Brain Fog, Mental Clarity and Arthritis

Hosts: Rebecca Gillett, MS OTR/L, and Julie Eller
Guests: Susan Goodman, MD, rheumatologist, Hospital for Special Surgery and Professor of Clinical Medicine, Weill Cornell Medicine; and Andrew Schrepf, PhD, University of Michigan Medical School's Chronic Pain and Fatigue Research Center

Plenty of people have those days when they just can't think clearly, but for people with inflammatory forms of arthritis, "brain fog" is not uncommon. This frustrating phenomenon is hard to define or measure, but it's a symptom of a number of conditions, especially those that involve systemic inflammation.

In this episode, Andrew Schrepf, PhD, discusses his and others' research into systemic inflammation its effects on the immune system, central nervous system and the brain. While research is still in its early stages, he says, this is an area of growing interest, focus and research momentum, which should give patients hope.

From a clinical point of view, Dr. Susan Goodman explains brain fog, which affects patients with inflammatory arthritis, fibromyalgia and other conditions. She discusses some suspected causes, including and certain medications used to treat arthritis, including methotrexate and prednisone, and she talks about ways to manage it.

Bio: Susan M. Goodman, MD, is an Attending Rheumatologist at Hospital for Special Surgery (HSS) and Professor of Clinical Medicine, Weill Cornell Medicine. She is the Director of the Rheumatology and Orthopedic Center of Excellence and Medical Chief and Research Director of the HSS Combined Arthritis Program (CAP), with a research interest in outcomes and risk mitigation for rheumatic disease patients undergoing orthopedic surgery.

Bio: Andrew Schrepf, PhD, is a research investigator in the University of Michigan Medical School's Department of Anesthesiology and the Chronic Pain and Fatigue Research Center. Dr. Schrepf studies how the immune system influences the brain and promotes symptoms like pain, fatigue, and cognitive dysfunction in patients with chronic pain. He is especially interested in conditions with an acknowledged inflammatory component, like rheumatoid arthritis. Dr. Schrepf is a graduate of Cornell College and received his doctorate from the University of Iowa in Health Psychology.

Additional resources:
Andrew Schrepf's research

Transcript: Brain Fog, Mental Clarity and Arthritis

PODCAST OPEN
Welcome to Live Yes! With Arthritis, from the Arthritis Foundation. You may have arthritis, but it doesn't have you. Here, you'll learn things that can help you improve your life and turn No into Yes. This podcast is for the growing community of people like you who really care about conquering arthritis once and for all. Our hosts are arthritis patients Rebecca and Julie, and they are asking the questions you want answers to. Listen in.

Rebecca Gillett:
Welcome to the Live Yes! With Arthritis podcast. I'm Rebecca, an occupational therapist living with rheumatoid arthritis and osteoarthritis.

Julie Eller:
And I'm Julie, a JA patient who's passionate about making sure all patients have a voice.

MUSIC BRIDGE

Rebecca:

Thanks for joining us on this episode of the Live Yes! With Arthritis Podcast. Today, Julie, we are talking about something you and I talk about a lot, and that's brain fog.

Julie:

Brain fog. We're talking about it all day long, Rebecca and I (laughs).

Rebecca:

Inflammation can wreak havoc on your body and mind, and while we think of arthritis mostly affecting our joints, inflammatory types of arthritis can actually have many other symptoms. Many patients like us living with arthritis and other chronic illnesses often talk about experiencing brain fog.

So, we're excited to have two different guests today to explore more about brain fog and mental clarity. And our first guest to talk about brain fog and dive deep into the workings of our brain is Dr. Andrew Schrepf.

Julie:

Andrew Schrepf holds a PhD and is a research investigator at the University of Michigan Medical School Department of Anesthesiology and the Chronic Pain and Fatigue Research Center. Dr. Schrepf studies how the immune system influences the brain and promotes symptoms like pain, fatigue and cognitive dysfunction in patients with chronic pain. Dr. Schrepf is a graduate of Cornell College and received his doctorate from the University of Iowa in health psychology. Dr. Schrepf, thank you so much for being with us today. We're so glad to have you here.

Dr. Andrew Schrepf:

Wonderful to be here.

Rebecca:

Brain fog is something, and mental clarity is something, that people who have all types of chronic diseases, especially arthritis, all the different types of arthritis, talk about, especially in patient circles. Like, "Oh my gosh, blame it on my brain fog," right? We know that inflammation affects our joints when you have arthritis. But can you help us understand what other effects chronic inflammation can have on the body and other organs?

Dr. Schrepf:

One of the things that is really important to understand about inflammation is that it really doesn't stay put in the body, right? One of the ways that we actually monitor disease activity in a lot of patients who have rheumatologic diseases is by looking at levels of inflammation in the blood stream. We should understand that it's not confined to the joints. It's clearly capable of kind of entering systemic circulation and affecting a lot of different organs and systems in the body.

Kind of the most well-known examples of consequences of chronic inflammation: increased risk for cardiovascular disease, increased risk of cancer, increased risk of dementia. Rheumatoid arthritis patients particularly may be at an increased risk of

cardiovascular disease. And a lot of that association is thought to be due to excess inflammation in the body.

A lot of people just don't realize that the inflammation is not something that is just in the joint. It's really clear that the inflammation is capable of traveling all over the body. And we need to understand that there's increased health risks that accompany that increased inflammation.

Julie:

It has a lot to do with defining arthritis as a holistic experience through science. A lot of times patients will describe it as, "Oh, I have that achy feeling. My head is aching. My body is aching. Everything is stiff. And I feel slower than usual." Do you have any tips for maybe describing how arthritis can be a whole body experience to friends and family member who are maybe not as familiar with the scientific side of things?

Dr. Schrepf:

If aliens came down to earth and we said, "Look at this group of people and tell us what you think is going on with them." I don't think the first thing they would say is they have pain in their joints. These individuals have a lot of different kinds of difficulties. They have sensitivity to pain across their entire body often. They have brain fog. They have often really debilitating fatigue. And in some ways, those are the things that people report hold them back the most in their lives. It's not necessarily the joint pain. If we just looked at the whole human being, we would see that there's something much more going on than the joints.

And to kind of explain the mechanism in a way that I think some people find a little bit easier to understand: If you've ever had food poisoning, like really nasty food poisoning, which I did at one point. Down for five, six days in a row. And the speed with which I was taken down was, you know, kind of incredible, right from the first moment. You kind of feel bad until the moment where you are absolutely and completely debilitated. It is really rapid. I think that most people understand that experience, right? The experience of getting really sick, and then being really tired and not being able to think and all of those different things.

That is an inflammatory event that is occurring in your body that caused all of those symptoms to occur. So, the key is to understand that the same inflammatory molecules

that make you sick when you get exposed to E. coli or salmonella are the same ones that are elevated in the body of a person who has arthritis. It's just at a lower level.

Julie:

The difference with arthritis is that duration. And I think it's important to say to folks, "You know, this is not an acute six-day, 10-day, 15-day bout of something. This is a lifetime. It can be a lifetime." Helping people make that switch and how they think about disease and diseases that don't necessarily get all the way better but do become manageable. Can you explain how the immune system influences our brain function?

Dr. Schrepf:

The first thing to realize is that the immune system and the central nervous system are designed to talk to each other. There's a connection between mind and body, but then in a lot of ways they can be viewed as discrete entities. It is something that I think leads people to think what's happening in my body really shouldn't have much of an effect on what's happening in the brain, and that's totally untrue.

I kind of liken it to almost like the brain has little weather stations throughout the body where they can really keep track of the incoming storms and the incoming rain and all the other things that might be happening in the body. The brain is ultimately gonna be responsible for changing the things that we need to change when we do get sick, so that we can get better faster.

It's interesting to think about why we would develop brain fog. But actually the brain is a really hungry organ. It really needs a lot of glucose to kind of perform all of its functions. And the immune system is really hungry, too. This kind of tug and pull can happen where you've got to devote more energy and more resources in your body to the immune system. And that can actually draw and divert resources away from the brain and just put us in a place where we're gonna be less likely to move around and expose other people to the sickness. And also it just allows us to rest and recuperate. Which all sounds good until it's happening to you on a daily basis.

The other thing that's really interesting is that a lot of the nerves that are running through the periphery of our body... A good example is one of the cranial nerves: vagus. They call it the wandering nerve because it snakes all through the body. It integrates a bunch of different organs. Well, that nerve is actually covered in receptors for inflammatory molecules. If you do happen to get sick, or there is inflammation present

in the body, your periphery is going to recognize that really quickly and send messages up to the brain that there's inflammation present.

And then something that's really fascinating to me, and we've only learned about this really in the last 15 years, is that the immune cells that circulate in our bloodstream... When we need them to get into a tissue and help clear an infection, they're there, they're ready for us. We've learned that they can actually get into the brain as well, the whole cell itself.

And once they're there, they can stay for a long time and have a big impact on how the brain is sort of talking to other parts of the brain and then overall create a global change in our behavior. And so, there's at least three or four different ways that inflammation in the periphery can reach our brain and tell it to get this program rolling that is meant to help a person heal.

Some inflammation is good, too much is bad. But you can't just suppress an inflammatory response and expect everything to be OK. That's really not how it works. I think it's critical to understand that they were always meant to be together, the brain and the immune system. They were all meant to talk to each other.

Rebecca:

This is all so interesting, it really is. So, the disease process itself is already lending to our immune system and our nervous system playing tug of war. We're already at a disadvantage to have some effects to our brain, right? And now you throw in, for people who have an inflammatory type of arthritis, we're on immune-suppressing type drugs, right? Is that just adding in another layer of causing more issues?

Dr. Schrepf:

The answer is: What kind of drugs are you on? Are they appropriate? Are they working well? I'm not a clinician, so this isn't what I do on a day-to-day basis. You may be able to prevent some of the inflammation that is reaching the brain from getting there and from promoting all of these awful symptoms. It's not like all of this stuff just goes away when you're given the drug.

We maybe right now have drugs that are really excellent for dealing with peripheral inflammation, the inflammation that's in the joints. And in fact, you'll get a lot of clinicians say, "I don't understand what you're talking about. I've got my patient down

to a level where their CRP and their ESR is fine. I'm not seeing any problems there. We don't have the tender joints. We don't have the swollen joints, but they still have the fatigue. They still have the brain fog and not everything can be explained by inflammation."

We know that there are some conditions where there doesn't seem to be a lot of inflammation, and people still have these issues. But I think what's probably true, and what we're understanding more and more, is that the kind of inflammation that happens in the brain, and why it happens, is not directly analogous to what's happening in the periphery. And we're gonna have to learn how to build treatments that can address one and not the other in order to really effectively give people the relief that they need.

Rebecca:

For osteoarthritis and our patients who have osteoarthritis, is this something that is seen in patients who are having mental clarity/cognitive function issues, or brain fog, if you have osteoarthritis specifically, which is normally thought of as specific to a joint.

Dr. Schrepf:

We do see these in conditions where we don't know that there's a lot of inflammation. And that's because the symptoms that we're talking about — fatigue, sleep disruption, cognitive fog, all of that stuff together — there's kind of a lot of routes to get a person to experience all those things at once.

What is interesting though about osteoarthritis is that about 20% of patients will show even in the bloodstream elevated levels of inflammation. It's thought to be mostly confined to the joint, but there's some systemic inflammatory activity in some patients.

PROMO:

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Julie:

Could you tell us a little bit more about your research in particular and maybe how it focuses on rheumatic diseases?

Dr. Schrepf:

We decided that what we were going to do was a particular kind of imaging analysis, where you take some variable that you care about. And in this case for us, it was the level of inflammation that the patients have. We took these functional neuroimaging measures. Rather than looking at something like the structure of the brain, you're trying to understand, using something called the bold signal, how different regions of the brain are becoming more or less connected to each other as, for instance, somebody is doing a task.

We saw these very, very strong patterns in which regions of the brain were really becoming more strongly connected to each other in the patients who had higher levels of inflammation. And so that told us right away that brain function was clearly changing in relation to how much inflammation an individual was experiencing.

So, we looked at how much those particular regions of the brain were talking to each other. And we said, "Does that have anything to do with the kinds of symptoms that they were reporting?" And we found that, in those kind of inflammation-associated connections, the patients had a lot more fatigue, a lot more widespread pain, more self-reported cognitive dysfunction. But then, really interestingly, when we looked at their scores on the test, they were doing worse.

And so, we could see, I think for the first time, a pretty clear signal between how much inflammation is in the periphery of your body and how much cognitive dysfunction are you showing, and what regions of the brain seem to actually be mediating that relationship.

It gives us a place to start from now, as we start to push forward and try to really understand: OK, now what do we about it? Because that's the next question.

Rebecca:

Yeah.

Dr. Schrepf:

But we first needed to just show that this, that this was real. We need to figure out: Why do some people who have really high levels of inflammation not show these symptoms that are so bothersome? And why is it that some do? I think when we understand that vulnerability, we will be on the road to finding an effective treatment.

Rebecca:

Do you think quality and quantity of sleep plays a role in that?

Dr. Schrepf:

It absolutely could. There's not a single symptom that we've talked about yet that doesn't get worse when you haven't slept. Right?

Rebecca:

Right, true.

Dr. Schrepf:

I don't wanna say that sleep is necessarily the nexus of all of this. But I will say that if somebody is sleeping poorly, the chances that this stuff is gonna get better are not very good. That's a primary area of concern to try to address.

Julie:

It's remarkable to think about having some level of research that's validating for patients in the way that you've described, and just saying, "Hey, you have been reporting these symptoms for years and years and years, and now we have a tool." We have an ability to really see what that looks like in your brain, what that looks like in your body. Are there strategies that have proven successful, other than getting good night's sleep, that can help people combat some of these mental clarity/brain fog issues?

Dr. Schrepf:

The sad news is that I can't tell people about a secret clinical trial that worked really well (laughing) with cognitive dysfunction in patients who have arthritis. I also don't want to contribute to giving people false hope or to think that something's just around the corner or something like that. I do think that momentum is really gathering around

some of these concepts and that people are really starting to pay attention and take it seriously.

There is some possibility that we may see less of this as time goes on in that, as the new generations of drugs come out and they're more selectively targeting inflammation, and they're having fewer off-target effects, we might start to see that patients don't have as many of these symptoms, or they don't have as many bad days.

Rebecca:

I think just the sheer fact of what you've established with your research so far is one validating to all of us patients out there, and many of us who experience it or have experienced it would be in line to be part of the research to say: "Figure this out, because I just wanna make sure that I'm not imagining this. So everybody else will understand that I'm not imagining this." There's just a long road ahead, perhaps, but is there a way that people could participate in research that you know of, or can look into that in their area?

Dr. Schrepf:

There are a few scientific centers. Obviously we're one of them that's interested in this topic. I think the easiest thing to do is to look for academic centers that are reasonably close to where you live and to just kind of survey what some of the faculty research interests are. If they do have some of these kind of, you know, patient portals, where you can log in and see studies that you may be eligible for. We do that at Michigan because we have so much clinical research going on. That's a great way to try to get involved.

In any field that's kind of emerging, it's gonna take a while for people to sort of establish those programs and to get the big studies going. If you look around enough, you'll find people who are really getting more and more interested in this topic.

It's very hard to do in human beings. The animal models are obviously a lot easier to do in the sense that you have a lot more control over the situation. But in the end, we need to understand this in the patients. That's the only way that we're going to get to where we're going.

Julie:

Research is slow, but it is important, and it is exciting every step of the way. So, we're really glad to hear about your perspective. Dr. Schrepf, if you had to leave our listeners with your top three takeaways from our conversation today, what would they be?

Dr. Schrepf:

The first one is that you're not alone. This is happening to a lot of patients, and that this more than other things is at the heart of why they're not living life to the fullest, or the way that they want to live their lives.

Another takeaway would be that help is on the way. It may be slow coming, but it's on the way. We're not going to give up on this area of research because this is something that has the chance to help patients who not just have arthritis, but who have a lot of conditions that are characterized by inflammation.

My final takeaway is: Look for a clinician who cares about this, who asks about this. If they don't ask about it, bring it up, and look for people who take this seriously. Until the person you're seeing is really invested in knowing whether or not this is also getting better, right? You don't want them to say, "Your joints look fine, have a nice day."

Rebecca Gillett:

Yeah.

Dr. Schrepf:

You want them to say, "We're doing a good job here, but I'm still concerned about the level of cognitive impairment that you're reporting. I'm still concerned about how your energy levels are really, really low. Let's keep working together. Let's keep doing some more if it takes trial and error to try to get you into a better place." There's really exciting things happening in drug development. But of course, it takes a really long time to get these things to work well and to get them out to the public.

Rebecca:

Wow. Thank you so much. This was very helpful to hear that there is validation to this. This is one of the main factors I think that affects our quality of life when you live with a chronic illness, and it's something that can't be dismissed.

Julie:

Yeah, absolutely. Thank you for making brain fog more than just a buzzword for patients, but one for researchers, too.

Dr. Schrepf:

It's been a pleasure.

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Rebecca:

On this segment of the podcast, we're gonna talk with Dr. Susan Goodman, who is an attending rheumatologist at Hospital for Special Surgery and professor of clinical medicine at Weill Cornell Medicine. She is the director of the Rheumatology and Orthopedic Center of Excellence, and medical chief and research director of the Combined Arthritis Program, with her research interests in outcomes and risk mitigation for rheumatic disease patients undergoing orthopedic surgery.

Julie:

Dr. Goodman, thank you so much for joining us today.

Dr. Susan Goodman:

Delighted to be here.

Julie:

Can you tell us a little bit about what brain fog is and how you would describe it?

Dr. Goodman:

Brain fog isn't actually a disease itself, but it's a manifestation that people frequently talk about in association when they have other problems. And it really refers to a lack of

mental clarity, fatigue and inability to focus, or feeling that you're just not quite connecting. It's different from fatigue, but the two frequently go together.

Julie:

I frequently experience brain fog, especially on days where my arthritis is really flaring. Memory recall is a little bit tougher or finding that word can be a little bit harder when you're trying to describe something to someone. I appreciate that you create a distinction between brain fog and fatigue.

Dr. Goodman:

They do frequently go together. And in fact, fatigue, overwhelming fatigue, is probably one of the most common causes of brain fog. We've all said at some point, I'm so tired I can't think straight. (laughter) And that's one of the many kind of casual experiences we all have with brain fog.

Rebecca:

What is it that you most commonly see in patients who have chronic inflammation?

Dr. Goodman:

So many, many, many patients report as part of their flares and as part of their active inflammatory disease that they do have that lack of mental clarity, that they really can't focus as well as they may want to. Currently, it's very common post-COVID. So many people are having a tough time just shaking it off after they've otherwise recuperated. It's not uncommon after a serious infection to have that sort of persistent fogginess and fatigue.

And one of the other settings that it can be fairly common in is in that sort of vicious cycle of depression and fatigue and brain fog, cycling through in that sort of way. These things do tend to travel together, but they really are separate.

Rebecca:

Yeah. I know a lot of people, especially with like fibromyalgia, experience that what they call... we call fibro fog, right?

Dr. Goodman:

Right.

Rebecca:

A couple years ago when my RA was not under control and my medications had stopped working after a surgery, I was experiencing true fibromyalgia symptoms. And one of the things that was like a point of contention around my home was I would not remember conversations I had with my husband. He would say, “I told you this already, and we talked about this the other day. Remember?” And I'd be like, “Nope, not even a clue.”

Dr. Goodman:

Yeah, exactly.

Rebecca:

“I really don't even remember.” And so, I know a lot of people with fibromyalgia report that being part of their experiences, having this fibro fog.

Julie:

Brain fog is one of those consistent symptoms that I always mentioned to my doctor, but I don't know how they quantify it when they're taking it down as a symptom, or if it's something that my treatment plan can really address.

Dr. Goodman:

It's really hard. I think the first thing is to see if the disease is under good control. And if your inflammatory markers are elevated and your joints are swollen, that almost makes it easier, because then you know that if you address the illness itself, you may well take care of the brain fog that goes with the active players. I think in some cases you really can tell the patient, "Get your sleep cycle in order, you're gonna be much better." But in other cases, it's not that simple.

Rebecca:

Yeah. We all know when you're a little bit sleep deprived, right? Like you can't focus on anything except for “when do I get to go lay down and rest (laughs) and take a nap?” We only have so much bandwidth to deal with all of it. Are there ways that you would recommend a patient talk to their doctor about the symptoms?

Dr. Goodman:

Brain fog is a very well-recognized symptom, and I think people know what you're talking about. Clinicians will know what you're talking about. On the other hand, you said something interesting when you talked about measuring brain fog, and we really don't have a measure for it. It's much easier to try and study something and to try and treat something if you can measure it.

Julie:

We cannot change what we cannot measure.

Dr. Goodman:

Right.

Julie:

I always say and recommend to my patient peers that if you're measuring it and logging it in a journal and bringing that into your doctor, that patient data really does matter. And you can bring that in and it can really inform a broader conversation with your doctor about some of the fatigue and brain fog.

Dr. Goodman:

Yeah. I think that's absolutely right. In particular, if you've been able to link it to something like maybe you were at a party and had red wine the night before.

Rebecca:

Does some of the medication that we take for arthritis actually have an effect on mental clarity?

Dr. Goodman:

Well, probably the one that does, although it's transient and it's not that common, is methotrexate.

Julie:

The methotrexate hangover is what we like to call it (laughs) in my household.

Dr. Goodman:

Yeah, prednisone is a paradoxical drug as I'm sure you're aware. Some people just feel frazzled by it and can't concentrate. And then, of course, pain medications or those sort of obvious centrally-acting drugs can have a real effect on brain fog.

Julie:

We talk a lot about brain fog being a symptom that you see for patients with rheumatoid arthritis or fibromyalgia. Do you ever hear from patients living with osteoarthritis or a degenerative form of arthritis that experience brain fog or mental clarity issues as well?

Dr. Goodman:

No, I really haven't. I think part of that is probably the drive of systemic inflammation.

Julie:

So, what types of treatments or strategies might a doctor suggest or prescribe to someone that is dealing with brain fog?

Dr. Goodman:

When we treat someone with RA, we really do try to treat to remission. And patients in remission don't have these problems. If you can treat the disease, you can take care of a lot of other problems associated with it.

We don't have specific treatment for brain fog itself. It's a matter of eliminating the things that may be aggravating it and trying to control the underlying disease.

Rebecca:

A lot of people with the inflammatory types of arthritis might be on a daily low dose of prednisone or take methotrexate once a week. How do they get around with managing these issues though, when they have to take this medicine regularly?

Dr. Goodman:

So, for something like methotrexate, many people can just have an extra cup of coffee in the morning and that can rebalance that. All work through the same chemical mediators. So that can actually take care of the fatigue and the methotrexate hangover that you talked about. (laughter)

For something like prednisone, boy that's... Some of the drugs are tricky and it obviously also depends on how many other choices you have. You try to compromise and kind of make minor changes in the regimen.

Julie:

It's hard to have those conversations about how to adjust your lifestyle, to make a treatment regimen work and manage some of those sticky things like brain fog.

Dr. Goodman:

One of the most helpful things for patients is just making sure you've got a good exercise regimen. It doesn't have to be marathon training, but, you know, walks and fresh air and things like that can really improve mental clarity.

Julie:

Establishing those routines can be really tough, especially when you're in the height of a flare, especially when it comes to getting moving and getting exercise.

Dr. Goodman:

It's very, very challenging for people. And there really isn't any magic there.

Julie:

Dr. Goodman, is there any way of predicting when that brain fog might happen for folks who are not relating their brain fog to medication? And is there any way to prevent it?

Dr. Goodman:

Unfortunately, there isn't. Those who seem to have overcome it are the ones who are able to get a good night's sleep and get regular exercise and take their methotrexate on a Friday night or whenever it's convenient. Then if it really isn't manageable, talk to your doctor. Maybe you've now become hypothyroid. Maybe something else has come up that's contributing and making your old coping mechanisms less effective.

Rebecca:

Having that conversation to try to pin down what might be that trigger is so important to do. Is there anything that you've discovered in all of your years working with patients who have chronic inflammation that can shed some light on how to manage our mental clarity in any brain fog we might be experiencing?

Dr. Goodman:

I think the most important thing is to be open with your rheumatologist, let them know if you think... I might think that it's the greatest medication on earth. And in fact, by many criteria, it might be, but it may not be working for you. So, you have to have that sort of open relationship. You have to do what you can to help yourself by getting a good night's sleep, getting regular exercise. I can't get an X-ray of your brain fog (laughing), and you have to be a real partner.

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As the pandemic continues, the 2021 Walk to Cure Arthritis is different. But it's still so important to get involved and keep moving our community's mission forward. Move your way. Get going at https://www.arthritis.org/events/wtca.

Julie:

Well, Dr. Goodman, this has been a remarkable conversation. It's helped me quite a bit in thinking about how to articulate brain fog and some of the causes and means for it. If

you would send our listeners off with your top three takeaways on arthritis and brain fog, what would they be?

Dr. Goodman:

My top three takeaways are that this is a very common symptom that patients with chronic inflammatory diseases, in particular chronic inflammatory painful diseases, that can disturb sleep as part of their normal mechanisms.

Brain fog is very, very common. Sometimes it melts away when the disease comes under good control if we can achieve remission. I think it's really worth paying close attention to the simple things. It's what everybody's mother told them: Get a good night's sleep, get plenty of exercise, eat healthy food.

Julie:

Love, love, love that. Listen to your mother.

Rebecca:

Listen to your mom (laughing). Mom was right.

Julie:

Well, Dr. Goodman, thank you so much. We've really enjoyed having you on the podcast today.

Dr. Goodman:

It's a pleasure talking to you.

Rebecca:

Thank you, Dr. Goodman. I really appreciate it.

Dr. Goodman:

Great. Nice meeting you guys.

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