I want to welcome you again to the first webinar for the clinical course on Bone Health Myths and Truths.

One of the things I want to say up front to those of you who have studied a variety of modern inflammatory diseases – it’s becoming increasingly clear that seemingly disparate diagnoses like cardiovascular disease and cancer and diabetes are quite related in the sense of having chronic inflammation as a root cause. I’m going to perhaps shock you a bit by going way, way beyond the typical “hormone deficiency” or “not enough calcium” or “not enough vitamin D” version of what causes bones to become brittle and to break, and for women in particular, osteoporosis.

There’s some fascinating research done, in particular over the past five to ten years, that is beginning to highlight how chronic inflammation affects the behavior of the cells that generate new bone tissue or break down old bone tissue. I think what we start to increasingly see in the few years ahead is that we can put osteoporosis in the ever-widening list of modern diagnoses - common dis-eases in the body that have their roots in chronic inflammation related to our lifestyle.

With that introduction, I want to remind you to take advantage of the go-to webinar Q&A tool - if you are listening to this as a recording, keep in mind that you can always post Q&A’s on the course page - but please feel free to send your questions in as they occur to you.

So getting started here, I just want to share a few key reminders with you. Some of you veterans have heard this explanation a dozen times and for some of you this will be the first time. I always like to share the model for optimal health that I use in supporting my clients because I find it’s critically important to simplify the face of wellness for our clients. There are so many scares, threats and study results, things to do and not to do in the health media that, our average client is completely overwhelmed, easily feels scared, or perhaps even worse, apathetic and disempowered - thinking that nothing they could possibly do within their control could make a difference. In fact, health coaches can feel overwhelmed by the incredible complexity of the human body and the supposed threat and things that can stand in the way of our client’s wellness.

Despite the thousands of labels for combinations of symptoms that can supposedly go wrong with the human body, the recipe for optimal health is really not that complicated. I share this model with all of my new clients. It’s part of what we cover in our first session so they understand the general approach and the general scope of what they can do to make a difference. It’s also something that I have on the wall of my office and look at easily a dozen times day just as a way of bringing myself back down to earth to look at the simplicity of what’s going on. It’s so easy, for me especially, with a scientific background to get all caught up in the mystery of the science, biochemistry and physiology of what’s going on.
You know, at the end of the day, most people need to sleep, most people need less stress, more food and less food-like substances. There are plenty of esoteric or complicated things we can recommend for our clients, and certainly part of my mission is to help you be more comfortable doing those things.

Never lose sight of the simple things. They are not necessarily straightforward for our clients to implement; they need a lot of support and a lot of coaching, but the simple things are incredibly powerful.

Our model is aimed at maximizing what is needed for this unique person to thrive. Obviously the nutrients our clients need to help organs and glands and circulation and lymph and muscles and all of these things work – the body doesn’t have storage rooms of those raw materials. It’s counting on us to bring it in with our breathing, water and food intake and minimizing the things that each unique person – remember the “minimize category” tends to be quite unique – things that could be harmful for that person.

It’s not 2.4 million things. It’s a very short list of toxins, infections, allergens and stress, which can be in the physical form of blockage or in the form of mental, emotional stress and then lastly and most importantly, prioritizing an environment for healing. As I’ve said to you one on one, this is the category that our clients need the most support with. Perhaps it’s the most obvious and the least medically intensive, but I think research is catching up rapidly with being able to demonstrate the benefits of simple activities like laughter, deep breathing and sleep and particularly invigorating exercise like tai chi and yoga.

Meaningful relationships; I was just watching a documentary the other day that was emphasizing what the Huge Blue Zone worldwide study identified which was that the cultures that have the greatest number of centenarians (people living longer than a hundred years) or the least amount of disease, they certainly had things in common with regard to healthy food intake, but much more importantly and consistently, they had in common key wellness strategies like community, meaningful relationships and spiritual practices that resonated with them. So don’t lose sight of these things. Each and every person needs all three of these to become proficient and I believe very strongly that the body will naturally heal itself and naturally seek wellness if we can become creative and proficient at providing all three of these.

There’s a question here about posting a .pdf of just this slide and I’m certainly happy to do that for you. Thank you for asking.

So certainly our challenge is that most of our clients don’t do or have these things. In some cases our wrestling with a shortage in all three of these problems. I won’t review these. You’re all familiar as health coaches with the absence of nutrients, the prevalence of highly refined processed foods, which is a double negative. It’s the missing of the nutrients and the addition of the toxins. All of these things stand in the way of our client’s wellness, but most importantly, they are all things clients can do things about with regard to the lifestyle choices that they want.

Lastly, this is another slide and before someone has a chance to ask, I will post this as well. This is another wonderful one pager that I often share with my clients as a way of helping them to understand that they may be just focused on weight loss or just focused on their chronic post-nasal drip or just
focused on the DEXA scan they just got which shows they have just lost 30 percent of their bone density. They are very focused.

Our average client does not have the ability to see the forest for the trees, and to see how all of the body’s exposures and systems are interconnected in creating wellness. We are certainly going to talk about this in depth.

How does stress impact on the body’s ability to retain bone density? How does the breakdown of bone tissue put more circulating toxins in the blood so that chronic inflammatory diseases could surge or even appear?

Food sensitivities: the ability to actually digest and absorb our food so that our bones can be nourished. Genetic predispositions for trouble with digestion or trouble with the cross-linking of the protein matrix that is in our bones. There are all sorts of factors at play here. It can be very helpful to just set the expectation right up front that you are potentially going to be looking at a broad base of items that might support your clients’ goals even though they are focused on the particular body part that’s hurting or struggling

Let’s dive into our focus topic for today. Welcome to your bones. We tend to think about bones collectively as a culture as being a somewhat dead part of the body. “Rocks”. I remember doing a children’s wellness education course after school for middle-school'ers in Massachusetts. Children have the funniest things to say about body parts. When I asked them what in nature their bones were most like, it’s amazing the number of children who said, “Big long rocks”. Dead, hard things that hold us up that provide structure. The whole skeletal system is an incredibly rich combination of both hard and soft tissue. Certainly the bones are much denser and tougher than the other pieces, but the ligaments, tendons, cartilage is all about what connects the skeletal system to the rest of the body to be integrated so it can achieve its functions, the most important of which is to bear our weight and help us to resist gravity, especially to resist gravity and still move. Otherwise we would be a puddle of skin, tissue and liquid on the ground.

Our bones also provide reinforcement to hold the roof, if you will, around our organs and our glands, to provide protection from shock or impact. The act of bones attaching to muscle is primarily what gives us strength. We talk a lot about bone strength in terms of resisting fracture, but in truth bones are not designed to handle an awful lot of force or an awful lot of weight on a regular basis. We’re designed for that task to be carried out by the muscles and indeed this is where there the integration of systems can go awry, causing problems with bones, especially in later life when there hasn’t been sufficient exercise or nutrition to keep muscles healthy. With muscle atrophy or weakness the body is forced to accommodate more force, more weight bearing on bones, which is not how we are designed. Bones attached to joints allow us to move and do the hokey-pokey, run around the corner, but also to give us flexibility to be able to do interesting tasks, interesting yoga poses, to dance.

Bones are the body’s primary storage source for minerals. In particular, we have a tremendous amount of calcium and phosphorus stored in the body in our bones in the form of a substance called hydroxyapatite, which is a crystalline type-structure embedded in the protein in our bones.
It’s also important to understand that there are a number of really key things that take place inside bone and that are stored inside bone. Most people are shocked to find out that there is a variety of growth factors that the body needs including things like insulin-like growth factor which really helps people to grow from childhood to early adulthood, also helping us to heal. Also, hormones- there are some hormones we store in our bones. We store heavy metals in our bones. The body thinks that storing heavy metals away from circulation, away from our blood supply in our bones or in our fat tissue is a really great strategy. It works quite well as long as the level of toxins is small until we start doing things that lose bone tissue or lose fat tissue.

Some of you are familiar with individuals who lose a lot of weight and they go through a lot of challenges with becoming quite toxic and have a lot of inflammatory symptoms because toxins come out of fat tissue and go into circulation. The same thing is true of bones. When women start to lose bone density, things that have been perhaps stored there for decades have a way of coming back out. We are going to talk a bit more about that later in the course.

It’s also important to remember with regard to the integration of systems that bone marrow produces red and white blood cells. Our cardiovascular system is completely dependent on healthy bone marrow for producing these red blood cells that allow us to exist. If we did not produce red and white blood cells, we would not last very long at all. Certainly white blood cells fight infection, but more importantly, red blood cells are transporting oxygen to all of our tissues. As you all know, we don’t survive very long if we cannot do that.

So the skeletal system provides a lot of structure and function but it also houses surprisingly vital, active support for other body systems.

Most importantly bone is alive; it is not a dead tissue. It is much more like a tree, for example, than a rock. What you are looking at there is a typical kind of bone structure fitting into a socket. What you see in the photo are two types of typical bone outside that little border that’s quite thin on that bone, which is of the femur in the leg, by the way. The outer portion of it, which I’ll show you here, is called compact bone. It’s really quite dense, depending on where it in the body. It’s typically about between 50 to 90 percent dense.

The inside is what we call spongy bone and you can tell by looking at it that it is by definition more porous. Many folks are surprised to find out that bones are naturally porous. Indeed they are not like rocks. There’s plenty of space in between bones which allows circulation between the bones, but it also allows bones to be stronger by virtue of a scaffolding-type structure. If you know anything about construction or design, it is very important for making structures light but very strong.

Bone is indeed alive. We are constantly regenerating about 10 percent of our bone tissue on an annual basis so theoretically it takes us about a decade to turn over all of our bone tissue. Some bone tissue turn over much more quickly than others. That has to do with how much we use them as well. We are going to talk a bit about that. The concept of use it or lose it is just as alive in the bones as it is in other parts of the body. Bones, like all tissue require good circulation, oxygen and a huge steady state supply of nutrients.
Looking at the diagram in the bottom right hand corner you see a much more complicated diagram of the anatomy of the bone. “Cancellous” bone is by the way just another fancier name for spongy bone. I just wanted to show you this picture, but I’m not going to get into this very detailed anatomy. There are plenty of books I can recommend if you want to learn about it. This is just to show you how active circulation is inside the bone. Again, it’s not dead, it’s alive and it’s being constantly serviced with nutrients and the blood vessels both bringing nutrients to the tissue and taking waste products away.

If we take a look here just with an example of the spongy bone structure, if we were to blow up the center part of this diagram it would look very much like the drawing on the left hand side of the trabeculae which is this grid-type structure which has spaces in between the bone tissue. So those trabeculae are actually the bone tissue and the spaces in between are the spaces where the bone marrow threads itself within bone tissue.

An interesting fact is that newborns typically have between 280 and 300 bones. You may be aware that bones fuse as an infant goes from infant to toddler phase and full fusing doesn’t take care until they are about ready to go into grade school. Most adults have approximately 200 bones, although it’s quite common for people to have an extra one or two or three.

There’s a question here; can we print out this PowerPoint rather than trying to write everything down? Yes, absolutely. As I mentioned earlier, there is a preliminary copy of the slides that was posted to the web site, so you are more than welcome to do that if that’s how you prefer to learn. We all have different learning styles so please take advantage of what feels best to you.

I mentioned earlier that the thing in nature that most resembles or mimics the function and the form of a bone is really a tree because we think of trees being stiff, strong and solid, but we are certainly very well aware of the fact that they are alive and when not otherwise taxed, they are still. But when necessary, they are capable of moving quite a bit, of bending to and fro as a way of not breaking. It’s a great analogy for emphasizing the point that bones are not just about minerals. Minerals are embedded in a protein matrix and it’s a flexible protein matrix that’s made up of collagen. Most of us are familiar with collagen, it’s most of what is in the soft tissue of our body. The difference in bones is that collagen is mineralized to make it strong and to some extent to make it stiff. Healthy bones are a combination of both strength and flexibility. A concept you might not typically think of in regard to bones is that having a good, strong, thick protein-backed bone or collagen matrix is just as important (if not more important) as having the appropriate mineralization of that collagen.

What you see in the bottom left hand corner is a diagram/drawing that represents these tiny little filaments, collagen fibers, and how the hydroxyapatite that I mentioned earlier is embedded in it, creating a little bit of a composite-type structure. It’s dietary calcium and phosphorus that together combine to go into this crystal hydroxyapatite structure. Of course there are lots and lots of co-factors that are involved in making that happen. I’m going to review those with you as we move along.

We think about things that can go wrong with the bones and pre-dispose people, women in particular, to fractures. It is not enough to have bones that are just strong and it is not enough to have bones that are just flexible. Think about the tree. When it is very, very strong but is unwilling to bend and is not flexible, it becomes brittle and it is not able to ebb and flow and if someone were to come crashing into
your leg from the side you wouldn’t have the flexibility to go with the impact and absorb some of the impact. It would very quickly break your bone because of the sheer force. On the other hand, if bones are very flexible but don’t have enough strength then they are fundamentally weak. Neither of these things is good and both of these things can increase the likelihood of fracture.

The use it or lose it concept is particularly important. Clinical research has shown repeatedly that weight bearing exercises increase bone density. This is very vital for children when we think of how important it is for children to get up and off the couch and away from their video game and get outside.

One of the topics I am going to cover today is- do we struggle with more loss of bone density because we lose it faster or because we didn’t have very dense bones in the first place? There are not a lot of people out there getting DEXA scans to check their bone density when they are 25 years old, but I can tell you for sure that a lot of them if they did would be shocked to finds out how much they are starting off with less dense bones. It’s not so much when they get it measured again, when they are 60, that they have perhaps lost a lot because they didn’t have that much to start with.

So it’s very critical to understand that bone building and bone density increases are happening for the first few decades of a person’s life and that is when we have the best opportunity to build good, strong dense bones based on our lifestyle choices. It certainly varies, but peak bone mass density is achieved around age 30. The adage that you have heard from your clients: “that it’s okay if your kids eat a lot of junk food because they’ll grow out of it?” No, it’s not. Not so much. The choices that children and young adults are making have a huge impact on the things that might happen to them or they might wrestle with later on in their physical life.

So let’s talk a little about that bone mass density loss. It is predicted that on average, about 50 percent of American women will have a bone loss-associated fracture. Fifty percent. That’s half. One in two. That is greater than all hormone mediated cancers – breast and ovarian together, for women. That’s quite an incredible statistic.

What you’re looking at in the upper right hand corner on the left hand side is quite normal bone. You see the spaces and the trabeculae that I mentioned earlier? That’s really quite normal. On the right hand side you see a couple of things. The trabeculae has thinned out and there’s less of it. It’s a little bit of a double whammy. There’s less of it in the little segments and they are definitely thinner. They become weaker because there’s less of it, but also weaker because it’s thinner. Some moderate reduction in bone density is actually quite normal and expected for all people as we age and especially for women going through menopause.

I want to talk a little bit about the typical testing that is done to assess bone density changes because you will undoubtedly encounter it. You may have clients bringing in D.E.X.A scores for you. D.E.X.A. is an acronym that indicates a dual spectrum type of x-ray that through contrasts of different wavelengths for x-ray is able to tell where there is mineral-dense tissue and where there isn’t. It’s typically a flat bed that people lie on fully clothed and get scanned. It’s a very low intensity x-ray. A D.E.X.A. score is typically called a T-score and it is due to be normal for a woman as she ages to have as much as ten percent of her bone mass lost as a result of typically, menopause. A T-score refers to the
standard deviation. In other words, statistically the difference is between my score and the score of the young adult average, which is assumed to be of someone who has optimal or ideal bone mass density.

I’m going to show you some examples in a second so don’t worry if you don’t understand it up front from the first get-go. If my T-score is .6 or .8 or up to 1, that means that my percentage bone loss is six percent or eight percent to ten percent, which is believed to be healthy, normal and safe. However, if begin to go lower than that I begin to go into the area of formal diagnoses for bone mass density loss. As you can see here, there are widely agreed definitions of osteopenia and osteoporosis, which are two words that mean the same thing, just to greater degrees. Osteopenia is where a T-score is between 1 and 2.5. Osteoporosis is any score greater than 2.5. So you can see with one standard deviation, meaning about ten percent bone loss, that osteopenia when one has lost more than ten percent but less than 25 percent of their bone mass, osteoporosis is statistically viewed to be greater than 25 percent loss.

The typical D.E.X.A. is taken of the lower spine and the hip. Some physician offices may have smaller equipment where they can assess smaller body parts. I’m increasingly seeing reports from my clients where they may be looking at density in the forearm, above the wrist or the fingers or the leg. Density loss is frequently not consistent across various body parts. I’m sure this makes sense because we may over use and under use various body parts and we may have more or less inflammation in various body parts.

One of the biggest challenges with osteoporosis is there does not tend to be a lot of early signs until there has been a fracture, concern and a D.E.X.A scan. I’m sure you have all had or heard of the experience of getting a bear hug from a family member and breaking a rib, or a friend walking through town and lightly stepping off a curb and shattering their ankle. These are the sort of simple day to day activities that can take place and actually fracture highly weakened bone. The few early symptoms that can show up tend to be typically related to bone mass loss in the spine where spinal compression takes place or perhaps even some micro-fracture which may not be noticeable in terms of dysfunction but can cause light discomfort or shooting pain, depending on the intensity of it.

We are all aware of women as they age perhaps losing some body height. This can be due to spinal compression or a disfigurement of the spine called hyperkyphosis. The diagram you see in the bottom right hand corner is something I’m sure you have recognized perhaps in your own family of how the micro-fractures in the vertebrae can cause a bending of the spine which is what we have colloquially called a dowager’s hump and can make even healthy or quite thin older women appear to have a protruding belly, which may not be because of excess body fat, it may be because of spinal formation. There are genetic drivers for hyperkyphosis as well, a loss of muscle mass and poor posture certainly exacerbate this, but ultimately the spine allows this disfigurement because of weakness in the vertebrae and micro and even macro fractures in the vertebrae.

Let’s do some looking at test results because there’s a bit of myth busting I want to do here. Most people who think about someone who are struggling with bone density as being your typical menopausal female, but I want to present some case studies that may be surprising to you. The first one is 30 year old female. I want to show you a few of the data points here. So what you’re looking at here is a list of the D.E.X.A. test scores or results from four different vertebrae. These are from the lumbar region and you
can see the actual T-scores that I mentioned. Negative T-scores mean loss from the comparison to the healthy ideal bone mass younger person.

What you see here is a mixture of various osteopenic numbers. Remember I said anything between 1.0 and 2.5 T-score is considered to be osteopenic. You can see here the Z score which I’ll talk about in a just a second. You can just see the comparison with just the average model. This person has only 87 percent of the bone mass density of the average ideal. All of these numbers are considered to be osteopenic. I’m giving you the average of 1.6 but you can see an example here of what I’m talking about with regard to not nearly as much loss in L1 and L2 as in L3 and L4. It would be very unusual to see consistent scores across all lumbar, or more importantly, across all bones that are recessed. Sometimes there’s very different bone loss in the hip versus the neck, versus the back.

What I want you to take into account here is that this woman is 30. This should be a time when she should have ideal bone mass density. She is osteopenic and what is of note about her history is a very thin young woman who was hyper-vigilant about her body weight and had a history of very aggressive exercise and amenorrhea, which is the lack of a menstrual period. We are going to talk about the critical, critical role of hormone balance in keeping bones turning over regularly and staying dense and keeping balanced between the formation of new bone tissue and the breakdown of old bone tissue.

Hormones are critical for that and when women don’t have menstrual periods, in particular, they don’t ovulate and they don’t produce progesterone and estrogen levels may be quite low with very thin low body weight individuals as well. You can see that this lifestyle choice has had a huge impact on her. She is at a point where she should be at a 100 percent of the ideal model, but instead she is already in the osteopenic zone.

There’s a question about providing a handout guide in interpreting the results. There are actually many, many web sites that do that, but I will give you a link to a couple of the really good ones that you can use for yourself or your clients.

The next one is an even younger woman, 23 years old. I wanted to use this as an example because sometimes people see these labels and think it’s representing the physical body neck, upper neck, lower neck. These are actually different measurements taken at different portions of the hip with regard to the density of the femur; the largest bone in the human body. You can see here for the measurements that were taken, T-scores of 1.9, 1.6 and .6. So two of these scores - and certainly the total - are definitely in the osteopenic mode.

This should be alarming to us because this is a 23 year old female who should be approaching pretty optimal bone density. Her personal history is the use of daily steroid medications in order to keep her skin clear - for one year. My hope is that you will make use of this data with clients who are choosing very, very strong, potentially toxic medications for potentially very optional purposes or for purposes that could be remedied via other lifestyle changes. Steroid medications in particular have a huge negative impact on bone mass density. I’m going to talk more about that in just a moment.
There’s a question. Are topical steroids equally damaging? We do absorb hormones from topical creams. Certainly the dosages tend to be much less, but yes, we do absorb some of them. I think part of the challenge is absorption is going to vary by person.

I want to talk about the Z score for a moment. The Z score is comparing an individual not to the ideal norm, but it’s comparing the individual to their peers both in terms of race and age. That will allow a 23 year old or a 60 year old to find out whether their bone loss is like everybody else’s. Personally, I’m not sure if that’s particularly useful because it’s kind of like having blood sugar like everybody else. When you have an epidemic of diabetes and have blood sugar like everybody else, is not something to celebrate. The same thing can be said for bone density as well. Some D.E.X.A. reports do include Z scores, but not all of them do, depending on the piece of equipment in the office where the person has had their assessment done.

Then there’s the 61 year old post-menopausal female client down at the bottom, so again taking a look at some of the different myths that we have. This woman would have within the expected range losses in bone mass density based on hormonal changes. She’s been post-menopausal eight years. This is quite healthy – an average level of .4, definitely nothing of concern. You can certainly see here the comparison both to the ideal norm for the T-score and then more to her equivalent peer. She’s doing a lot better than the average peer.

So these are just a few examples. You may see all sorts of different data. If people have multiple assessments done, usually the T-scores will be plotted right next to each other, which is a really wonderful way for people to see the changes in their scores over time. The type of message I like to give to my clients who have this type of data available right away is first of all: bone mass loss density can be reversed. Absolutely. It happens very slowly. It is not something that corrects itself rapidly. The first task for shifting that balance is arresting loss so that the pace of loss does not continue, allowing bone mass density to stabilize and then beyond that, actually to get it back. I’ve seen this happen in about seven of my clients over time. It typically takes not just a couple of weeks, not even a couple of months- it tends to take a couple of years. So it’s important to set client’s expectations properly because bone tissue turns over slowly. It’s not a part of our body that regenerates itself rapidly. If you cut your tongue, it’s amazing how quickly it heals but if you have damage to a bone, it takes months and months to heal so progress is slow, but absolutely it can be done.

There’s an individual sharing here who has a friend who’s 55 years old and has been on antibiotics actually for her scan for probably 20 years and already has a dowager’s hump. I’m going to talk about antibiotics and how that also can be playing a role in bone mass loss. It’s a very rich equation of how body systems impact one another.

This is a quote that I have versions of many, many times. Because a client had typed it, I had to share it. “I just can’t understand why women are wrestling with this bone loss thing so much. I mean, it’s just a matter of taking vitamin D and calcium regularly. How hard can it be?” This is a quote that one of my clients shared with me from her primary care physician, which is a fascinating simplification. After all, if we all just took vitamin D and calcium pills we should all have ideal bone density, right? Not so much, it’s actually quite complicated.
High bone loss density does increase the risk of bone fracture. That is not up for discussion. It has been demonstrated incredibly well hundreds of times in clinical study. Very true, but it’s not that simple because bone loss density is only one of many factors, and I give you some of the common ones here. I wanted to give you this graph from a clinical study. It’s referenced at the bottom if you’d like to read the whole thing. It’s actually very interesting. This is taking a look at the risk of fracture along the vertical axis relative to the T-score for men on the left box and women on the right box. You can absolutely see how for both men and women (I focus on women over here to the right) increasing T-scores - that’s higher and higher standards of deviation away from the ideal norm. That means more bone density loss definitely increases the risk of fracture because these lines are going up, but you notice it’s not linear and more importantly, what these lines are showing you is just how much the risk increases given other risk factors.

In particular I just want to highlight one example. The steroids I mentioned before are in the family of glucocorticoid medications like Prednisone. Look just how much the use of steroids increases the risk of fractures, You’ve got a baseline here of simply having a problem here with the bone density really increasing the risk of fracture really in the 10 to 20 percent zone. When you talk of ongoing use of steroids the slope is much steeper for people who have really significant bone mass loss. This is way up into the 50 percentile zone. This is a relative tripling of the risk of fracture by adding the use of those drugs to loss of bone density, so it’s not just as straightforward as vitamin D and calcium.

Similarly, taking a look at things like family history, which can involve all sorts of different factors; it’s not just a matter of genetics. While people were being raised as children they undoubtedly ate the same food as the rest of the family and were undoubtedly exposed to the sun, vitamin D or lack thereof and were undoubtedly exposed to very similar levels of stress or perhaps toxins or other sources of inflammation. So again, family history is a very rich category, but look at how much this increases the risk of fracture. It is really incredible.

To further complicate the situation, this study will give you some really great examples if you’re interested. Fractures in bones other than the spine – in the arm, hip and ankle for example - occur mostly in women, who are osteopenic, not women who are osteoporotic. Isn’t that fascinating? A great example that statistics don’t always show us what we expect, and clearly shows that the loss of bone density itself is not the single primary factor around risk of fracture. That goes against what most of us have heard in the media and certainly goes against what our clients have heard. I think it’s very important for them to understand that just like any dis-ease in the body; lifestyle choices collectively play a huge role.

Now let’s do a little more myth-busting. We have seen advertisements on television encouraging women to drink more milk because that would certainly help their bones to be stronger. I think this is the type of concept that is very seldom questioned because we think “milk: does the body good”, that milk is loaded with calcium. It has a huge amount of calcium so it must be helping us to have stronger bones and to have fewer fractures. As you can see by this graph, this is a pooled analysis of multiple studies taking a look at the impact of the relative risk rate (that’s what the vertical axis is) of fracture based on the relative number of glasses of milk consumed per week.

There’s a reference here that has to do with no-milk consumption and then it’s taking a look at: is the risk of fracture positive or above the reference line, meaning the risk is greater or is it less below? Even
going up to 30 glasses of milk a week, (understanding that the variation bar is really quite high in all these study collections), there is no clear pattern. Certainly what the American Dairy Council would want us to believe is that there’s this unbelievable trend in improvement and risk reduction for milk consumption, right? They would just like us to believe that there is going to be this precipitous fall in risk because we’re all sucking on the dairy products. That’s not true.

Certainly milk and dairy foods are a source of calcium, but as we’re diving into this, it is becoming clear that it is much more complicated than that. It’s not just about the calcium and as I’m sure many of you are aware. A higher intake of calcium can actually increase hip fractures if it doesn’t come into the body in combination with all of the other co-factors to ensure that the bone tissue that is added is strong. I will get to more of that in just a moment. Again, definitely not what most people expect to understand from the research.

Indeed it’s very complicated. If we look at my client’s primary care physician’s assertion to just take calcium and vitamin D. Well, some studies have shown that supplementing with those nutrients slows the rate of bone loss or reduces the incidence of fractures. However there have also been studies with those two that found no benefit. There have also been studies where they got the participants to admit that they didn’t do a very good job of complying with the tenets of the study. I included this to give you a bit of a choke-hold, but also to remind all of us that clinical studies by definition are imperfect; especially human studies. Animal studies in some ways more reliable because the animal is made to eat what is put in front of him. The human person is sat at home with a bottle of pills having signed their name saying they will do their best to take them.

Clinical studies, at best, point in the general direction of what we want to learn. Clinically, if we start to see a whole bunch of studies on the same topic show a rich mix of positive and negative results. It’s generally, scientifically, a really good indication that we haven’t found all of the critical factors. There is a variable, a wild card, a variable that is not being taken into account.

Going even further – a huge collection of data - an enhanced study, as recently as 2012: that consuming calcium beyond the RDA, which is not very much at all and usually in the form of supplements, provided no benefit for the hip or for the vertebral bone density. A 2007 study in the American Journal of Clinical Nutrition found that calcium supplementation did not reduce fracture rates in older women, and actually depending on how you evaluate the data, increased the rate of hip fractures in some people. Numerous studies show increased vitamin D does reduce incidence of actual osteoporosis, but a few studies have shown that surplus vitamin D is not benign. It actually causes loss of that same bone mass density. On the other hand when we go out in the sun we get huge amounts of vitamin D on a daily basis. We can easily get 10,000 IU at a minimum per day of vitamin D from summer sun exposure. Then, some studies show an increase in bone mass density from calcium with or without vitamin D, but that increase in bone mass density didn’t help the risk of fracture.

Indeed, it’s complicated and it’s important for us as practitioners to stay out of the fray a little bit of all the study minutiae. There are plenty of people in the medical media vetting their studies against other people’s studies. There are literally thousands of studies on the concept of bone mass density. As I said earlier, when you end up with is so many mixed results, and it’s usually an indication that there are key
variables that are not being considered, and the fact (we know this intuitively as coaches) that more of a good thing is not necessarily better.

As is the case with most things in the body, having the optimal amount allows optimal functioning. Having not quite enough is not ideal, but having too much is also not ideal.

So if you enjoy diving into these studies and looking more at the detail, I’ve given you the links so you can check them out for yourself. Feel free if this is a topic you are passionate about. You’ll definitely get good further learning about the dynamics of these nutrients and some good handouts to show your clients with regard to myth-busting that it’s not just about more vitamin D and more calcium.

I just want to make a comment here that I have received a few questions and I am just moving on in the interest of time but I promise I will not lose track of your question. If I don’t get to it during the presentation, I will be sure to answer it on the course Q&A page.

As I’m going to share in just a moment, several studies have actually shown that the maximum useful amount of vitamin D with regard it enhancing calcium absorption is about 35, but we readily understand that higher levels of vitamin D can reduce the risk of other chronic inflammatory diseases like a variety of cancers and also heart disease. So again, the way the body uses certain nutrients varies by system so what is optimal for one is not necessarily optimal for another. This where studies can really lead us awry.

With that introduction, let’s shift into the debacle, the question, the mystery of why we have so much osteoporosis, why we have so much bone loss mediated fracture. This is a great quote from Dr Alan Gaby. I’m a huge fan of his. “As late as the end of the nineteenth century, [not the Middle Ages but just two hundred years ago], pathologists recognized fractures in osteoporotic bone not as a frequent occurrence but rather as a medical curiosity”. Osteoporosis, my friends, is a modern disorder. In fact, skeletons dating back to the late 1700s to the first half of the 1800s were found to have significantly lower rates of bone loss at the hip than the modern day woman. Even coming forward from that, the age–adjusted incidence of the hip and the wrist doubled between the 1950s and the 1980s in several European countries. Doubled. What does that tell us about our lifestyle choices and our environment?

In Finland the incidence of hip fractures increased by 60 percent in women and by 108 percent in men between 1970 and 1997. That is a huge, huge increase in the incidence of a very debilitating dis-ease in the body. Clearly, something has changed. As I said earlier, peak bone density should typically occur near age 30. Compared to our forefathers, are we losing it faster or are we starting with less dense bones overall? I think the data clearly shows it’s both and I want to encourage you to bring that concept on board when you think about who needs help with bone density. Is it just the post-menopausal 61 year old woman who has only very light osteopenia that we looked at a moment ago? Or is it the body image obsessed 30 year old whose addiction to exercise and loss of her menstrual period is making her nearly osteoporotic at the age of 30? Or is it the children in the family we might be supporting who are not getting any kind of calcium intake at all? Not from dairy foods, not from dark green leafy vegetables, not from nuts and seeds because their diet consists largely of take-out fast food. Or the children who are not getting outside to get weight bearing exercise and who are spending way too much time watching television or tinkering on a video game or a smart phone?
I think it’s important to shift our perspective on who needs support with bone mass density because retaining good strong flexible bones as we age, especially for women post-menopausally, is about building as strong and as dense bones as we possibly can in the first place. With obvious risk factors like the use of steroid medications, not for a short period of time; certainly steroids are prescribed for very short use, a week or two, in order to suppress the immune system to help the body to get over something. When there’s been chronic use or when there have been major hormone shifts and issues, or a history of great thinness or amenorrhea or of fertility problems - these are all indications of situations where it could make a lot of sense to check bone mass density even though people aren’t anywhere near the typical age of 65 where US government standards would suggest getting a D.E.X.A. scan.

There’s a question here. Is peak density near 30 for women and men? Yes. Men generally do have denser bones than women, but only slightly. They certainly lose bone density less quickly than woman because they don’t have the same hormone shifts. Interestingly enough, estrogen in men is also really critical for keeping good bone density. Men who have big drop offs in their 50s or their 60s or their 70s in their testosterone levels often also struggle with bone density loss because the little bit of estrogen that men are supposed to have they convert testosterone to estrogen.

So let’s take a look. This is a modern epidemic. What’s changed? I think as we well know, a lot has changed. I put together a summary form. I certainly could have put together a 50 slide deck diving into all of these in terms of the research, but instead these are things you can review with your clients. What has changed? What can be potentially contributing to bone mass density loss because for the average person it’s not just one thing? It’s not just menopause and drop in estrogen. It’s not just lack of calcium intake. It’s not just living in northern Washington and not getting enough vitamin D. It’s usually a cornucopia of factors:

*High refined sugar intake:* This is fairly well understood to be a contributor. I’m going to mention a number of things here where absolutely the research is not conclusive because it’s not the same in each person. In every case where there is a combination of multiple variables some people are going to be more sensitive than others. Generally, a large ingestion of refined sugars or refined carbohydrates does result in a transient increase in urinary calcium presumably from mobilizing calcium from the bones. Of course if it is just an occasional ingestion, this is not a problem but if it is chronic as we observe in the average young person today, it’s easy to see how this would be a key factor. High sugar intake also increases cortisol, which is our own steroid stress hormone and that also increases calcium loss in urine.

*A high intake of coffee and soda.* Caffeine causes an increase in calcium loss, phosphoric acid in particular. I want to harp on, in particular, on sodas that contain phosphoric acid, primarily the dark ones like the colas in the soda world, do not tend to contain citric acid for that clean mouth feel. What they include is phosphoric acid. You may notice the similarity of the phosphoric - which is a type of a phosphate which causes calcium to be released. Huge, huge, very acidic dose of phosphate once it’s absorbed and brought on board in the blood causes the body to lose some calcium.

*Ingestion of caffeine:* also increases urinary calcium excretion. Interestingly enough, tea is associated in studies with increased bone mass density and this is because tea is so full of phytounitrient categories called flavonoids which are believed to perhaps protect bone mass density from the potential negative impact of caffeine.
Low stomach acid: I’m going to talk about this at length. Certainly if we are not able to denature proteins very well in our digestive tract we are not going to be able to absorb the amino acids from protein well and if we don’t get good supplies of acids from our dietary protein we are not going to be proficient at maintaining our collagen backbone in our bones. Magnesium deficiency is extremely common in the US. It’s one of the top three nutrient deficiencies and in particular we wrestle with it because it’s just less prevalent in our soil. Our soil has appreciably less magnesium than even in the 1950s, so it’s harder to get in our food. On top of that, we need good strong stomach acid and it’s been demonstrated that individuals taking acid-suppressing medications, like Prilosec and Protonics and all of that, are in danger of having magnesium deficiency.

Acid producing diet / very acidic diets: I’m going to talk a little more about that later on. There are a lot of myths around this but certainly the body needs good balanced amounts of phosphorus and calcium from our diet and potassium certainly plays a supportive role. It’s not so much that acid-producing foods are negative but we need them to be balanced with alkaline producing foods as well. I’m going to talk about that in detail later on.

We definitely have widespread low vitamin D: Vitamin D is really critical in helping us to absorb calcium from our GI tract and actually helping us to make use of that calcium in our bones.

Widespread Low vitamin K: required to make a substance called osteocalcin which actually binds tissue in the bone calcium and keeps it there. Vitamin K is generally responsible for managing calcium in the body, so it goes in the bones and stays in the bones rather than ending up in rogue places like kidney stones or in the lining of our arteries.

Poor methylation: this is an interesting one stretching way across systems, but if we are not adept at methylating, we can end up with high levels of an amino acid in the blood called homocysteine. Remember this from ‘Disease 101’? High homocysteine can pre-dispose you to cardiovascular disease, but it also interferes with building a good, strong collagen matrix. As you know we need good amounts of B12, B6 and Folate in order to methylate well. A good third of the population struggles with methylation genetic variants or SNPs that make that process difficult.

General nutrient deficiency: we tend to eat nutrient-poor food. The average American no longer eats as they definitely did back in the 1800s or certainly in the early 1900s even, whole natural foods. We didn’t have fast food or highly processed food back then. We tend to be missing some of these key nutrients. We’re not as active and less likely to put the demand on the bones that they stay strong. Use it or lose it. Weight bearing exertion is required to keep bones strong. Low muscle mass predisposes the bones to carry more of their fair share of the load.

There’s a question here. Calcium loss in bone is typically measured in clinical studies with high levels of calcium excretion in the urine because that is part of what the kidneys are doing: playing traffic cop for allowing various levels of minerals to escape and we have to keep nice balanced percentages of these electrolyte minerals in our blood in order to keep our body functioning well and in particular, to keep blood pressure in a healthy zone. So if we end up dissolving bone tissue and pulling calcium, and phosphorus for that matter, out of bone tissue and putting it back into the blood, the body has to respond to that excess by excreting it. It can only handle so much surplus in the blood without messing up a lot
of other functions, so the kidney plays traffic cop for that and various levels of calcium loss from bone which can be measured in urine.

There’s a question about low stomach acid affecting calcium absorption as well. Absolutely. In fact, the most typical type of calcium supplement Americans used is calcium carbonate, which is a form of calcium that requires extremely strong stomach acid, very acidic stomach juices so it can have a hope of breaking it down so it can be absorbed later on, which is a form I highly discourage all of my clients from using. We’re going to talk about forms of nutrients in detail so don’t worry about that, but indeed stomach acid is vital for all of the minerals as well as protein.

Beyond intake we can have all sorts of issues with nutrient absorption. I’m sure you deal with this all the time with your clients (I know I do) with various types of intestinal inflammation. It’s the old adage that it’s not “you are what you eat”, you are what you absorb. We do things like eat gluten that has been so hybridized that our immune system isn’t really sure it’s a food anymore. We frequently use antibiotics which frequently disrupts the protective anti-inflammatory balance of microbes in our intestinal lining. We take prescription drugs, we pop aspirin and Advil, and we’re eating foods laden with chemicals and pesticides. All of this has a serious chemical wear and tear on the lining of our intestines and can impair our nutrient absorption.

**Chronically high stress.** Stress hormones impair new bone growth and actually break down bone matrix. One of the things that damage the collagen backbone of a bone tissue is high cortisol. That’s definitely a pearl for you. People who have stage one or stage two adrenal fatigue have definitely wrestled with bone loss.

**Another key hormone: progesterone.** We see this all the time. Those of you who have taken the hormone course know about this in spades. Estrogen dominance is epidemic in our society and because of the cortisol steal, the sex hormones being reduced as a result of the body needing to keep the stress hormones so high, progesterone can plummet which not only predisposes women to hormone cancer, but progesterone is also critical for bone density. I’m going to talk about that in more depth as well.

**High intake of dairy foods.** This is a really interesting one because- is that a source of calcium? Absolutely, but two-thirds of the world’s population has lactose intolerance and the primary symptom of lactose intolerance is diarrhea. When we have diarrhea and loose stools, we do not absorb readily the nutrition that we can from our food because stool is moving through our GI tract too quickly. Most of you are aware that dairy sensitivity is in the top two food types that can cause intestinal inflammation, so that can also impair absorption.

Again as I mentioned earlier, **general inflammation** – there are some really fascinating studies and I gave you a link here to this about different inflammatory chemicals. Remember we talked about cytokines. It’s a fancy word and just means ‘inflammatory molecules’. Different types of inflammation have a huge impact on up regulating or speeding up bone breakdown. It’s part of the bone’s inflammatory response and it’s interesting why. One of the things the body does as a stress response to threat or crisis is it begins to break down some bone in order to increase blood levels of calcium dramatically because calcium is necessary to make muscles work well.
From a primal evolutionary perspective, if we are stressed out it’s because we need to run for our lives, so the body is preparing us to have optimal muscle function by having more than enough calcium in our blood. If that happens once in a blue moon for a real threat, that’s a wonderful thing, but if it’s happening every day because we’re in traffic and have road rage or we’re at work and we can’t stand our boss, or we have chronic tension in our marriage, this promotes ongoing steady state elevated excretion of calcium from our bones.

**Metal toxicity.** We’re going to talk about that more in depth. We’re going to have a whole course on that. I want to give you one particular clinical tip here. Lead has a preference for being stored in bone tissue and again as I mentioned at the beginning of the webinar, it is not uncommon for lead to be freed up when some level of osteopenia begins typically in the menopausal years. That can create inflammation when a woman suddenly starts developing arthritis symptoms, or suddenly starts having migraines and suddenly starts having tremor. These are the types of things to think about in terms of where that toxicity came from. It may be that the exposure was not a single toxic exposure last week, but rather a slow chronic exposure between ages 20 and 30, but definitely something to think about.

So clearly in contrast to our PCP’s little quip here, it is not that simple. It is not about vitamin D and calcium. It’s not even just about estrogen, which is the most common hormone we hear about in the news with regard to retaining bone density. A lot has changed and there is a large cornucopia of things that could be contributing to bone density loss in our average client.

In the second webinar for this course I’m going to give you some real specific suggestions with regard to reversing bone density loss. I’m going to share case studies with you and tell you specifically what I have done and give you a lot of practical tips. For this particular course I just want to focus on broadening your awareness of these factors and in the beginning, focusing away from the notion of how much vitamin D should I take and what kind of calcium should I take? What are these other key factors and how can we support our clients to address them?

We have some questions here: “Would calcium loss cause the stones in the kidneys if that loss is at a greater level and the kidneys can’t keep up?” Absolutely. In fact, there’s a General Q&A post on kidney stones. It is really quite detailed. Certainly lack of magnesium, lack of vitamin K are both key factors in the creation of kidney stones, as well as hydration; to your point, diluting the urine more so there’s not as much of a buildup. The vast majority of kidney stones are calcium in nature. You’re absolutely right.

In fact, calcium running rogue in the body is a problem, not just in the kidneys but in other places. Our thyroid can get calcified, our pineal gland can get calcified and our arteries can get calcified. Calcium is a critical nutrient. It’s kind of like estrogen. If it’s not in control, it can wreak a lot of havoc.

There’s a question here about the name of a good supplement that’s a good NSAID replacement. I like using curcumin for that; I like the meriva form of curcumin. There’s also a really great product by Thorn called Phytoprofen. (It’s a play on the word Ibuprofen.) That’s a mixture of bromelain and Boswellia and curcumin, three really potent anti-inflammatories; three really potent herbal anti-inflammatory remedies for pain, tightness, stiffness, inflammation and potentially fever as well.
There’s a question here about bone loss medications. I am going to go through those in the second webinar in detail in terms of what they are, how they work and unfortunately just how toxic they are. Certainly, I have never recommended those medications to my clients but what I’m going to show you from my case studies doesn’t involve the drugs.

There’s a question about constipation. “Could those be equally damaging for mineral absorption?” Constipation usually takes place in the colon where not a lot of nutrient absorption takes place but the dairy intolerance itself and the immune system intolerance to that in the small intestine further upstream definitely has inflammation in the intestinal lining, so constipation may be a symptom as well, but all food sensitivities can wreak havoc on the intestinal lining.

In the interest of time I’m going to move on and introduce one last key slide about the anatomy and physiology of bones and that is the critical concept of bone remodeling. I mentioned earlier that bones are constantly being remodeled - approximately ten percent per year - and certainly as needed to respond to the way we use our bones and to heal damage. I’ve already mentioned that exercise and especially weighted exercise increases bone density. It’s important to remember that your body weight counts. Walking around, jogging around, climbing stairs is weighted exercise, and you might find it intriguing that studies have shown that even moderate weight loss can reduce bone density, even in the face of exercise, because people’s bodies are not as heavy and this really highlights the importance of addressing the whole cornucopia of factors that can support bone regrowth.

I’ve already talked about the basic structure of bone tissue and the trabeculae and the spaces in between, but if you were to take one of these little channels or one of these little pieces and look at it on the top, so let’s say we would take this little piece here and look at it head on. This is a blow up of what you would be looking at. You can see here the three primary bone cells that I want to talk about. Osteocytes, osteoclast and osteoblast.

The vast majority of bone tissue is made up of osteocytes. That’s just the maintenance of existing bone tissue. Osteocytes are able to differentiate and do have osteogenic stem cells in terms of creating new cells on an ongoing basis, but osteoblasts and osteoclasts have a job to work in balance with each other so that as we make new bone tissue and break down older bone tissue at the same rate - if we want to maintain the same amount of bone. The analogy of this is if I have a bucket with a hole in the bottom of it and if I want to keep the level of water in the bucket the same, I’ve got to be pouring in the same amount that I’m taking out.

So, other than when we are growing as a young person, once we are of the peak bone density then wellness is about keeping the activity of osteoblasts and osteoclasts equal so we are not breaking down faster than we can replace it. Indeed, one of the issues with a lot of the medications that are used for osteoporosis is that they don’t encourage the osteoblasts to make new bone tissue. What they do is they hamper the osteoclasts so they can’t break down older bone tissue as quickly. It doesn’t take a rocket scientist to understand that allowing old tissue, especially old damaged and more brittle tissue to hang around more than the body would naturally want it to may be a recipe for higher bone density. Eventually that bone, even though it may be dense, is still going to be vulnerable to fracture because it’s old and it’s not being constantly nourished and turned over.
The behavior of the osteoblasts and the osteoclasts is controlled by a really delicate symphony of hormones. I’m actually going to describe each of these to you. You might be surprised to see that it’s not just estrogen. If you were to listen to the media or check out the internet it would lead you to believe that estrogen is the only hormone that is really critical for maintaining bone density. There are a whole slew of hormones here and they are not just sex hormones that are involved in this process.

First of all - as is the case in localized tissue, the osteoclasts and the osteoblasts regulate each other. It’s part of how they make sure they are not working counter to each other. There is a biochemical process called paracrine signaling. That’s just internal to the trabeculae itself in terms of regulating each other and keeping each other in balance. Growth hormone stimulates both bone growth, in terms of the larger size of the bone, and mineralization. In young people that happens as a result of bone plates, which we won’t get into, but growth hormone is allowing young people to grow to their full genetically programmed size. It’s still important that we have growth hormone as we age in order to stimulate the mineralization of bones. That’s the maintenance process I was mentioning earlier.

Growth hormone is highly affected by things like insulin, which you remember is a hormone. It’s a metabolic hormone, but this is a place where really highly refined carbohydrate diets do a real whammy to our body’s growth hormones supply.

Let’s leave the bones for a moment and talk about the glands. What about the thyroid? When we talk about metabolism we tend to focus on the thyroid T3 and T4 thyroid hormone which regulate among other things, our metabolism. The thyroid produces another hormone called calcitonin which works in the opposite way of parathyroid hormone at reducing calcium in the blood and it actually does that by inhibiting the osteoclasts so they don’t break down as much bone. That’s a way of reducing serum calcium when it’s too high. Parathyroid hormone’s job is to increase serum calcium when it’s necessary.

Remember that electrolyte levels in the blood are ideally kept in a fairly tight zone for optimal functioning of the rest of the body, so hormone’s job is to really be traffic cops. Interestingly enough you probably have a client who has low thyroid function. It’s important to expand our thinking that if we have low thyroid function it’s probably not just because of low T4. There may also be low T3, which is part of the regulation system here. Much more importantly as a clinical tip here- if you have clients who have had a partial or total thyroidectomy, they are not making any calcitonin at all.

It’s interesting to me that there’s not a medical textbook on the planet that does not acknowledge that this is what calcitonin does. In all the years I’ve practiced, I’ve never had any physician express any concern about it missing when there’s no thyroid. This is a key difference between the synthetic thyroid medications that might only be T4, or even a little bit better I guess, T4 and T3. There’s no calcitonin. This is the big difference between the synthetic meds and the natural thyroid extracts that do have calcitonin in them.

Despite the name, parathyroid hormone is not produced in the thyroid gland. It’s produced in the parathyroid gland; little teeny weenie glands. We have four of them. The name has nothing to do with the thyroid chemically. It’s just based on the fact that they are next to the thyroid. Parathyroid hormone is responsible for keeping calcium coming into the blood in order to have good amounts of it. Parathyroid dysfunction can cause all sorts of issues. There are increases in parathyroid hormone
disease, called para-thyroidism, where there is way too much parathyroid levels and serum calcium levels get way too high, which is also a problem for the kidneys and also a problem for the bones.

Thyroid hormone itself. We all have clients with hyperthyroidism. Elevated thyroid hormone itself increases bone re-absorption, so people who have Grave’s Disease, the autoimmune version of hyperthyroidism (which are most common) are definitely at higher risk of osteoporosis.

Estrogen has a multi-factorial effect and that’s why it’s talked about in the media. We have already talked about testosterone for men and how that’s critical; because that’s how they get the little bit of estrogen they need. Estrogen supports vitamin D’s role of taking up or encouraging the take up of calcium from the gut. Estrogen primarily does its job by lengthening the life of the osteoblasts but then inhibiting bone re-absorption, inhibiting the osteoblasts from breaking down bone. This is, as I said, about density, by not allowing older tissue to break down.

The challenge for us as a society is that unless a woman has had a hysterectomy where her ovaries have actually been removed; there are not that many women who have problems with low estrogen. What we have huge issues with are women with non-existent or very low progesterone. I’m going to talk about that in a little more detail in just a moment. I’m going to review some of this and if you’re interested in the dynamics of sex hormones, the ‘Hormones Demystified’ course goes into this in extreme detail, but I’m going to give you some back-up information to support this because understanding hormone levels for our clients who have been diagnosed with advanced osteopenia or osteoporosis, this is really key.

Let’s check in here on the questions. So the osteoblasts are the cells that generate new bone tissue. I think of it as blasting like a construction crew is doing blasting in order to build something new. I think about osteoclasts as like crushing, getting rid of, wiping out, dissolving.

There are a few questions here about lab work. I’m going to give you real specifics on lab work in the second webinar so I promise I’ll get to that.

There’s a question about the thyroid. “If the thyroid is missing what does that say about the need for calcium?” What it says is that there is a need to carefully monitor it to ensure that serum calcium stays in a healthy zone. Certainly I think that urinary calcium can be assessed. I think as soon as there might be a concern about kidney function or calcium levels that would be typically what a physician would jump to next in order to check what’s happening. So it doesn’t necessarily mean there’s an issue if there are not a lot of drivers in the body for the parathyroid hormone to have to be breaking down a lot of bone to increase calcium. Then it’s not necessarily a concern but it could very well be a big concern.

I think it makes a lot of sense for clients with total thyroidectomy to chat with their physicians about natural thyroid extract to make sure they get the full complement of thyroid hormones. By the way, it’s not just these three. It’s T1, T2, T3, T4 and also calcitonin. It will do a much better job of putting back in the body of what we would have produced, because in some cases we are just beginning to understand what the function of some of these hormones is.

Let’s talk about hormones for a second. Hormones exist in the body in a soup. We think about hormones having different functions – sex hormones, stress hormones, metabolic hormones, and growth hormones
- all different types - but it is not as though they are sequestered as individual little cavities in the body. They’re swimming in our body, in our blood in a soup and they all affect each other.

I want to share a little bit about this because these are all complicated dynamics. It makes sense that if we are going to help someone understand what’s going on with their hormones that we give them a little bit of structure with which to examine it. Obviously measuring four or five hormones and changing them all at one time is not going to necessarily help at all because the body is constantly changing to try and adapt to the adjustments that are being made. It makes much more sense to adjust one thing at a time to allow the body some time to adjust and see if it self-correction. Generally, it’s more logical to address upstream hormone function or to address the root cause of hormone imbalance rather than trying to tackle a whole bunch of out of range numbers at once.

I want to focus on the adrenal gland. There’s a whole course on this, especially how the adrenal and the thyroid affect one another, but I wanted to summarize for you some really key tenets from that course. We have an epidemic of adrenal dysfunction that is widely unrecognized in conventional medicine. Even though it’s well understood that the job of the adrenal gland, among other things, is to secrete stress hormones that protect the body from the effects of stress.

Stress hormones are not evil. They are not bad. We have to have them. It’s kind of like cholesterol. We can have over the moon too much or not nearly enough, but again like most things in the body, more is not better and less is not necessarily better. It’s about balance and about having the right amount, so in a typical adult body what we should have is a nice high amount of cortisol first thing in the morning. That’s how the brain kicks the body into gear so that we are able to wake up and bound out of bed. Then, our cortisol level should fall down fairly dramatically during the morning and crest out during the later part of the day and really fall off later at night because at night time we don’t need cortisol.

In fact, at night time cortisol competes with melatonin in receptors in the brain and if we have high night time cortisol, it will give people insomnia. This is what a healthy cortisol looks like- bound out of bed, excited to greet the day, not freaking out, not having a panic attack, just energetic. Then my body’s energy carries me for the rest of the day and I have good amounts of cortisol but nothing crazy.

When people experience average Western lifestyle and we go through the amount of mental, emotional stress that we do, or the anxiety that we do, it causes the adrenal gland to have to put out more and more and more cortisol in response to this perceived crisis or threat that we are experiencing. Primal historical life - those kinds of threats were real intermittent but a lot of us are experiencing those dramatic surges of stress every day and for some of our clients every day, all day. What the body does is it sends out more cortisol to protect us from yet more stress and if that’s temporary it’s great, but for a lot of our clients it becomes chronic where they start the day with sky high, off the chart levels and it falls off to this really high level.

This the kind of person who would feel anxious throughout the day and might have trouble sleeping because of this really high night time cortisol where melatonin would have a really hard time getting into receptors. Just like the steroid drugs I mentioned earlier, high cortisol increases collagen breakdown, so the actual break down of the back bone, the structure of our bones, inhibits the osteoblasts that are supposedly making new bone tissue and also increases serum calcium. All three...
things fly in the face of maintaining bone density. So again if it’s happening infrequently it’s no big deal, but if it’s happening frequently or every day it’s a big contributor.

So these are things we can help our clients with. What’s their primary food? What’s their life experience? What’s their chosen attitude or outlook about their life? Keeping in mind, on the physical side, the adrenal doesn’t just respond to mental or emotional stress, it also responds to physical stress and can be anything from burn-the-candle-at-both-ends lack of sleep to more insidious things like toxins or chronic intestinal infections or food sensitivities.

In fact, a really good clinical pearl for you is that a huge amount of exhausted adrenal glands in people where it has been sky high for so long and so long that the adrenal gland eventually becomes dysfunctional and can’t keep up. These levels then plummet their way down here and that brings a whole other host of different issues. A major cause of this process of elevated, elevated, elevated - crash of the adrenal gland is undiagnosed or ignored food sensitivities. We can feel that we can ignore it because,” Oh, it bothers me but not that much”, but your body thinks it’s under attack and the nervous system is noticing and the immune system is noticing and trying to protect us from this food that is innocuous enough but that the body thinks is a threat.

So cortisol is the best place to start in understanding how we can help people with better hormone balance because once we are putting our hormone priority on cortisol, the body start making less and less sex hormones. It also causes the thyroid to be dysfunctional. In my practice, easily 80 percent of people who have thyroid issues actually have adrenal issues and the thyroid issue is just a side effect of the adrenal issue.

I’m going to talk about this briefly and there’s a slew of this in the hormone course but just to demonstrate - all hormones are made from cholesterol. It’s a really vital substance in the body and absolutely critical. We have the sex hormone pathway where we can make estrogen, progesterone and testosterone from cholesterol or we have the stress hormone pathway where we can make cortisol. What happens in people who have the chronic stress that I mentioned earlier is that there is what is called a ‘cortisol steal’, where the body prioritizes sending all the raw material down the pathway to make large amounts of cortisol in order to protect us from the stress.

It’s a good example of how the body is choosing between crisis and reproduction. In fact, this is a huge driver for infertility. When people have giant amounts of cortisol they are not making sufficient amounts of progesterone, they are not making sufficient estrogens, and it is very difficult to get pregnant and to stay pregnant in the midst of a cortisol steal. This is where both physical and mental relaxation is so critical for fertility, but it also turns out it’s really key for maintaining bone density. If all your hormone raw material is going down the cortisol pathway it’s going to be very difficult to retain the amount of estrogens and progesterone you need to nurture those osteoclasts and osteoblasts so their activity remains balanced.

I just want to talk briefly about estrogen dominance. This is a very rich topic. Estrogen dominance is extremely common in our society. If you look here at the bottom - all of these symptoms that people have are evidence of estrogen dominance. There are a lot of reasons why a person can acquire estrogen
dominance but it is important to understand that in an awful lot of women it is not about having too much estrogen. It is about having estrogen and progesterone that are out of balance.

As I mentioned earlier, estrogen is an extremely important hormone. It’s what allows women to conceive and carry a child. It’s fantastic. Estrogen out of control leads to breast, ovarian and uterine cancer and all sorts of debilitating symptoms. So the critical thing is to ensure the body is able to manage its estrogen levels but more importantly that the body is able to produce plentiful progesterone because progesterone protects our tissues from the effects of estrogen.

A pearl for you is that all women, five to ten years prior to menopause, experience reductions in progesterone. In women, aggregate estrogen levels don’t really go down appreciably until late menopause. For most women this is going to be in their mid to late 60s. Women do not have hot flashes because of overall low estrogen. They have hot flashes because of highly fluctuating estrogen, but their overall levels could still be quite high. The ovaries start making less and less progesterone five to ten years before menopause and so women become very vulnerable to estrogen dominance during that not one or two year window, but five to ten or even twelve year window.

Here’s the kicker. As the ovaries start making less progesterone, the body part that is supposed to take up the slack and make the progesterone is the adrenal gland. We just talked about that and if the adrenal gland is completely occupied pushing out a lot of cortisol, it’s not going to pick up the slack and it’s not going to make a lot of progesterone. The imbalance in progesterone and estrogen can cause a huge variety of estrogen dominance symptoms, not only the menstrual ones I mention below, but things like anxiety, a huge source of anxiety and also increased retention of belly fat and also bone density loss.

If I have got plenty of estrogen and I’m breaking down old bone appropriately, but I don’t have enough progesterone to make new bone, eventually I’m going to lose my overall density. More importantly, I’m going to have more brittle bone because my bone tissue becomes old.

So that’s little bit about hormones. Let’s chat for a little bit about minerals. Again, I’m going to go into specifics in the second webinar about supplementation recommendations. I just want to talk about things that are really critical here. I’ve given you a lot of notes and I’m not certainly going to talk about all of them. As we have already mentioned, protein is extremely important so having sufficient stomach acid and sufficient protein intake is very, very key for that collagen framework. We talked about vitamin D as important for allowing calcium to be absorbed from the intestines. We are not designed to get it from food; we are designed to get it from the sun. The max benefit of vitamin D for calcium absorption is around 35 nano grams per milliliter. Vitamin D works in concert with vitamin K and in particular, the form of vitamin K2.

So the surprise for many of you in this course might be just how critical vitamin K2 is. You can absorb plenty of calcium but if you can’t bind it in the bone tissue, you are not only at risk of reducing bone density but wreaking havoc on other body tissue that can become calcified. We get vitamin K1 from leafy greens but unfortunately it’s K2 that we need to have this effect. K2 is in a lot of foods that people chose not to eat because they are afraid of them. The bells should be going off in your head of the criticality that children should have copious, copious amounts of vitamin K to work with. That’s why I have always thought that two eggs cooked in butter is a fabulous breakfast for a young growing person.
Serum vitamin K is not a particularly good marker but you can measure how much osteocalcin in the bone is missing vitamin K. That’s a specialty lab test and I’ll give you more information about that in the second webinar. When you take more vitamin D the body generates more receptors for vitamin K2. When someone is supplementing with more than 1000 IU of vitamin D they really need to be taking vitamin K2 as well because they work in concert. Vitamin A is in there in the trio as well but for purposes of bone, there is a partnership between vitamin D and vitamin K2 and is really why I recommend supplementing them in tandem.

**Calcium.** I’m going to talk about calcium more in the second webinar but suffice it to say that it’s really, really critical. It’s incorporated in the protein fibrils. As I think as all of us recognize as coaches, dairy foods are not the only source of calcium. It’s interesting; I’m going to give you a handout on dietary sources of calcium. Most people are shocked to find out that human breast milk has only 33 milligrams of calcium, but the same size serving of cow’s milk has nearly 300 milligrams of calcium. It’s interesting that we assume we need ten times more than Mother Nature has us providing to an infant. Foods like collard greens, kale and almonds, sardines and sesame seeds have just as much or more calcium per serving ounce to ounce than dairy foods. So it’s not for lack of calcium sources. It’s lack of knowledge of these other foods that people feel like they have to consume dairy, so we have a great opportunity to help people understand if dairy foods are right for them.

A real key point here is that the intestines can only absorb 500 to 600 milligrams of calcium at once. So women who are taking 1000, 1500, 2000 milligrams of calcium is way over the top. First of all they are not going to absorb it all intestinally, so there’s going to be a lot of calcium in their stool and calcium will cause constipation. There’s a little pearl for you there. Magnesium speeds up bowel movements, so the balance of magnesium and calcium is not only key for bones but it is also key for motility.

I’m going to talk about the forms of calcium in the second webinar, but there are a lot of mistakes made with regard to calcium supplementation. Certainly the average woman going to a drug store and picking up 1500 milligrams of calcium carbonate and taking it on an empty stomach with her coffee – we could talk all day about how much that’s not helping. So just a wonderful opportunity to educate your clients. They don’t know what they could be doing with the calcium they do ingest, whether it’s food or supplement to be more effective.

The list is longer. **Magnesium.** I’m becoming increasingly convinced that magnesium is even more important than calcium for retaining good bone density because you have to have magnesium to make a substance called alkaline phosphatase, which helps the phosphorus to get into the hydroxyapatite in order to have good bone density, to have healthy crystals of the minerals in the bone tissue. We also have to have magnesium to make calcitonin, by the way.

Magnesium can be gotten in food sources. The problem is that we have less magnesium in our soil so we have less magnesium our food and therefore we are absorbing less of it in our bones. So in many, many cases I find that a magnesium supplement is required. It’s definitely one of the top three American nutrient deficiencies.

Here’s another pearl for you. Magnesium is necessary to allow Vitamin D to convert to its active form. So if you want to enhance calcium absorption it’s not just a matter of taking the vitamin D. This goes
back to the confusing studies we were talking about before. What if I was taking lots and lots of vitamin D and lots and lots of calcium but I wasn’t taking any magnesium and I was deficient? Probably not be activating that vitamin D to absorb a lot of calcium, so high intake of vitamin D requires high intake of magnesium.

By the way, if there is magnesium deficiency when someone starts taking heavy dose of vitamin D, the body will prioritize draining the magnesium from the muscles in order to support vitamin D activity. This is why sometimes people will start taking a high dose vitamin D and suddenly start having symptoms of magnesium deficiency, like leg cramps or muscle spasms. So this is particularly key for your clients who are taking that prescription vitamin D of 50,000 IU once a week. If they are very deficient, that is a giant hit of the D2 form of magnesium. The body has to do a couple of conversions to help it become active and magnesium is critical for that.

*Manganese* is also required. It’s not a common deficiency but I do think it’s worth mentioning that the majority of it that we get is from grains, but when we choose to eat refined grains versus whole grains, we lose more than half of the manganese.

*Phosphorus* is obviously very key but seldom an issue because the average American diet includes lots of phosphorus particularly in animal flesh foods, grains, dairy foods and certainly processed foods. Keep in mind that calcium and phosphorus have to balance each other so inappropriately high calcium intake will deplete phosphorus. There’s a form of a calcium supplement called MCHC, which is a form of the hydroxyapatite just like we have in our own bones, and the MCHC already has the right ratios of calcium and phosphorus in it, so I’m a big fan of that form of calcium because it helps to balance all of the minerals as they are in our bones.

*Zinc, copper, strontium.* These are all very important. I am going to talk about strontium in great detail in the second course. So again giving you an idea of the rich variety of things that are needed and what you may want to be on the lookout for clients who may have symptoms of the deficiencies in some of these other things.

There’s a question here. “For kids who are taking vitamin D of 2000 IU a day, do they need magnesium?” When I start working with a client, if they don’t have it in hand, I ask them to consider going back to their doctor and asking to get a red blood cell level of magnesium because magnesium insufficiency is so rampant, and especially in children. I think that’s a really smart thing to do. Whether they have a need for magnesium depends on just how deficient in Vitamin D they were. Rather than guess, I think it’s always better to get some numbers. You really want all your clients to be in the upper half of the reference range for all of the minerals.

“Can I recommend a zinc copper product?” I can. Optizinc is made by a few different companies. One of the top of my head is Source Naturals that has I believe, a zinc citrate combination where it’s already in the appropriate ratio, so it’s healthy and safe for longer term use.

There’s a question about vitamin D/vitamin A ratios. There’s a great write up on that on the web site which I encourage you to take a look at. Vitamin A certainly plays a role in a lot of different functions in the body. Vitamin A, K and D all have to be balanced. When vitamin A is rock, rock bottom it can cause
an issue with vitamin D and vitamin K being used appropriately. Vitamin A deficiency is not incredibly common but there can be issues where people are unable to convert beta carotene, the precursor to fully formed vitamin A. If you’re curious about that I encourage you to check it out on the website. If you just type in the keyword in the search box ‘vitamin A’ it will pull up a link to the article about that. Vitamin A is really critical for our immune system but it’s really a lesser factor in regard to bone density.

“How is magnesium lost from the soil?” Largely through topsoil erosion. The average factory farm is not putting any source of minerals back in the soil. If you keep farming on the same soil over and over again, you are absorbing minerals from the soil into the food and eventually it’s gone. This is where old fashioned farming where there was a rotation between crop agriculture with livestock. The dung from the animals would put minerals back into the soil and that’s where crop rotation plays such an important role, or small scale biodynamic farms that use natural fertilizer like decomposed fish or algae on their crop soil - there’s a replenishment of minerals. If you don’t put minerals back in the soil, they are not being made by the sun. Once it’s used up in the soil, there’s nothing left.

Some other good questions, but in the interests of time I’m going to keep us moving along.

I won’t talk much about this slide, but I did want to give it to you though because I find that it’s a really good one to share with clients about the impact of stress and that stress tends to have a double whammy impact on body system function. Not only is it up regulating cortisol, which has the effects we talked about, or increasing adrenalin, which is even worse. It is normal in the body when we are in fight or flight mode for digestion to come to a screaming halt.

It is a natural functioning of the body to reduce stomach acid, to reduce bile, to reduce digestive enzymes and seek to empty the digestive tract when we are under stress, so very critical to make sure we are absorbing nutrients from our food. I’m sure we all have clients who like to eat their lunch running from conference room to conference room, or in the car zooming to a new meeting. This may work every once in a while but as a habit it’s a recipe for all sorts of different dis-ease because we are simply not going to absorb anywhere near all the nutrition from our food.

I also want to give you a slide on stomach acid. There’s whole class of this if you are passionate about it. There’s a ‘Disease Begins in the Gut 101’ where we talk about stomach acid and all of the different functions of the various digestive parts of the GI tract and various stages of digestion, acid reflux and that type of thing. Stomach acid is an incredibly critical substance. It gets a bad name because a lot of people associate heartburn with having too much stomach acid. If truth be told, most heartburn in acid reflux is because people don’t have enough stomach acid and not because they have too much.

Internal production of hydrochloric acid in the stomach decays with age. Even the conservative national institutes of health in the US estimates that half of people in their mid-60s have insufficient stomach acid. Half! And 80 percent of people over the age of 85. So clearly those problems didn’t suddenly occur when people turned 65. I have seen in my practice people in their 50s and even late 40s who already have a reduction in stomach acid.

A little tip for you is that low stomach acid is incredibly common in people with asthma or chronic allergies or those with low cortisol or low thyroid hormone.
When we don’t have enough stomach acid, our digestion is broken and it’s sub optimal. We cannot de-nature our proteins in order to digest and absorb them well and we can’t isolate the minerals in our food to absorb it, so again you could be eating a great diet but if you have low stomach acid you are going to start to go deficient to on things like Vitamin B12, a whole host of minerals including calcium and magnesium and zinc and iron and also low amino acids, which can cause problems like depression or anxiety or problems with the gall bladder or problems with various mood swings. Or, in this case, problems with retaining the collagen backbone of our bone tissue.

There are a variety of ways you can increase stomach acid when it’s an issue. I give you here a number of different symptoms that you can be on the lookout for, but basically people need to make their stomach juices more acidic in the middle of the meal – not at the beginning, not at the end. If it’s only minor they can do that with one or two, maybe three tablespoons of apple cider vinegar in a tiny amount of water (like half a cup) that they gently sip on during the meal, or if it’s more advanced they can use a capsule of hydrochloric with pepsin in order to boost that. Even though their body is not producing it, they still need it for optimal digestion.

Similarly we help our stomach to break down protein by chewing. The handout I got from IIN about chewing is probably the handout I have given out to the most clients. It’s amazing to me how clients can make a major lifestyle change but how challenging such a simple task as chewing is. We’re programmed culturally and stress-wise to gulp down our food and we definitely assist our digestion by chewing our food until it’s nearly liquid.

A pearl for you about keeping good strong stomach acid is making sure your clients are not trying to hydrate during a meal. During a meal we should be drinking as little water as possible, really just the minimal amount that’s needed to cleanse our palate to help the food go down. If you chew food thoroughly by the way, you don’t really need a lot of liquid. When we are consuming liquid during a meal, all we are really doing is diluting stomach acid or making it less acidic and creating the very problem we just mentioned earlier. This is a simple, simple tip that can make a huge difference.

The next thing I want to talk about briefly is something you have either encountered yourself or from your clients. I’ve had many clients jump in with me on the first session loaded up with information about the magic of the pH diet, the magic of the acid/alkaline balance. There are a lot of myths around this approach and I want to do a little myth busting here for you. It is true certainly that the food we chew up and swallow, digest and absorb is then metabolized and it does have a residue, or what these proponents call an ‘ash’ left over after digestion.

That ash can be acidic or alkaline and those are really just words referring to the minerals that are left. Minerals aren’t destroyed. They are not broken down for the calorie like the sugars or the fats or the proteins. The minerals remain and whether a food has an acid producing effect or alkaline producing effect is based on the minerals that are included in the food. First of all, you know now if you didn’t know before, we need all of these minerals. Neither category of these foods is bad. We need them all and particularly for bone health, we need them in balance.

Generally speaking animal proteins, (especially dairy) and grains and processed foods are acid producing. Fruits and vegetables are generally alkaline producing and fats are neutral because they don’t
have minerals. There’s lots of confusion here. I’ve read all sorts of things on the web such as if you eat more lemons you’ll improve the pH of your blood. All of these kinds of things are just a little ”out there” because first of all, the pH of the blood is kept and has to be kept extremely stable or we would die very rapidly.

The body has some very complex systems for retaining the pH of our blood and also of our intra and extra cellular fluid in the body. The pH outside of the body doesn’t have anything necessarily to do with this residue pH, so something like lemon juice, for example, when you take it in, clearly it’s very acidic because it has a lot of citric acid in it. So lemon juice is acidic going in, but its net effect is alkaline. So we would call it an acidic food that is alkaline producing.

It’s important to understand that our body has not left us up to our own devices to eat a balanced pH diet because we certainly would not have lasted this long as a species. We have a very complex system of pH buffering and balance in the body that is primarily driven by bicarbonate, which is something available all over the body. It’s not the bones, by the way. In order for the bones to be pulled into doing heavy duty buffering just based on your food, you would have to have some really, really extreme crazy intake of food.

The kidneys are designed to handle in concert with the blood, a buffering a response to your diet and I’m sure it’s not hard to understand that this would be required because today we have a lot of choices around food. Historically, people have to eat what’s available and they have to eat what’s available seasonally and that may be a lot of acid producing food or alkaline producing food or a nice balance. Generally speaking, I think a nice balance is ideal for the bone because we need all these minerals in order for our bones to thrive.

There are a lot of myths that higher protein intake floods the body with acid and that is just not true. In a good healthy body, higher protein intake increases the body’s ability to handle that protein by-product. That’s the major job of the kidneys, in fact. Clinical research does not hold up these myths. Higher protein intake is not correlated with bone mass density loss. On the other hand, higher intake of fruits and vegetables, which a lot of Americans struggle to consume, is associated with improvement in bone density retention.

So clearly there’s a balance here that is really key and I don’t think it’s about people getting obsessive about having the perfect pH balance in every single meal. I can certainly show you a general diagram. There are thousands of these on the internet, but it shows you what foods are acid producing, which are on the right hand side of this page or generally alkaline producing.

I talk to clients about the notion of just wanting to balance these things, which is why varied food is a good thing to strive for, and to balance the piece of chicken or piece of fish that you might have, it’s important to get some dark leafy greens or some good fresh fruit. Certainly there are concerns about mineral deficiencies and mineral imbalances when people end up only consuming things like a bagel and coffee for breakfast, and a cheeseburger, French fries and Coke for lunch etc, etc. You end up with this extreme; the body being well able to handle the acidity of that, but the challenge is that it is going to be unbalanced in terms of minerals. I am going to post this as well others as a single handout, so you are welcome to use that with your clients.
So in summary, I want to highlight for you some of the pearls that I have covered. Again, this is a lot of information so please just allow it to flow through and take on board what you can today.

As always, these courses are designed to be very information-packed. It is not my intention that you can lock away to memory with just one viewing. All of these courses are designed to be absorbed in three viewings. So as always I encourage you to make time for repeats in the next couple of weeks when we move to the second webinar. I will get into much more detail then about the drugs that are involved, case studies, specific supplements and keys about supplements.

For this particular webinar, I hope you have learned a lot about the rest of the cornucopia of factors that has a huge impact on the retention of bone density.

So it’s always a pearl in every course that I deliver - stress is pretty much at the root of what challenges everyone, including osteoporosis. Everything that we do with our clients around helping them to take a good, critical look at their life, accept their primary food needs, move into a direction of getting into a less stressed place and to create that third prong that we talked about - prioritizing a healing environment. That is really critical.

We talked about slow, mindful eating and chewing. We talked about questioning stomach acid and good protein and mineral digestion. We talked about hormone balance, in particular the adrenals being the place to start if there’s multiple imbalances.

Weighted exercise; I’m a champ at being creative about how to get clients to get some kind of movement. Sometimes people don’t find the word ‘movement’ as intimidating. Most people do not want to go to a gym, so I don’t promote going to a gym. I think it’s too easy to do other things. To begin with, walking can be really powerful. I give you a link for this really neat little backpack product that’s actually designed for people who want to do more weighted walking. We can give clients all sorts of different ideas for just getting more movement, more weighted exercise.

There’s a lot of brainwashing in our society about the importance of consuming dairy foods. We know that’s not true. I encourage my clients to do a one month cold turkey elimination of dairy just to see if they feel better. Clients need to know that there are plenty of other better dairy-free sources of calcium. Most people don’t know that. It’s not for lack of wanting; they just don’t know.

Magnesium is an extremely common deficiency. Look for the most common symptoms of that. I give you a really good list here and keep in mind that if a client is very Vitamin D deficient, make sure they get the magnesium they need to have that Vitamin D be active. In particular, if you have a client who has been taking a lot of Vitamin D and the levels have not gone up on their lab work, think about magnesium.

Lastly for bones- a balanced diet really means a good balance of calcium and phosphorus sources, so a good balance of acid and alkaline producing food so the body is getting the rich variety of minerals it needs.

Questions:
“I thought drinking some fresh lemon juice with water in the morning is really great for liver detoxification”. Actually it’s a great source of citrate which is very, very good for a number of things including countering kidney stones. The citric acid in it is going to help you to hydrate and also to urinate, so it’s really good for clearance and really good for the kidneys in particular. I’d say more for the kidneys than the liver, actually.

“Is there a test for stomach acid?” That’s a complicated question. The ‘Disease Begins in the Gut 101’ course goes into detail about the options. There’s not really a direct test for it. I think the trial and error method works really well in order to see if people feel better and experience improvement in their symptoms just by boosting it naturally. There’s only one test that measures stomach acid directly. It’s called a ‘smart pill’ and it’s extremely expensive and very hard to get. Very few gastroenterologists offer it, so there are ‘side-look’, peripheral view sorts of tests, but I find that experimentation is usually the best way to go.

I think any kind of rebounder is good for clients if they are hesitant for going outside because it’s too cold or they are a little intimidated about being out on the street.

Yes, magnesium is unfortunately missing from both organic and non-organic foods. If you can find food from good, small organic farms, like a local Farmers Market or a CSA type of thing, you’ve got a shot at getting some good mineral-dense foods because of the tender loving care of their soil. Unfortunately, a lot of organic food today is coming from huge organic farms that are still experiencing top soil depletion.

There are more questions, really good questions, but I am going to defer to the Q&A panel in order to follow up on those just in the interests of time because we are over our two hour window here.

I hope this has been inspiring to you - eye opening, intriguing and hopefully has given you some new pearls to think about. I have a number of resources available in this packet for more information if this course area is a passion for you. A lot of really wonderful tools for you, and for you to educate your clients.

I thank you for your participation. It’s always lovely that so many folks can join us for the live course. I really love all the questions and the comments. As always I encourage you to take advantage of the archives and take advantage of the Q&A tool. Maximize your investment in this course so that you can, not just hear the material, but really absorb and retain the material in helping your clients.

The archives will be posted by midday tomorrow.

Our next event is two weeks from now on Thursday 27th, will be the second webinar of this course.

So thank you all very much and I wish you a good evening.

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