive function to how they felt digestively. |
|  | The Holstein cow produces this almost entirely A1 casein. I would hate to have to choose between a raw Holstein milk and a pasteurized ... Guernsey cows are predominantly A2, those are really almost all A2 so that would probably be the gold standard, but a Jersey is still going to be typically more A2 than A1. It's a good choice, goats and sheep are really ideal but I don't have anything to make a decision on around that. I agree with you Mark, whether it's raw Holstein milk or it's pasteurized A2 milk they're both much better choices than something where you get the worst of both worlds, which would be pasteurized and homogenized A1 milk from a Holstein cow, which that's 98% of what's being sold out there. That's a really tough call but people need to, if they can, they need to really try to find the farm or farmer in their area. |
|  | It's possible, it just takes some homework and a lot of people don't have time for that in their life. If you can find a farm that at least has Jersey cows you're going to be much, much better off and homogenization, we had a question around homogenization too right? |
| Mark: | Yes we did John because we spent more time focusing on the effects of pasteurization of milk, so yes that's a good segue of what does homogenization bring to the commercialization of milk and why might one want to be concerned about that? |
| John: | Yes absolutely, homogenization for our listeners that might not understand, it's the physical and mechanical breakdown of the fat molecules in cow's milk and it doesn't have to be done with goat's milk or sheep's milk because the size of the fat molecules or droplets, we call them micelle's, the size of those fat molecules in goat's and sheep's milk are anywhere from 1/8th to 1/12th the size of a fat molecule in cow's milk. Because of that goat's milk and sheep milk contain fat throughout the solution. It takes a long, long period of time before that fat starts to come to the top in significant quantities. Typically goat's and sheep's milk is not homogenized, but because the fat molecules in cow's milk are so large, they're much more buoyant and they'll tend to come to the surface much more quickly. |
|  | That's why when you buy raw, unhomogenized milk, for instance, you'll notice that with the milk that we get at our farmer's market I'm going to say that the top 1/3 of the one gallon container and sometimes it looks like it's 40% is all cream. Which 20 years ago people would look at that and they'd be like what am I going to do with all that. Now we look at it like wow, that's great, look at all that cream. |
|  | With homogenization, when cow's milk has to be mechanically shaken and I use this word, I laugh when I say it, but it is shaken violently to the point where these fat molecules break up into little fragments, that releases a variety of chemicals like xanthine oxidase, for instance, into the milk which in animal studies it really increases the progression and can cause the early signs of atherosclerosis or heart disease. There is this really serious chemical change that takes place when the fat molecules in cow's milk are shaken to the point where they break apart into these little fragments. It really starts to change the composition and the way that that milk would be metabolized by us, by the consumer. |
|  | I'm against homogenization, again I would hate to have to decide between homogenization and pasteurization, they're both bad process. Someone, at least from a public health perspective, could make the argument for pasteurization although it's a weak one and I don't agree with it. What's the argument for homogenization? That people don't want to simply shake the milk carton themselves to get it equally distributed because that's all it really takes. When our grandparents got their milk delivered at their doorstep it was the same way as I'm describing it. Either they use that for their coffee, the cream, or they did something with it or they just shook it up themselves. Homogenization is also very detrimental to the end product, so I'm against that as well. |
| Mark: | That's great John and I do think this whole homogenization process really is the aesthetics right? You create this uniform substance which apparently is supposed to have some appeal, how it looks and the texture. When you start looking at how these molecules are effected by that and so much of this John is, we think about it and as we talk about it and reflect on it, brings us to this place that's so true of foods that are commercially produced. There is very concerted and thoughtful effort on appearance and texture and palatability and research clearly can produce and design and design a product that will predictably impact taste and palate and brain function, and it's easy to be drawn to those products and the food industry is obviously well aware of that. Yet we know biologically many of these alterations have such significant impact on human health. |
|  | The milk topic is always I find when I'm out talking John and I know you experience this as well, it's been so beautifully branded that it almost feels un-American for those listening in the US to come down on dairy. What we're saying is that it's not that dairy's necessarily bad, a lot of it is the sourcing but you really have to be mindful no doubt about it. |
| John: | That's for sure. |
| Mark: | We had another question John and this is off the milk topic, but we get a lot of questions about hormonal imbalance and that's a huge topic, but the question specifically was with respect to PMS, premenstrual syndrome and PCOS which is polycystic ovarian syndrome. I frequently, in the work that I do and when I'm out and about women will often approach me with hormonal issues, which have become so commonplace John for many reasons that we can touch on. When I look at some of the epidemiology of PMS most of the data would point to the fact that the overwhelming majority of women, 80, 90% of menstruating women will have premenstrual symptoms from bloating, to breast tenderness, to maybe alterations in sleep patterns, to maybe acne or changes in skin, dryness, inflammatory change. Then there's about 30% which is a large, almost one out of three menstruating women will have really much more severe symptoms, so noteworthy that their quality of life for a few to several days every month predictably is horrible. |
|  | Then there's this even smaller segment and it's typical of the medical establishment, maybe 5 to 10% of women now have this disease as it would be characterized of PMS with dysphoria, profound mood change, depression and certainly it's true that many women will be quite sad and blue and maybe anxious and have very little energy and struggle to function and just get through the day. We medicalize how we think about that and so there's now a diagnosis for that, and like many diagnosis in that 5 to 10% cohort a lot of women will find themselves being offered antidepressants and mood stabilizers. |
|  | Like many things that we talk about John, these are becoming more prevalent in the example of PMS. Then if you look at PCOS, polycystic ovarian syndrome, more recent data would suggest that that probably effects about 5 to 10% of women. Again that's a large number and PCOS for the listeners is characterized by essentially insulin resistance, so this is an insulin resistant state where you will tend to see some weight related issues and usually that will be characterized by a higher percentage of body fat composition, which we know particularly around the mid section or visceral fat is associated with insulin resistance. |
|  | Those women have very significant disruption of their hormonal system so that their periods tend to be very irregular, they might miss a period, they're not ovulating consistently so fertility is a very common challenge in women with PCOS. Because of the insulin resistance they tend to make more testosterone, we can get into some of that biochemistry, but the features for the woman experiencing PCOS might be to experience more facial hair, these androgen features, what we call clinically is hirsutism. The combination there is generally one of struggling with weight, having irregular periods, noticing changes in body hair patterns and then if you look at labs in those individuals because they are insulin resistant, frequently you'll see features of metabolic syndrome which we talk about often John with a higher perhaps fasting sugar that, while normally, at least by current standards, less than 100 lower even better. |
|  | Many of these women will have fasting sugars between 100, 125, clearly out of a normal range. They may have a hemoglobin A1C which is another marker of sugar that is timed averaged, this glycosylation that we talk about. Frequently they'll be between 5.7 and say 6.4, 6.5 which is a pre-diabetic range. We know that many of these women without some help will often develop full blown metabolic syndrome with hypertension and high triglycerides and low HDL and fertility issues. When I look at these epidemiologic patterns John and women struggle a lot with this and quality of life and again often end up being offered medications that attempt to address the smoke but do nothing to address the fire. What starts to go through my mind John when I think about this and you could add other hormonal issues, you might add breast cancer and it's so common now. Who doesn't know somebody that has breast cancer and again epidemiologically almost one out of eight to one out of 10 women in their lifetime will confront that diagnosis. That has changed radically. |
|  | As we often talk about John, while there may be a lot of interest in the genetics of these diseases, it's clear that the changes in our environment are disrupting or hacking our endocrine hormonal systems and I know you and I would both look at these as endocrine manifestations of these environmental mismatches. In the example of both PMS and PCOS, as true of everything we talk about, you start with diet and it's hard not to sound like a broken record, but if a women's diet is abundant in poor quality carbohydrate dense foods, these grain based foods, refined grain based foods and sugar, we know that from an abundance of research that that will drive insulin and leptin will alter cortisol and hormonal balance. Ultimately you end up in a fat storage state that perpetuates the insulin resistance, that again drives inflammation and in inflammatory states, not to get too geeky, but the body will place it's hormonal priorities on producing cortisol and all of our sex steroids estrogen, progesterone, testosterone, are all influenced by that. |
|  | You start to see these disrupted balances, estrogen levels shift and progesterone levels become abnormal. You see these rises in testosterone which ordinarily you wouldn't see which is one of the reasons that women will have these androgen features. Diet has a powerful impact on that, so I'm always educating women that I'm working with to really start by bringing in, moderating and eliminating many of these carbohydrate dense insulinogenic or driving foods and again sort of the broken record mantra John. When you look at sex hormones whether it's cortisol or whether it's progesterone, estrogen, testosterone, fat cholesterol is the origin, the building blocks of these hormones so many women with PCOS in addition to getting an excess of poor quality carbohydrate dense foods, are getting a paucity, a minimal amount of quality fats and the fats that they're getting, again as we always talk about, tend to be very high in processed seed oils, the omega 6 fats. There tend to be limited, sometimes if any, quality omega 3 sources, so you see these high six to three ratios and just not providing enough of good substrate there for hormone balance. |
|  | Always focusing on quality fats from avocados to coconut oil and olive oil, the pasture raised meat and animal products that we talk about are so important in restoring the macro nutrient quantity and quality that is necessary to lower the insulin and inflammatory states and to drive hormonal production in a more balanced way. That's sort of one dimension of that approach John, and then I try to help women think about the importance of the gut as we always talk about as a driver of these inflammatory states, which will effect brain function and ovarian function and this neuro endocrine balance. Complex as some of this can get, we know that leaky gut and disbiosis, this highly prevalent disruption of the gut ecosystem is a big player and not only in all diseases, but these healthy bacteria which so many people are deplete in, actually help us manage estrogen and it's metabolism and it's excretion and the inflammatory manifestations of disbiosis and leaky gut are often never addressed in the context of trying to help a woman struggling with these issues. |
|  | Many of the things that we've talked about in diet reeling in the carbohydrate dense foods, liberalizing the more healthy fat sources, eliminating at a minimum gluten containing grains and perhaps all grains as you try to gain traction here and casein, particularly from A1 sources, is an important first step in lowering gut inflammation and then introducing, as we often talk about, much more plant based fermentable fiber or these MACs. These MACs, these microbiotic accessible carbohydrates will allow women to then begin to propagate or produce more of these healthy organisms that can assist in the maintenance of hormonal balance and lowering the inflammation that can disrupt these processes, fermentable foods from yogurt to keifer, sauerkraut, kimchi, also an important way to address the gut. |
|  | The gut becomes a central focus in everything that we talk about and approach, and certainly for PMS and PCOS is an important way of addressing root cause. Then the other things that I often work on with women John is the importance of the stress response and this, we call it the HPA, the hypothalamic pituitary adrenal response. People are so stressed out these days and I look at women and many of them they're moms, they're working, they're balancing so many priorities in their lives and in the course of being a mother, being a wife, being someone who's working to make ends meet. I frequently meet women who spend very little time thinking about their own self-care because 99% of their time is spent serving others and it can be very hard to bring attention to one's self. |
|  | Lot of hours working, not eating regularly and balanced meals, having very little time for movement, all of which can create these stress states. We know that in a fight flight or an accentuated cortisol response state that the body will shift it's priority in producing the adrenals, it's all about getting the cortisol out because you're on the African Savannah and you're running for your life and that is the biologic imperative and all of the downstream hormones, predominantly the sex hormones, will become compromised by virtue of that prioritization or that triage. I often will begin to help women think about some simple techniques they can use, breath techniques, guided imagery techniques and it's so easy to underappreciate the power of the pause or deep breath. We'll look at sleep hygiene, sleep disruption, another driver of disrupted hormonal status. We'll look at darkness of the room and room temperature and sort of filtering out those blue light sources and focusing more on amber lighting later in the day. |
|  | On some level seems complex but when you start to look at these issues John, it's the same underlying features of foods that don't serve that biology well, that have the unintended effect of disrupting it in a profound way, changes in body composition, alterations in the gut, gut permeability, inflammation, disbiosis, alterations of sleep cycling and stress states. In this instance the hormones become the targets and for so many women quality of life becomes profoundly disrupted. Then the last thing I'll say John and it may be one of the more important and concerning aspects of all of these hormonal driven quality of life issues and diseases that continue to skyrocket and I've got a 25 year old daughter and it scares me as a parent to think about the environment that we currently live in and how our kids are impacted by that. |
|  | We know that our environment is loaded with hormonally disrupted toxins and I know we've talked about this as well and we encourage our listeners to go back and look at previous podcasts, but from plasticizers like bisphenol A and phalates which we know can disrupt hormones from glyphosate, that I know you know so much about John and genetically modified foods and the ways in which they effect the gut and bacteria in our gut and hormone production. The extent to which so many pesticide and pesticide residues, flame retardants, everywhere you look now, cosmetics, there are things that we are exposed to, most of which we don't even think about much during the day, that we are getting multiple hits at very low levels. This is death by a thousand cuts that all add up in some way to this perfect storm, particularly when added to poor quality foods and sleep disruption and challenging and perpetual stress states, it makes it very hard for our hormonal systems to serve us the way they are designed to serve us. |
|  | It's hard not to imagine John that our environment is driving a lot of this and there are ways that people can address this in terms of going organic with the dirty dozen and being careful about plastics and using databases like Skin Deep from the Environmental Working Group to be more thoughtful about shampoos and conditioners and makeup. The many things that we know will not only alter estrogen, but they alter how we detoxify and estrogen, like all hormones, has to be managed by the liver and all of these systems become impaired. That's a long winded approach to that but generally those are the things that I'm looking at as I try to help women begin to restore some of this. Most can do it very effectively and very successfully without needing to take antidepressants and without needing to take hormones, and it's another example of a common problem that will find it's way to pharmaceuticals that really do nothing to address the underlying causes. |
| John: | That's great Mark, that's a great 30,000 foot level of how much women's health has been influenced in the last 30 years by a combination of factors. If we take a look at the generalizations and I know people hate stereotypes, but typically women are much more sensitive to public health messages. Women have been for the last 30 or 40 years trying to eliminate fat, trying to cut calories. Women typically, if you look at all the surveys that have been done in the last 30 years are much more concerned about their health and their weight. What do they do? They eat the low fat diet that tends to be higher in carbohydrate bombs and sugars. A lot of men say the hell with it, I'm still going to eat my bacon and eggs and I'm going to eat whatever I want and strange as it might seem that has actually maybe spared men some of the health issues that women are experiencing now. |
|  | Now don't get me wrong, in the last few years of my clinical practice I saw a lot of men who tested very, very low for testosterone and you take a look at their diet and it's all polyunsaturated fat, it's all those garbage seed oils and vegetable oils, they weren't eating any saturated fat and it's [aschematic 00:30:56] if your diet's based on polyunsaturated fat, that your testosterone levels, as you just said, are going to suffer. With women it's the perfect storm, you got the cortisol from stress, the heightened stress response. I just spent a week with my kids, my wife was away for a week and I was on the Ohio Savannah. I wanted to run for my life but the stress of taking care of kids and maybe try to hold a career at the same time is overwhelmingly detrimental to cortisol production or any other aspect of endocrine health. |
|  | If you have a woman that is on a very carbohydrate based diet and maybe has the signs, the early signs of insulin resistance, but often Mark this is what's terrible is a lot of people don't know this because they're only operating off of a fasting glucose. That fasting glucose tells us some of the story some of the time, but I always say to women who have heightened PMS symptoms, or the PCOS, or they're starting to suffer from this myriad of hormonal imbalances, get your fasting insulin levels tested. Let's rule that out that that isn't starting to creep up and driving all these other processes, because insulin is the master metabolic switch, that's what determines whether we're in an anabolism or catabolism, or we're at that right balance point and a lot of people get into that anabolic pattern because their insulin is so high and it's three times what it should be. |
|  | Then you just touched on it Mark and I think it was great. You got all these other issues, you got the stress, you got the fact that the diet is off and it's very high in it's polyunsaturated fats and it's sugars. For every pound that we put on around our midsection there's an incredible amount of aromatase activity which is going to drive estrogen levels even higher. If you've already got an estrogen to progesterone imbalance or you've already got these imbalances going on then you start packing on the pounds that are metabolically active. Most people think weight just hangs on us but you know Mark, weight is an enormous estrogen factory if it's fat, if you're talking about body fat here. |
|  | Lastly women are much more likely to wear cosmetics and creams and moisturizers and put that stuff on their skin than men are. Men might use deodorant if you're lucky, but women put all these things on their skin that have xenoestrogens in them. You mentioned the parabens and there's a long list of things that are in very, very common cosmetics and body washes and everything you could imagine that are also going to maybe it's 1% to 2% but if it pushes the needle a little bit more towards imbalance that just makes these symptoms and this quality of life, this deterioration in terms of how women feel on a day to day basis, it creates more imbalance. For many women it's the perfect storm, you've got the environmental factors, you got the dietary factors and it's too much sometimes for a woman to overcome with our mainstream medical system. Because when they go there they're going to be told maybe that they got to talk to somebody about the stress in their life, they're going to be offered a pharmaceutical intervention but no ones going to be taught that it should be a paleo. |
|  | A paleo lifestyle is what you and I are talking about. The right light, the right quality of sleep, the right diet of course. I always say to them get your fasting insulin levels tested, obviously you can look at your estrogen to progesterone ratio. I mean that's certainly way beyond my area of expertise but I know it helps some women find out what the core problem is. The paleo lifestyle Mark is 9/10th of the solution. |
| Mark: | Yes, those are great points John and I'm glad you brought up the testosterone issue. In men this is a huge problem and I track testosterone in my own life John, so I'm 60ish and my primary care provider, who's a really good guy, ordinarily would not check that. In part because if you do a few quick questions I might not score positive on them. I'm not necessarily struggling with libido or weight issues or erectile issues, but so many men are and even though these are complex issues that often go beyond just testosterone, I am struck by how many men I see, when I measure testosterone, that are in a normal range. The docs not going to get an astirix back attached to the lab value, but you look at these ranges between say 300 on the low end and 1,200 on the high end and these men are around 300, 320, I mean they're in the lowest 10th percentile and doing nothing more. I'm not an advocate of putting all these men on testosterone, for some that can be a major quality of life upgrade. |
|  | If men, and the same is true of women, did nothing more than brought healthier fat sources into their diet you will see dramatic shifts in your hormone levels and in the balance of those hormones. In my own N of 1 John and I've shared this in the past, probably about 10 years ago my testosterone, so we look at total testosterone, we look at free testosterone. Total is the testosterone that's bound to albumen, a lot of our hormones are attached to albumen which carries them around, it's sort of the limos that carry the hormones and then drops them off wherever they're needed. Then there's the free, it's the testosterone that doesn't need the limo, it's been released and it can then exert it's biologic effect. |
|  | I started tracking this around the time that I turned 50, so I have this 10 year window that I've looked at and again nowhere along the way was I symptomatic in a way where I was really concerned but back in a time where I was vegetarian and I probably had been doing it for a couple years. My testosterone levels really dropped, I mean my total testosterone was probably around 400, again in a normal range it would not have gotten any physician's attention but it was in that lower 20th percentile and that was concerning to me. As I began to adopt more of a paleo lifestyle, certainly eliminating grains and flour and sugar and then eating all these fatty foods that I had been avoiding for the longest time, it was amazing John how quickly my testosterone started to come from 400 to 550 a year later, 700 and now I tend to live in the 750ish range, which would be maybe equivalent to that of a 30 to 40ish year old guy who's in pretty good health. |
|  | I am convinced that I've been able to turn the clock back to bring my testosterone level to a physiologic range that I could have easily never had or experienced. Of course I've noticed a lot of difference with that in terms of my cognition and a bit more lean body mass with resistance exercise. It's incredible to me how we can modulate, that's 40, 50, 60, 70% increases in circulating hormones by virtue of lifestyle modification that is stunning. |
|  | Just to share that N of 1 John because there are a lot of men out there and if look at whether it's sperm counts, sperm counts are going down by the decade in men and more men and more young women, for the reasons that we've been talking about, are struggling to conceive and have families. More couples are looking at in vitro fertilization and more complex ways to reproduce. If you want to have kids you'll do anything to and yet most of these issues can probably be managed with lifestyle and it's both concerning and at the same time it's an amazing opportunity John that a lot of people and certainly the providers that are helping them are never going to look at. |
| John: | No Mark and you mentioned this a little earlier in our discussion today, but if I had to guess what percentage of people and that would include healthcare providers, physicians, anybody that's in the medical field. What percentage of people realize that your testosterone, your estrogen, all of these hormones which are obviously critical components to how you feel on a day to day basis, how you perform, that they're all based on cholesterol and that when you start to manipulate cholesterol levels, as people have been advised to do for the last 40 or 50 years, lower and lower and lower, more polyunsaturated fats, avoid saturated fats, take a statin. These things undermine the body's pool of testosterone and estrogen building blocks. |
|  | When it comes to testosterone, to me it's no mystery why men have less and less drive, not only for sex but less and less drive to be active, to be physically active and to really take life head on and have adventure. People's testosterone levels are dropping because we have inadvertently been manipulating cholesterol levels to a lower and lower point and it's one of the primary casualties. It's astounding, it's so great to hear your personal story and if 10 years from now if I see that you're competing in an MMA fight somewhere I think I'm going to draw back on this conversation and see where that came from. To see the changes that you produce in your testosterone levels and how much better you feel now than you did when you're on seed oils and things like that. Other people have to hear that story because they can experience the same type of transition in their life. It's really eye opening to look at the research in addition to hearing personal stories like yourself. |
|  | When I look at the research on how testosterone levels respond to polyunsaturated fats and seed oils, it's really eye opening. I would love to hear Walter Willett's take on this. Of course Walter Willett for our listeners who don't know who Walter is, he's a nutritional epidemiologist at Harvard, he's the one that was given a lot of credit for the Mediterranean food guide pyramid. Although a lot of people from the Mediterranean region say this doesn't represent how we eat, nevertheless Walter Willett will go to his grave basically defending seed oils, canola oil and these things. He's someone I have heard in the past said well should a man's testosterone levels be that high? Wouldn't it be better if we kept our testosterone levels lower, wouldn't we have a lower risk for certain types of disease like prostate cancer which I don't think that's never been defended. |
|  | My point is I don't know if I want to live to be 80 or 90 years old and have no testosterone because it's an important part, you want to feel good on a day to day basis. This isn't about how long we're going to live, that's part of it, but a bigger part of it is quality of life. We want to live each of our days to the fullest and feel good and have the strength and the ability to do things that we want to do. When you start undermining it in an effort to lower your cholesterol levels with seed oils it just doesn't make any sense, it really doesn't. |
| Mark: | Those are great points John and hopefully we've given both men and women, who may have hormonal issues, something to think about. I know this is a topic that we'll continue to come back to John and you said something, as we get ready to close here, that the metaphorical light went off in my head. You were talking about light and light exposure, full spectrum light and this will be a great segue for maybe our next podcast John, but there's this remarkable literature that is still evolving and again through this ancestral lens, this paleo lifestyle, we do appreciate that lack of full spectrum light exposure will wreak havoc with brain function, neurotransmitter function and all of the hypothalamic pituitary, which is the master hormonal regulator, thyroid, sex hormone, adrenal, all of this orchestra of hormonal function which drives so much of human biology, quality of life and function is disrupted when we are not getting regular and diurnal exposure to light. |
|  | This whole connection of light and human biology John is a really great and interesting topic. People are sometimes amazed, even if they can get 30 minutes in the morning of going outside or using maybe a full spectrum light box, getting 10,000 lux which is one strategy to recalibrate that circadian hormonal neuro endocrine immune rhythm can be a powerful intervention that doesn't cost anything and can have dramatic impact on quality of life. |
|  | Much in the same way John that we talk about junk food and junk products, whether it's cleaning products or cosmetic products, one kid could characterize a lot of the epidemiology of chronic complex disease to our exposure to junk light and the poor quality fluorescent lighting. That's a whole new rabbit hole and maybe we can do down that, but just the reminder of folks to be outside as much as you can and to be more conscious toward the end of the day of not getting a lot of artificial light exposure or maybe wearing amber glasses or using an app like the f.lux app or now Apple has now, in the upgrades of their operating system, now have a I think it's called time keeper or it's now part of their operating system that will automatically filter out the blue end of the light spectrum late in the day. You're getting more of the amber, orange, red, end of the spectrum which we know is important for calibration. Light as medicine becomes an important adjunct in everything that we're talking about and certainly for hormone balance it's critical. I'm glad you brought that up John. |
|  | We appreciate people submitting questions and please feel free to do so on our website, the healthedgepodcast.com and John and I try to get to as many as we can and if we don't get back to you directly, we'll save a lot of these for periodic Q&A's like we're doing today John. We're on iTunes and we appreciate your checking us out there and giving us a thumbs up if you appreciate the quality and the value of this information. We're on YouTube if you want to check out the video and we get our show notes out for these podcasts usually within 24, 48 hours. John I'm trying to think of, I know there are a lot of references, you mentioned that A1, A2 paper that we talked about, that was uploaded on the website, it was a nice interventional trial and so readers can look at that. That was a recent upload and we have a- |
| John: | I'll send over a paper on polyunsaturated fats and testosterone levels, just a little while. |
| Mark: | Awesome John, so any final comments John before we [crosstalk 00:47:56]? |
| John: | No, just it's springtime to probably most of our listeners and get outside as you mentioned, first thing in the day, start the calibration within your body and then try to get outside at the end of the day. Give your body bookmarks as you mentioned Mark, getting some light early in the day for the blue and getting some light at the end of the day let's your body know where you're at and it can give you better sleep and we can dive into this as you said Mark. This is a full on podcast but it's every bit as important as what you eat. |
| Mark: | Absolutely, get into the soil right, gardening and get dirty and enjoy, be where you're intended to be. |
| John: | That's it. |
| Mark: | John, as always, it's a great pleasure and great to see you buddy. |
| John: | You too bud, take care. |