A Special Interview with Dr. Daniel Amen

By Dr. Joseph Mercola

JM: Dr. Joseph Mercola

DA: Dr. Daniel Amen

Introduction:

JM: Welcome, everyone. This is Dr. Mercola, and today I am joined by Dr. Amen who is a physician and board-certified child and adult psychiatrist. He is a five-time New York Times bestselling author, which is quite an accomplishment. He’s also the medical director of the Amen Clinics in Newport Beach in San Francisco, California; Bellevue, Washington; Reston, Virginia; Atlanta, Georgia; and New York City. He’s also one of the foremost experts on brain imaging science, which is what we’re going to talk about for the most part today.

So, welcome and thank you for joining us today, Dr. Amen.

DA: Thank you. It’s my honor.

JM: I appreciate the opportunity. We’re going to talk about one of your specialties, which is SPECT scanning, in a minute. But one of my recent interests has been on brain plasticity, and I’m wondering if you could comment on that before, and if that plays a part in your work.

By brain plasticity, of course, I mean the ability of the brain to recover, repair, and actually assume older functionality, which had previously been lost. This seems to be in direct conflict with what is typically thought of brain function, which is once you lose it, it’s lost permanently and you can’t recover it. I’m wondering if this is a part of your work, and how your work enters into that.

DA: Right. It’s been a huge part of my work. About 10 years ago, I wrote a book called Change Your Brain, Change Your Life. It’s based on the imaging work that we’ve done. We can actually see the damage in your brain done by a wide variety of things. But on what I call a brain-smart program, you can literally improve the function of your brain, which is happening through neuroplasticity. Your brain can actually look and feel younger, or look and feel more repaired. And very few people know that.

We were actually able to actually prove it in a very large NFL study that we did on a 120 active and retired NFL players. When they came to us, their brain was very damaged – I mean not a little bit damaged. But these are people that have been hit in the head sometimes 10,000 to 20,000 or 30,000 times in their lifetime.

On this program, what we’ll talk about, 80 percent of them showed significant improvement, including boosting function and blood flow to the prefrontal cortex. We’ve had this rash of NFL suicides, which just breaks my heart, because what they don’t know is that there is help available to them. That’s just very exciting.
JM: One of the primary modalities that you use is a SPECT scanning. I’m wondering if you can share with our audience exactly what a SPECT scan is, how it compares to modalities that we maybe more familiar with (which is MRI or CT scan), and then if you could just comment on that to put your technology into a proper framework.

DA: About 21 years ago, I went to a lecture on brain SPECT imaging. SPECT looks at blood flow and activity. It looks at how your brain works. It’s different from a CAT scan or an MRI; those are anatomy studies that show what the brain actually physically looks like. They tend not to be very helpful for my business in psychiatry.

SPECT looks at how the brain works. It’s actually pretty easy to understand, because we basically look for three things: areas of your brain that work well, areas of your brain that are low in activity, and areas of your brain that are high in activity. So, good activity, too little, or too much,

And then our job becomes balancing your brain. At the Amen Clinics, we’ve done now 74,000 scans on people from 90 different countries. We have more experience with this technology than anyone – I think – in the history of the world. It’s very exciting, because, you know. I often say psychiatrists are the only medical doctors that never look at the organ they treat. And when you never look at it, you miss brain trauma, you miss seizures, and you miss toxicity.

If someone’s had mercury exposure or they’ve had mold exposure, you’ve just completely missed it, because they tell you their symptoms, and then you make diagnosis based on symptom clusters. That’s exactly the same way they diagnosed Abraham Lincoln in 1840 with depression. They talked to him, looked at him, and then really prescribed some very toxic treatments for him. Unfortunately, that’s what’s going on in my profession now. And what the images do...

For example, I’m a classically trained physiatrist. I trained at the Walter Reed Army Medical Center in Washington, D.C. I was taught to use psychotherapy and medications, and that’s pretty much it. Some of the medications I was taught to use like Xanax, Ativan, or Valium for anxiety disorders, when I first started ordering SPECT scans, I saw that they made the brain look like alcohol, and that they were really toxic to brain function. That horrified me, and that is what actually led me. It was the imaging work that we do that led me to look for, “Okay, what are natural ways to decrease anxiety?”

It has been very exciting, because not only do we use this very cool, high-technology tool. To get you well, we want to really work on your diet and exercise, correct the negative thought patterns you have, and look at what are the natural supplements that I can use to optimize brain function.

JM: Terrific. It’s definitely different from the MRI and CT scans, which as you said are really more anatomic and the SPECT scan is physiologic. But there’s another physiologic test that I forgot to mention (if you could compare it, too), which is the PET scan. I’m wondering if you can comment on the differences between that and then also on the availability of it. Is the SPECT scanning something that’s only available in a few centers like yours and maybe a few other specialized centers, or is it something that is more widely available that a clinician locally and that someone is close to could have this type of technology used?
DA: PET and SPECT – PET or positron emission tomography – is a cousin to SPECT. They’re both nuclear medicine procedures. PET looks at glucose metabolism; SPECT looks at blood flow. But they tend to show the same information.

There are a couple of other imaging tools that we like. Actually at the Amen Clinics, we also do quantitative EEG that looks at electrical activity in the brains. It’s very exciting. And another one called magneto-electroencephalography that looks at magnetic fields. Now, that’s actually very rare. It’s only done in research settings, because those cameras are about five million dollars.

There are SPECT cameras in every major hospital in the world, because they do SPECT heart studies, SPECT bone studies, and SPECT thyroid studies. There are about 25 centers around the United States and Canada that do brain SPECT like I do it. There is a center in Chicago. There are centers in Toronto and Vancouver. There is a center in Florida and another one in Texas. They’re not really available in every city, but it’s getting closer. There are more and more people who are excited about the use of this technology.

JM: Okay, and you mentioned the fact that it was a radionuclide scanning. Can you comment on the dangers of the radiation exposure in this type of process?

DA: The radiation that occurs when we get a SPECT scan is less than most CT scans. It’s a normal amount of medical radiation. But because there is some radiation, what we do is we encourage our patients to drink 32 ounces of water. It’ll cut their radiation dose in half, because it’s excreted through the kidneys.

It’s the reason you don’t do 50 scans on someone. But you always have to compare the risk versus the benefit. And the risk of not getting a procedure like this, which is having an ineffectively treated psychiatric problem, is way more dangerous than any risk from the radiation.

JM: Well, a CAT scan – in my understanding – is equivalent to about a thousand chest X-rays and really something we normally advise people to avoid if at all possible. Sometimes, of course, there’s really not a reasonable option.

A CAT scan is clearly ionizing radiation. Are the radionuclides emitting ionizing radiation also? Is it similar?

DA: No! This is not an ionizing radiation.

JM: I don’t think so.

DA: It’s gamma ray.

JM: It’s gamma ray.

DA: And again, you can cut your risk in half by drinking a lot of water. I mean, it’s something that people should think about, but the information it gives you is so important. Because without looking, you just don’t know what’s going on.

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When we make a diagnosis, for example, of depression, it’s a symptom. It shouldn’t be a diagnosis. Making the diagnosis of depression, I tell people, is like making the diagnosis of chest pain. And doctors don’t give people the diagnosis of chest pain, because it doesn’t tell you what’s causing it, and it doesn’t tell you what to do it for. Depression is the same way.

That’s why – and I’ve actually seen this on your site – antidepressants in large studies really work no better than placebo. Now, does that mean antidepressants don’t work for individual people? Of course not, they can be extremely effective, but you have to target the medication or the natural supplement you use to an individual person’s brain.

If you don’t get any physiological data on their brain, how would you target it to their brain? It becomes – what’s happening in psychiatry today – guesswork and multiple shots in the dark. I just argue with my colleagues that that’s just not smart. We can do better.

**JM:** It’s certainly not 21st-century medicine, and it seems foolish not to utilize the advances in technology. Of course, we want to make it safe.

Just to finish up on the radiation exposure, I appreciate the fact you can increase your water intake, but it may also be useful to have the person take some astaxanthin for a while, build up astaxanthin levels for a few weeks. Because there’s a pretty strong and clear evidence that that reduces radiation damage from either ionizing radiation like CT scans or gamma rays – I believe – when you’re up in the air at 35,000 feet. That’s something I do personally. I think it’s a wise approach, and it could work synergistically with drinking extra water.

Are there any physical injuries that SPECT is particularly useful other than, you know. Well, depression is not an injury, of course. It’s a physiological disorder. But are there physical injuries that SPECT works well for assessing or neurologically?

**DA:** Yes. Actually, SPECT is really good at identifying traumatic brain injury. In fact, it’s more sensitive than CT or MRI. It will show you the functional deficits that are likely to be there. I think that’s one of its best uses. It will also show you physical injury from toxicity, whether it’s drugs, alcohol abuse, mold exposure, or heavy metal toxicity. Now, it will give us what I call a toxic pattern, and then it’s incumbent upon us.

For example, I had a patient recently who came in and had resistant depression. They were thinking of doing ECT with him or electroconvulsive therapy, but his brain looked toxic. The toxic pattern then forces us, encourages us to go work it up. It’s like, “Why is it toxic?” This person ended up having Lyme disease.

The toxic pattern on the scan, it doesn’t give you the answer. It teaches you to ask better questions where most of my colleagues would have tried more multiple medications and electroshock therapy. I’m like going, “Wait a minute, wait a minute.” You have to have a good diagnosis before you start trying to change people’s brains.

**JM:** Do different heavy metals provide different patterns? Mercury might have one pattern and then lead or aluminum another one.

**DA:** You know, not that I know of. When I see a toxic pattern, I have to go find out what it is. I had another patient recently who is diagnosed with ADD. He saw the best ADD doctor in the
country. He made the diagnosis basically after 10 minutes of listening to his story. When we scanned him, he had a totally toxic-looking brain. Of course, you have ADD symptoms if you know there’s damage to the front part of your brain. It turned out he had arsenic poisoning. He needed a detoxification program, not more Adderall.

**JM:** Let’s get back to some of the other diseases that can SPECT scanning can be useful for. Certainly depression, as you’ve mentioned, is one. It’s an area that when I first graduated out of family practice I had a really passionate interest in. And I actually want to prescribe antidepressants for many thousands of patients, because it’s pervasive in our culture – I think – at least if you go by the traditional diagnostic criteria. Using your SPECT criteria might be a whole different range.

It seems that about up to a third of people are depressed if you use the clinical criteria. I’m wondering what your experience is using the physiological criteria to make that assessment. Is there a significant difference in your view from what psychiatrists or primary care clinicians are diagnosing as depression and what you’re diagnosing through your scanning?

**DA:** Well, depression is very common. Anxiety disorders are the most common psychiatric disorders in the world, followed by depression. What we have seen through our scans is that it’s just not one thing in the brain. Now, if you look at the general population, a lot of people have very unhealthy brains, whether it’s because they’re obese or they’re not exercising.

And you know, maybe a better place for us to start is nobody cares about their brain. It’s hysterical. Nobody thinks about it, because you can’t see it. You can see the wrinkles in your skin, you can see the fat around your belly, and when you’re unhappy you do things about it. But because the brain is encased in your skull, nobody cares about it, even though it runs absolutely everything you do.

The first part of what I try to get people to have is brain envy. That’s what the scans do. When you see your scans… If you came to our clinic and you got an image, you would begin to fall in love with your brain, because you’d be thinking about it. When I saw my first scan in 1991, I didn’t really like it very much. It had a toxic pattern. Now, I’ve played football in high school, I had meningitis when I was in the army, and I had a lot of bad habits. I carried more weight than I should have and didn’t sleep.

But when I saw the scan, I went, “Well, I want it to be better.” Really, most of my work over the last two decades has been about “How can I get my brain better? And well, while I’m at it, let me do it for my mom, wife, kids, and my patients.” The first things that scans do is they give you brain envy.

Then what you realize is: depression and anxiety, they’re totally symptoms of underlying brain dysfunction. You can have depression if your frontal lobes work too low. They can’t inhibit the negative feelings you have. You’re going to have depression if your frontal lobes work too high, and you can’t stop thinking of the bad thoughts in your head. You can have depression from a traumatic brain injury – very common. Or you can have depression from some sort of toxic exposure or some really bad lifestyle choices, which you and I both know are rampant in our society.
I’ve actually published two studies on something I call the “dinosaur syndrome.” What that is as your weight goes up, the actual physical size and function of your brain goes down. That should just scare the fat off anyone. There are now 20 published studies on that. When I read the first study from the University of Pittsburg, I lost 25 pounds. I’m not doing anything purposely to have a smaller brain. It just changes everything when you start looking.

**JM:** Terrific. SPECT sounds like a marvelous tool that you can use to objectively, consistently, and reliably quantify the functioning of a person’s brain. But it’s not an easy tool to have access to. I’m wondering if you’ve noticed if there are any other tools that you can use that are simpler tools, and very similar to the way that one would use a tape measure to measure their waist circumference, a pretty good predictor of far more sophisticated ways to measure body fat. That correlates really well. Are there any simpler tools that correlate well with what the findings on the SPECT scans are?

**DA:** A long time ago, I’ve realized not everyone is going to get a scan, either because of the cost or the availability. My books are now translated into 30 languages. If you read me in China or Brazil – oh, sorry, you’re not getting a scan. Based on thousands of scans, we’ve developed a series of questionnaires to help people predict what their brain would look like if they could get a scan.

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Now, it’s clearly not as good as getting a scan, but it’s the next best thing.

**JM:** Oh, terrific.

**DA:** We have a community website called The Amen Solution. On TheAmenSolution.com, they can take the questionnaires, or they can pick up one of my books. I’ll often put them in one of the books.

Quantitative EEG is another study that’s more widely available. It’s less expensive. There’s no radiation exposure. It doesn’t give you great information on the deep structures in the brain – the cerebellum, the cingulate gyrus, or the basal ganglia – but it’s another way to get information. At least, you can find, “Is this person’s brain working too hard? Is it not working hard enough? Are there asymmetries that we should be concerned about?” I’m just a huge advocate, for more information leads to better diagnoses and more targeted treatment.

**JM:** Well, I’m glad that you’ve developed that tool, because it seems that that would be a useful adjunct to what you’re doing. It’s available on your website, which is greater in your books. I’m also intrigued because I didn’t realize before our interview that this tool could be used for that purpose. Does it actually allow you based on the results? Does it show a depressed brain, or does it show more specific details to actually identify what type of antidepressant or other psychotropic medication might be useful?

**DA:** Or other supplements might be useful.

**JM:** Other supplements, yeah. What are the treatments that are indicated? Can I help you identify the supplements that might be useful?
DA: Right. What a lot of people don’t understand is that supplements are not always innocuous. Just because it’s natural doesn’t mean it’s innocuous. Arsenic and cyanide are both natural, but not good for you.

In my work, I’ve described seven types of anxiety and depressions, six types of ADD, five types of overeaters, and six types of addicts. What the scans do is they really show you the individual areas of the brain, and they show you where they’re working too hard or not hard enough.

Some common types – if I may just talk about my types of overeaters. We have compulsive overeaters, people who just can’t stop thinking about food – the bad foods that are not good for them – and the front part of their brain works too hard.

That usually happens from a deficit in the neurotransmitter serotonin. When serotonin levels go low (serotonin is, in large part, inhibitory to the brain) the brain starts to overfire. We see that in certain types of depression, we see that in OCD, and we see it in our compulsive people, whether it’s a compulsive addict or a compulsive overeater. That would lead us to target treatment with an intervention that boosts serotonin. You can do it with one of the SRRI’s – Prozac, Paxils, Zoloft, Lexapros, and Celexa.

But you know, I’ve been a psychiatrist for 30 years. I get weary of making people sick with medicine. Let me try the natural ways to boost serotonin. You can do it with 5-HTP, L-tryptophan, St. John’s wort, or saffron. There are eight studies now with saffron, showing it has equal efficacy to antidepressants, and there are virtually no side effects to taking higher doses of saffron.

A compulsive person leads us to a serotonin intervention. Oh, by the way, exercise is a serotonin intervention. It boosts serotonin in the brain. Head to head compare exercise to Zoloft, they’re equally effective at 12 weeks, but in 10 months exercise just beats the socks off Zoloft. It just targets what intervention.

Say, for example, we have an impulsive overeater. What we usually see on their scans is they have low activity in the prefrontal cortex, so they can’t inhibit their behavior. They don’t really think about food all the time, but as soon as they smell it, they’ll go get it. They have poor impulse control often associated with low prefrontal cortex activity, also associated with ADD. Maybe they had a head injury that affected that part of their brain.

Please don’t put them on a serotonin drug or a serotonin intervention, because you’ll lower their prefrontal cortex more and ultimately make them more impulsive. That’s why you have the research that came out in the early 90s about Prozac makes you kill your mother. Well, in fact, it can disinhibit people, because of what it’s doing in the brain. The impulsive people, we want to raise dopamine.

Now you can do that. You can do it with Phentermine, which is an appetite suppressant. You can do it with Ritalin, Adderall, or any of the cousins to the stimulants. Or you can do it with green tea and with L-thyroxine. We’ve actually seen Rhodiola do something very similar in the brain.

What I would do is I would start with the natural treatment. If that didn’t work, then I would think about medication. That’s how my brain works. I’m not opposed to medicine; I’m just opposed to the indiscriminate use of medicine.
The other exciting thing that we found is there are certain foods that raise serotonin, like simple carbohydrates. That’s why people get addicted to sugar, wheat, and pasta, or what I call smart carbohydrates. If you think of a sweet potato, brown rice, or oatmeal, they will actually raise serotonin but not in the same sort of powerful way that will get somebody hooked on it.

A high-protein, low-carbohydrate diet is very good for impulsive people, because it helps them focus. But it’s a disaster for our compulsive people, because they start to focus on the things that upset them.

I was on Rachael Ray Show. We’re talking about one of my books, *Change Your Brain, Change Your Body*, and she goes, “Oh, my God,” she says, “I’m the compulsivetype, and when I went on a low-carb diet, I became so mean. I wondered why my husband didn’t leave me.” It’s very important. I know you also – in your work – looked to type people to know what diet is best for them. I do it based on the brain imaging work that we do, because one treatment will never fit every one.

That’s just an example of two of our types of overeaters. We also have sad overeaters, anxious overeaters based on what we see in the scans. The most common type is what we call our impulsive-compulsive overeaters, where they’re actually a combination of those two, typically children or grandchildren of alcoholics. If you have alcohol disease in your family, you often end up with both compulsive traits and impulsive traits. That’s where a combination of interventions – Prozac and Ritalin, or St. John’s wort and L-thyroxine – can just make a huge positive difference in someone’s life.

**JM:** Well, thank you for that explanation. I’d like to take a little bit of a tangent from something you’ve mentioned that I think would be useful, which is the serotonin component. It’s my understanding that 80 percent of the serotonin in the body is produced in the gut. It would seem that strategies designed to optimize gut production of serotonin would be useful.

I’ve become recently passionate in the last years in having people massively increase the amount of fermented foods they’re taking – specifically fermented vegetables even better – to replace and replenish the amount of beneficial bacteria that produces serotonin.

I’m wondering if you’ve looked at that as an intervention compared to some of the other ones you’re using, such as the tryptophan or the 5-HTP, which in many ways are still an allopathic approach. I mean, certainly safer than antidepressant, but you know, not really treating the underlying cause as much.

**DA:** Well, I think maybe partly because of your work or because of some other work I do with my integrative medicine colleagues, I’ve really been thinking a lot about gut health. Your gut is really the second brain. They’re totally interconnected. When your gut is healthy… The gut – at least, the last thing I’ve read – produces about 95 percent of the serotonin in your body.

**JM:** Oh, so it’s even more. Okay.

**DA:** If you have a leaky gut or an overgrowth of poor gut bacteria, you are not producing serotonin and the other neurotransmitters that you need to stay healthy.

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Fermented foods, we often recommend probiotics. What we see in our patients, they often had high levels of antibiotics as children. And another very interesting finding is that people who had early abandonment issues or had a lot of stress in their families early on, their gut became very unhealthy, and they have irritable bowel syndrome or a lot of GI claims. Really, optimizing their gut with the right nutritional strategies can make just a huge positive difference for them.

**JM:** Clearly, part of that process is avoiding antibiotics and making sure you’re avoiding sugars and processed foods. But I’m not sure if you’ve read some of the stuff on our site (I believe we may be the first investigators that looked at this) where we actually measured the amount of beneficial bacteria in fermented foods.

The highest quantity of probiotics that you can purchase over the counter is typically somewhere about a 100 billion. I mean, even that is really common. It’s uncommon for a supplement to be over 10 billion, but you can find them at a 100 billion. We have approximately a 100 trillion bacteria in our gut, so that’s not really a lot.

Probiotics are useful. Certainly, we’ve all seen people improve with them. But when you measure the fermented food – and we did this – in two to three ounces of fermented vegetables, we found 10 trillion bacteria, which is 10 percent of the entire gut flora. If you’re doing this on a regular basis, it’s certainly a lot. You’d have to take a whole bottle of a high-potency probiotic to equal that.

I don’t know if you’ve looked at it, but I’ll bet there’s probably some potent result there to encourage to get on the fermented vegetables as opposed to the probiotic. You may see a phenomenally increased level of the serotonin and subsequent changes in the brain. It might be an interesting research project for you.

**DA:** Yeah, I know. It’d be very interesting. Which ones would you start with?

**JM:** That’s the beautiful thing about fermented foods. You could ferment just about anything. We have a whole description or website of how to do that. Basically, cabbage seems to be the primary one, but you can use carrots and other vegetables, and spice it up with a lot of your favorite herbs. Essentially, what you do is you shred those vegetables, then you can pour some celery juice, and pack it down into some glass jars. Then, of course, you can use a starter culture, and let it ferment for about seven days.

In seven days, you’ll get that concentration of about 10 trillion bacteria for two to three ounces of fermented foods. That’s the beautiful thing about them. You can customize the blend based on your individual preferences, which is probably also further customizing it based on your biochemical individuality. It’s really a beautiful process. When you focus your treatment on a food plan as opposed to a supplement plan, you not only get the benefits you’re seeking, but you get so many other benefits. It’s just a marvelous strategy.

I’m just excited to help promote and generate interest in that, because I think that maybe one of the most potent ways to help improve people’s health is through optimizing their gut flora.

**DA:** Yeah, you know, I totally agree. In the last seven or eight years, my last couple of books have been about the connection between physical health and emotional health, and really how people can use food as medicine. If you look at the spices that have specific brain-optimization
qualities—for example, saffron and your mood; cinnamon, it’s a natural aphrodisiac that also helps to balance blood sugar and helps people focus; or oregano and rosemary that have been shown to boost blood flow to the brain—really what you eat is either helping your brain function better or it’s hurting it.

If you just think of all of the billboards and commercials of these companies trying to shove bad food down your throat, very few people know that it has a direct correlation to brain health. There’s a study out of Holland that I quote a lot, where they put ADHD children on an elimination diet. Seventy-three percent of them had more than a 50 percent reduction in symptoms. That’s the exact same response if you put ADHD children on Ritalin. But there are not side effects to just eating whole high-quality food.

JM: Oh, I would disagree. There is a side effect. You get healthier.

DA: There are no bad side effects. Except maybe your friends think you’re weird.

JM: Yeah.

DA: My nine-year old, she looks to her friends and goes, “You could make a better choice.”

JM: There you go. You’ve written five *New York Times* bestsellers. Congratulations on that. It’s an unusual accomplishment for any author to even get one, let alone five. Is your latest book a bestseller, too, and can you tell us about that one?

DA: It is. It’s called *Use Your Brain to Change Your Age*. It’s based on my lectures for the last 15 years or so. I have this one slide. We did a study with 8,000 people. What we found was that overtime, the brain gets less and less and less blood flow. So, it’s sort of like your skin falls off your face as you age. The same process is happening in the brain. You can—with your behavior—accelerate the aging process, or you can decelerate it. I’m just so excited about that idea. Basically, that’s my last book. It’s *How Do You Decelerate the Aging Process in the Brain?*

We can actually prove you can do it through the imaging work that we did. There’s a whole chapter in the book about reclaiming your brain. Say, you’ve been bad to your brain. You’ve been overweight. You’ve drank too much. You didn’t exercise. You’re one of our NFL players, and you’ve been hit in the head multiple times. If you get on a brain-smart program—I’ll tell you what that is—what we’ve been able to see is you can slow or even in many cases reverse the aging process in the brain.

A brain-smart program is six words. I horrified myself when I figured out how easy this is. “Brain envy,” those are the first two words. You have to care about your brain, because it controls everything you do: how you think, feel, and act, and how you get along with other people.

Nobody cares about their brain. We let little children play Pop Warner Football. That’s so stupid. We let them be flyers in cheerleading, hit soccer balls with their head, or go on a mountain and snowboard without really protecting their heads. The great mythology, of course, is that helmets protect you. Helmets protect you from a skull fracture. They don’t protect you at all from a brain
injury, because your brain gets rattled pretty hard with a fall. The first thing is you have to care about your brain.

The second two words are “avoid bad,” What does that mean? So, “brain envy” and “avoid bad.” You need to avoid anything that hurts your brain – drugs obviously, brain injuries, obesity, but also sleep apnea. Sleep apnea doubles your risk for Alzheimer’s disease. Diabetes, it’s a blood flow disorder. A blood vessel disorder damages your blood vessels, and your brain gets 20 percent of the blood flow in your body. Anything that damages blood vessels damages the brain. Same for hypertension, cardiovascular disease, negative thinking, untreated depression, the standard American diet, and alcohol.

Alcohol is just not a health food. We’ve done many studies looking at the brain of people who just have one or two drinks every day. And they have a smaller brain.

Brain envy, avoid bad (avoid anything that hurts it), and then do good. Then we teach people what does that mean? It means get your diet right. Physical exercise, mental exercise, and some simple supplements we found can be incredibly helpful. Learning how to think in positive ways… I know on your site you talk about tapping to deal with emotional traumas that you’ve had in your life. They actually get stuck in your brain and cause chronic stress.

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Chronic stress is another one of those things that damages your brain.

Brain envy, avoid bad, do good – we then fill that out for people, and it changes people’s lives. I mean it’s so exciting. I wrote a home study course for anxiety and depression a couple of years ago. When we tested it on participants around the country, a significant percentage of them told me they lost 20 and 30 pounds without trying. That got me very excited, because what I realized is with a better brain, you get a better body. Because ultimately, your health is driven by all of the decisions that you’ve made in your life, and those decisions come directly from the health of your brain.

This is going to sound terrible. But when I’m out walking around, and I see somebody who’s obviously very unhealthy, I think to myself, “Wow. They’ve made many bad decisions.” And then I see somebody like you, for example, who’s very fit. I’ve seen some of your workouts, and I’m thinking, “What went into Dr. Mercola’s body?” Many good decisions, that’s what went into your body. The first organ to work on to get really healthy is your brain, because it is the quality of your decisions that really determines the length, happiness, passion, and effectiveness of your life.

JM: Yes indeed. Many of the things you talked about we have reviewed for years on our site, which is primarily lifestyle. But a recent appreciation…. I didn’t really understand the full impact of this, and you did mention it’s part of your program as part of the good: the mental exercises. I’m wondering if you can review or comment on the program that you’ve developed and that you’ve found to actually produce positive beneficial changes in the SPECT scans.

DA: On our community site, we actually have a sophisticated neuropsychological assessment tool. It’s about a 35-minute test that will test your memory, reaction time, focus, level of stress,
and mood. And then based on how you score, we give you individualized personalized games to strengthen your weak areas. It’s one of the tools that our NFL players used. We’re very excited, because as we saw their scores go up, the blood flow to their brain improved.

Now, in my plans, I never do one thing. I always do the brain envy, avoid bad, do good. But when we did the whole program with them, there were significant positive improvements in their ability. I mean, some of our players improved more than a thousand percent in their memory, mostly because they started with a score so low.

Working out your brain in a regular way is important. Reading the articles and watching your videos, I do that, because I’m always learning something new. The important thing is you want to learn something that you don’t know anything about. Because if I just kept learning about vitamin D, for example, that would be useful, but it’s really not stretching my brain. I learn about gardening, I learn about cooking, I learn a new language, I go to a new place, or I learn a new way to move my body, which I think is incredibly important.

I like people to learn dance, because it’s a coordination exercise to music. It’s new learning and exercise at the same time. My favorite game is table tennis, because you got to get your eyes, hands, and feet all to work together at the same time while thinking about the spin on the ball.

And you know, there’s a very important but disrespected area of the brain. It’s called the cerebellum. It’s in the back bottom part of the brain. It’s only 10 percent of the brain’s volume, but it has 50 percent of the brain’s neurons. So, doing coordination exercise, because it’s the seed of physical coordination.

But now what we’ve learned it’s also the seed of mental coordination. You don’t want to drink very much because alcohol damages your cerebellum, which is why you can’t walk in a straight line. Coordination exercises with new learning. Table tennis or dance is – I think – one of the perfect new learning tools to use.

**JM:** Yeah. I recently interviewed the developer and the research scientist who put together Brain HQ. I’m sure you’re familiar with that.

**DA:** Yes.

**JM:** He’s Dr. Michael Merzenich. It was phenomenal. He just really opened my eyes to this whole process that I was ignoring and not really aware of. Not only of this neuroplasticity of the brain, but also very specific and precise tests that are a little bit different from what you described, because it’s mostly computer-based and actually very precisely measured, forcing you to improve in about 16 different categories. It was a very comprehensive program. I’m just wondering: it seems like that would be a very useful strategy with your program, and also it would tend to improve that.

To me, it seemed the mental equivalent of the physical exercise program that we’re doing, in addition to some of the other recommendations you’re making. But it’s this very comprehensive strategy. I’m wondering if you can comment on that, because I’m sure you’re familiar with the Brain HQ program.
DA: Yeah. Posit Science, a wonderful company that has been producing these really very sophisticated neuropsychological ways to help people boost neuroplasticity and keep their brain young.

I’m actually very excited. I know there’s a chain of new stores around the country called Marbles: The Brain Store. They actually have very specific… I know you’re near Chicago. Their first one is in downtown Chicago. They carry Posit Science’s games. They also carry some of our stuff. But I’m a big fan of what they do, which is why in The Amen Solution community site, we test your brain and then we have similar games to help people work out their brain.

JM: Perfect.

DA: But if you’re going to do that, if you really want to see benefit, you got to get your diet right. You need to get your exercise right, too.

JM: You’ve mentioned previously that psychiatrists are really the only professionals that don’t look at the target organ. And I’m wondering if you think this is changing or you perceive a more of an interest in your type of technology where they can get this subjective evaluation of the target organ that they’re treating.

DA: I’m horrified at what is happening in my profession. I am saddened and horrified. At the Amen Clinics, we’ve seen people from 90 different countries and every single state. People who come to see us are complicated. On average, they have failed three doctors and six medications and have multiple diagnoses. We’re seeing people coming in to us on three, four, five, six different medications. What’s happening is not good.

60 Minutes just did a story on what was psychiatry’s dirty little secret that has now become our dirty laundry, and that antidepressants work no better than placebo, yet it’s a scientific food fight.

I have been at the American Psychiatric Association in the last couple of years, debating my colleagues about SPECT and other imaging tools. You need to start using them today. The resistance is strong. The problem with that is that means there are hundreds of millions of people around the world that have ineffectively treated brain problems that nobody knows about, because they have temper problems or they have depression problems.

Personally, I think traumatic brain injury is of epidemic proportions in our country. Nobody knows about it, because those people are seeing mental health professionals. It’s something, obviously, that will change in the next 20 or 30 years. Tom Insel, who’s director of the National Institute of Mental Health six years ago, said that we would start imaging the brain in five years, but it’s not happening. They’re not teaching it in residency programs. It’s just a shame.

I’m fighting as hard as I can to try to change it. And there’s a growing body. We have a whole SPECT group of us that meet on a regular basis.

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But the orthodoxy in my profession is pretty rigid. And I’m saddened by it, because it needs to change. Now it became a mission for me. Initially, I was just really excited, because it made me a better doctor.
But about four years into my imaging work, my nine-year-old nephew, his mother called me up late one night in April 1995. She told me, “Andrew attacked a little girl on the baseball field that day for no particular reason.” I was horrified, and I said, “What else is going on with Andrew?” She said, “Danny, he’s different. He’s mean. He’s surly. I went into his room today, and I found two pictures he had drawn. One, he was hanging from a tree. The other one, he was shooting other children.”

I’ve been doing imaging long enough to go, “You need to bring him to see me.” What we found was he had a cyst the size of a golf ball occupying the space of his left temporal lobe. It’s an area we’ve subsequently really tagged to violent behavior. When they took out the cyst, his behavior went back to normal. Still, sometimes when I tell the story, I’ll cry, because I think about all the people we’re throwing away like Andrew as “bad,” when in fact, they may be sick.

Optimizing the brain of people who struggle, suffer, or even do bad things – and it’s not popular. It’s the part of my work that’s not popular. It’s just like it’s the right thing to do. If someone has problems with aggression, let’s scan them and see if they’ve not had a brain injury.

We’ve actually uncovered 20 different brain cysts recently last year in a boy who wanted to cut his mother up into little pieces. Let’s really look at what we do before we do it. It’s logical; most nine-year-olds would get, “Okay, well, that makes sense,” but the profession is very slow to change. I always argue that there’s no downside to looking.

**JM:** Okay.

**DA:** Yes, it costs some money, but it saves you money in the long run. We’ve published a study two months ago that said if you get a SPECT scan, it’ll change what your doctor does 79 percent of the time. He’ll give you a different diagnosis or a different treatment plan based on what the scans add to the clinical evaluation.

We have a new outcome study that we’re publishing on 500 consecutive patients that came to the Amen Clinics who were complicated. After six months, 85 percent showed significant improvements in their quality of life.

We are very excited about our work. And we try to give it away. We’re not trying to be proprietary with it at all. I teach whole courses on how to do brain SPECT imaging in your clinic and in your hospital. I’m grateful. There’s a whole group in Vancouver that does it based on my work and a whole group in Toronto, Florida, Texas, and Chicago.

But it’s horrifying what’s happening. I would be very cautious about seeing a psychiatrist that is not gathering data on your brain before he puts you on multiple medications.

**JM:** Now, is this something that if it’s ordered by a physician for appropriate diagnosis it is typically covered by third-party insurance carriers? And if it’s not, what is the typical cost of this?

**DA:** Insurance carriers and anybody that’s dealt with insurance carriers know they’ve tried not to cover anything possible. Sometimes, it is, especially if it’s for a medical reason like for seizures, strokes, or dementia. It’s a wonderful tool to look at people who have mild cognitive impairment, dementia processes, or traumatic brain injury. They tend to get covered. For more sort of psychiatric things, it tends not to be.
A whole evaluation at one of the Amen Clinics, which includes two scans. We do one at rest and one when you concentrate. All of the evaluation tools, including neuropsych assessments or history, pictures, reports, and first follow-up visit, are about 3,500 dollars. For people who got one SPECT scan in their local community, it probably runs about 1,200 dollars.

There was a study out of Creighton that said if you got a scan on the day of admission for a bipolar teenager, it cuts your hospital stay more than in half. It’s a cost-effective tool, but you know, that’s what the cost is in our clinics.

**JM:** Anytime you add hospital admission into that process, the cost of a SPECT scan becomes almost insignificant.

**DA:** Right. Or when you think of what does it cost a person’s life to have an ineffectively functioning brain? It costs your marriage, it costs your job, it costs your money, and it costs how you feel about yourself. I just saw a 19-year-old girl who came to see us. She was doing cocaine and smoking pot. As soon as she saw her brain, she stopped using, because she developed brain envy. I mean, it’s very cool. We have that experience a lot with our substance abusers.

The 30,000 dollars I spend a year on college for my kids, would I spend 12 percent of that so that they could actually have a better-functioning brain? Well, of course, I would. It just opens your eyes to so many things. It’s changed my life, you know – how I eat, how I think, and how I take care of my brain. But it has completely changed the way I practice medicine.

**JM:** It sounds like a great tool. You’ve also mentioned it also particularly useful for traumatic brain injury such as NFL players, even high school football players, or boxers. Are there any other types of traumatic brain injuries that are common that it could be used for? What type of results have you seen in assessing and using it as a tool for monitoring?

**DA:** I’m so excited about our work with the NFL, because quite frankly, the NFL was not telling the truth. They had their concussion committee since 1994. By 2008, when we started our study, they had never sponsored a functional brain imaging study on players, which means you don’t want to know the answer to the question. When we started our study, we had so many people who signed up and who volunteered. We saw high levels of damage. We published that in the *American Journal of Neuropsychiatry.*

It’s very clear. If you play in the NFL, you have a very high chance of having brain damage. But then we put them on our program, and what we found was that 80 percent of them showed cognitive improvement. Even some of the people who were already beginning to be diagnosed with dementia showed improvement. We’re thrilled about that.

But what it tells us is that we probably should not let children play contact sports. Your brain is soft about the consistency of soft butter, your skull is really hard (inside your skull there are many sharp bony ridges), and your brain does not finish developing until you’re 25 for girls and about 27 or 28 for boys. Why would you ever let a developing brain be put inside a helmet and then start slamming it up against other kids? It just makes no sense at all.

We did our NFL study in large part not just for football players, but for hockey players, cyclists, boxers, and mixed martial arts. Why MMA fights and Ultimate Fighting is legal, I just have no
idea. It shouldn’t be legal. It’s barbaric to slam someone’s head against the canvas repeatedly or kick them in the head repeatedly.

But it also has huge implications for our soldiers. I was an army psychiatrist for seven years. I love our military. We have had 300,000 soldiers come back from Iraq and Afghanistan with blast injuries and with concussions. But because the military is not looking at their brain on a regular basis, they do paper and pencil tests, they miss it. And then when these soldiers act out when they have marital problems, drug problems, or work problems, they throw them out. They call them personality disorders, or they give them disability, which is just as bad, because they are not rehabilitating their brains.

If you give someone disability, they then emotionally take your money. They have to prove that they are sick. I would rather keep them in, rehabilitate their brains, and save as many of them as we can, because that’s just logical. Optimize their brains, you can keep them. You’ve spent hundreds of thousands of dollars training them. Then they’ll be able to be a better dad. They’ll be a better worker. They’ll pay taxes. It’s actually good for our economy.

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JM: That’s quite surprising. I wasn’t aware of those statistics. So, 300,000 soldiers from your analysis or review have these disorders from concussions due to blast injuries?

DA: Correct.

JM: How does that occur?

DA: The weapons of choice in these last two wars are these things called IEDs – improvised explosive devices. Captain Patrick Caffrey, he lets me talk about his story. He was a Marine Corps captain and was exposed to three blast injuries. Part of his job in Iraq was to clear roadways of these IEDs. He had been exposed to three of those blast injuries, and then he started being irritable, had trouble sleeping, was more sad, couldn’t concentrate, and had headaches.

When he asked the military (well, he read one of my books) and he said, “I want to get a SPECT scan.” They go, “Oh, no. That’s experimental. You’ll be fine.” He actually paid to come to one of our clinics, saw the damage, changed his life, and took some simple supplements. He started his own non-profit called Brain Scans for Warriors just to try to raise money to help people get the service that they could benefit from.

We designed a specific supplement to try to reverse aging. But I designed it really for my NFL guys and for the soldiers we see, because it optimizes multiple mechanisms in the brain. Blood flow, acetylcholine, has a super antioxidant in it and something to help stabilize brain blood sugar, because that just ends up to be so important in brain function. When your blood sugar is off, your memory is not good. They’re actually starting to call Alzheimer’s disease diabetes type 3. The supplement piece ends up to be very important.

What I recommend to my patients is a really high-quality multiple vitamin, because what they found is that B6, B12, and folic acid has been shown to support memory. Omega-3 fatty acids I’ve recommended for a long time. There are a lot of studies showing that they help support brain function and have been useful to enhance things like mood and memory. But then our
supplement contains (it’s called brain and memory power boost) gingko and vinpocetine. Both of those have been shown to optimize blood flow.

I often say the prettiest brains I’ve ever seen are brains that take ginkgo and vinpocetine, huperzine A to enhance acetylcholine as well as acetyl L-carnitine, alpha-lipoic acid to help stabilize blood sugar levels, and N-acetylcysteine, which is beyond an interesting supplement. There are now six studies with N-acetylcysteine, showing that it helps decrease cravings for alcohol, marijuana (two studies now for marijuana), cocaine, hair pulling, and gambling. I like N-acetylcysteine because it helps boost antioxidant levels as well. We have seen that combination be very helpful in optimizing brain function.

But you know, what I always tell people is “Don’t bother taking your supplements if you’re not going to go for a walk and get your diet right.” You need to do the whole program.

**JM:** Supplements are an “addition to” not “in place of,” of course. I like NAC, too, because of its increase in the levels of glutathione, which is probably the top antioxidant.

Getting back to traumatic brain injury, in light of the fact of this neuroplasticity concept and the body’s ability to repair and regenerate, in your experience, is it possible to recover most of the function or even all of the functions in some cases of this damage that has been done in these injuries?

**DA:** It depends. For example, many of our players, they function at a much higher level, and we get them much closer to what would be considered normal. But I have an 18-year-old girl that I saw from Alaska who had a door fall on her head when she was 18 years old, and literally performed a prefrontal lobotomy on her. If we scan her she has no function at all in the front part of her brain. We don’t yet have the Lazarus treatment to bring the dead back to life, but we can bring the struggling tissue and make it much more functional.

For example, someone’s had a stroke and they’ve really killed a significant part of their brain. That’s not going to completely come back. But the area around the stroke (it’s called the penumbra) we can invigorate that or energize that area. Therefore, they are more functional. I would never want to make a promise that I just don’t know to be true. Some damage tissue if it has died, it’s not coming back. But you can optimize the tissue around it, so that they can become significantly more functional.

Because there are really hundreds of thousands of brain injuries every year in the United States according to the CDC –I think the last estimate I saw was 1.6 million – there are so many people that need brain rehabilitation that I just think it’s critical to get this message out.

**JM:** In the treatment of stroke, which is another common challenge that many older individuals and some younger face, I’m wondering what your experience has been in integrating hyperbaric oxygen. Some clinicians seem to promote that as being of great benefit. I’m wondering what your experience has been.

**DA:** Well, you know, initially, I was very skeptical of hyperbaric oxygen, but one of my friends at UCLA had done hundreds of before and after SPECT scans. He’s like, “Dan, this makes a big difference.” When we did our NFL study, we partnered with a hyperbaric group. They did
hyperbaric oxygen on many of our players. We saw that it added a significant benefit not for everybody, but for a lot of our players.

Then recently, I was involved in a study on soldiers coming back from Iraq and Afghanistan. We published this in the *Journal of Neurotrauma*. What we found was that 40 sessions of hyperbaric oxygen significantly increased blood flow to their brains, and their symptoms were significantly better as well. That was the only thing that they did. They went for hyperbaric oxygen. I have become a big advocate for it, mostly because of what I see in the scans.

One of the most common symptoms people have after a brain injury (and a stroke is a brain injury) is they have trouble sleeping. Almost one of the first things that get better when they start doing hyperbaric oxygen– their sleep becomes better.

I’m very excited, because it’s one of those things Hippocrates – I think – would have been in favor of. Because what did he say? “First, do no harm.” I mean, there are virtually no side effects to going into a hyperbaric chamber repeatedly. I mean, you might feel like your ears are full, but it can be so helpful without side effects. That’s the thing I’m always asking myself when I treat my patients, you know. First, do no harm. What is the least toxic, potentially most effective treatment? I put that on the top 10 treatments for my patients with strokes and head injuries.

**JM:** Have you differentiated the benefits between strokes and traumatic brain injuries, or they’re pretty much the same?

**DA:** They’re pretty much the same in my experience.

**JM:** Is there a critical threshold of time that you have to treat it? This penumbra or this area of struggling cells that at one point they cross the threshold, and they’re dead. I mean is there a timeframe post-stroke that you find most beneficial?

**DA:** Well, I think the sooner you do it to get to really struggling, the better that would be. But you know what surprises me in our NFL study is that we saw players from 25 to 85. Some of our players actually had their damage 60 years before we saw them, and they still showed significant head improvement. It’s like no matter where you are, it’s almost never too late. Now, I say that with some hesitation, because I think some people in the late stages of Alzheimer’s disease, you know, you really don’t make that much difference.

**JM:** Sure.

**DA:** But even people in the beginning or in the middle stages of Alzheimer’s disease, sometimes can show significant improvement when you use these technologies and tools.

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**JM:** That was Dr. Merzenich’s experience also, just profoundly amazing benefits with these simple mental exercises.

You have a very intriguing technology and tools that you can use to improve brain function. I’m wondering if someone who’s interested after hearing this and wants to learn more of your work, what’s the best route to do that? Read the books, visit your clinics or websites?
DA: Well, the person who’s really best for our clinic is someone who, you know, they’ve gone, they’ve failed, and they’re really struggling to find the right help. We’re really good with complicated cases. Or they really don’t want to use medication; they want to know what the natural alternatives are – we do both.

I think picking up one of my books –*Change Your Brain, Change Your Life* is my bestselling book, or *Change Your Brain, Change Your Body* if you’re concerned about your physical health. If you’re concerned about aging, *Use Your Brain to Change Your Age*. I have a new book coming out next February called *Unleash the Power of the Female Brain*. Given that I have three daughters, five sisters, and 14 nieces, I know a lot about this, maybe more than I want to know. Or people can certainly visit our website at AmenClinics.com.

JM: Terrific. Is there anything else you’d like to add before we close?

DA: Well, you know, I just want to add my gratitude to you. I know that people have taken shots at you like they’ve taken shots at me. But I find what you’re doing incredibly valuable both for me personally and for my patients, because I often encourage them to visit your site. You’re doing something that is extremely valuable, and I’ve looked up to it for a long time. I just want to say thank you and encourage you to keep doing what you’re doing.

JM: Well, you’re most welcome. Thank you for those kind words and for all that you’re doing to help expand the boundaries of what we know can be useful and helpful strategies to help people take control of their health.

We know that the conventional model is just really fairly flawed in so many areas. I mean it’s a marvelous tool for tech diagnosing and treating acute traumas, but boy, it’s just a miserable failure for just about everything else. We just need people like you to keep helping to provide more natural options to help people improve the possibilities of reaching their optimum health. So, thank you for participating.

DA: Thank you.

JM: All right.

[END]