

Shut Your Mouth! Nose Breathing Improves All Your Body Systems – Patrick McKeown with Dave Asprey – #835

Announcer:

Bulletproof Radio, a state of high performance.

Dave Asprey:

You're listening to Bulletproof Radio with Dave Asprey. Today, we've got a large live studio audience, who are live online anyway, from the Upgrade Collective. So we're going to get a lot of good questions at the end of the show and I'll be getting a lot of good feedback during the show. So I really like the energy that happens when my membership and mentorship community and we're all together and get to do these interviews. This is a second time our guest today has been on the show, but he's got a brand new book with only 534 pages. We're going to go through and learn a lot of cool stuff today. You've probably heard the term magic bullet. And if you ever think about that, where did that come from? Well, it turns out that a scientist named Paul Ehrlich figured out that phrase or he came up with it in 1906.

And he's a guy who won a Nobel prize for important work in understanding the body's immune response that later helped us to understand some of how cancer spreads and what we can do with chemotherapy. So he was looking for a magic bullet for the immune system and cancer. It turns out we have a magic bullet and it's one that is free. Some biohacks can be expensive. Most of them work on mechanisms that are free, but breathing might be the biggest and best magic bullet we have today. And our guest today, who is Patrick McKeown has put more than 20 years of research to find out why.

Before breathing blew up... You see what I did there? So much in the last couple of years. He's rolling his eyes right now. Patrick was on the show. I think he was my first major guests on breathing with the work he does with the Buteyko Clinic. And since then this new book, which is very encyclopedic and matches very nicely with James Nestor's book. James Nestor wrote a popular science book about this. So there's a lot of just really cool stuff that's come out. So that's why you do this one thing right is probably as important as eating. So here we have it on the show one of the world's leading breathing re-education experts. Patrick, welcome back to the show.

Patrick McKeown:

Good to be here. Thanks very much, Dave.

Dave:

You're a bit of a crazy person. And in fact, you and James are both similarly crazy. Are you guys buddies? James Nestor and you, you must know each other.

Patrick:

Yeah. We know each other. James reached out to me about four years ago, he was writing the book for Penguin. So I bet it's a small world in terms of I think we all know each other. So information always crosses and people, we cross parts as well. So it's an interesting space.

Dave:

It happens in all the different areas of biohacking. And we've got the Biohacking Conference coming up where I do my best to cross pollinate things. So guys, biohackingconference.com, I'd love to see you

there, a couple of thousand people in Orlando having fun in the sun with smiles and hugs and everything, who would have thought? But the idea is to bring it together, allow cross-pollination. But what I find interesting is going back to 2002, it was almost 20 years ago you're in Moscow doing this crazy breathing stuff. And I think James was just doing his first stuff, I had done my first holotropic breathing about the same time. And so there's these weird breath pioneer guys who just get into it and stay into it. So what I want to understand is, okay, what made you go to Russia that long time ago to do this weird thing? It's so odd [inaudible 00:03:40].

Patrick:

Totally. But you know what? Life sometimes directs you in mysterious ways. As a kid growing up, I had asthma, I had a stuffy nose. And if you have a stuffy nose, your sleep is really impacted. So I had fatigue, poor concentration, and I was always kind of feeling that something was not quite right, but you're not quite putting your hand on it. So I came across a newspaper article in '97 and it spoke about the work of a Russian doctor. And he said two things, he said, breathe through your nose and he said breathe lesser. Now this was news to me because I'll give you an example, I was at the university in Dublin and I can remember going into an exam hall in my finals and I was quite anxious going in. This was back in '96, 1995.

And I took a walk for three minutes before going into the exam hall. And I took this full big breaths because that's what I was led to believe was the best right thing to do. And I walked into the exam hall totally spaced out. And for me, it was entirely the wrong thing to do. So when I came across the importance of nose breathing, I started using the nose and blocking exercise. It worked. So I knew there was something in it. I started breathing less air and the temperature of my hands increased. So I knew there was something in it. And then I taped my mouth at night and I use breathe right trips as well to keep my nose open. The first morning, I don't remember much out of it. The first morning was it good or bad? I don't know. But I kept sticking with nasal breathing during the day. And I taped my mouth closed again the second night. And I woke up the second morning and it was the best night's sleep that I had in 15 years. Now, that was enough for me.

Dave:

You say you did that a long time ago, I've got to say you've had a meaningful impact on my marriage because it was after our first interview, that was maybe episode 434 I think and we're above 800s. This is a while ago. But I started taping my mouth and my marriage immediately improved, but I don't know if that was from breathing or just because I was talking less. Have you ever considered that?

Patrick:

Well, there's a relationship between. I think with snoring and with sleep, 50% of the adult population wake up with a dry mouth in the morning. And if you wake up with a dry mouth, you're not waking up feeling refreshed. And there's another thing as well for men, men should wake up with an erection in the morning. And if they don't, it's not a great sign and it's more likely to happen when they have lousy sleep. So I think it's something for the men to pay attention to and maybe the females as well.

Dave:

I have been taping my mouth for a couple of years now because of that interview. And it really does improve sleep and measurably reduces snoring. And my daughter has been taping her mouth for probably a year and a half. I got her the strips that are kind of flexible. And after a while she said, "No, I just like the normal tape." So every night when she goes to bed, she does it. And it's made a noticeable

difference. You wake up feeling better. So if a 13 year old will do it of her own accord, there's something to it and you don't wake up with a bad tasting mouth. So that has been meaningful for me and as someone who used called me a mouth breather, I had chronic sinusitis for 15 years. So how is this possible? Well, it is possible.

So I really truly have to thank you for that. And for anyone listening, it sounds weird tape your mouth at night. I don't know if Victoria's Secret makes mouth tape or not, it doesn't matter. You will really like how you feel in the morning. So it's worth it and I wanted to just give you a shout out and say you're the guy who turned me on to that. And you're the reason we sent out your tape in the Dave Asprey subscription box and all that. So thank you, man. It was a big deal. And now you've got a new book that's... Like compared to the Oxygen Advantage, your new book is encyclopedic in every kind of breathing. And I'm wondering if I can actually get you to teach listeners some of the cool techniques from the book on this interview.

Patrick:

Yeah, of course. I wanted it to have as much detail as possible. I just feel that breathing has been too left of field and it hasn't been put out there properly. I really need breathing to be taken seriously. And the only way it's going to be taken seriously is if we can support it. And if we can support whatever science is out there and grant it. Science doesn't tend to like breathing in terms of it's not getting major funding, et cetera, but at the same time, there's information about breathing that's been around for a 100 years, but it has been buried in pub med. And it's really important to get this into the hands of the general public. Like you spoke about kids, female breathing, the male population, it really has application for everybody.

And I suppose Dave, I'm working now with elite police forces, Swash, Navy SEALs, Air Forces, Olympians and when you see high performance individuals taking it on board, there's something in it. And it's great to see it getting out there. But at the same time, the book I had to show that there's a lot of science supporting this. This is not just something taught by a lot of hippies lads going around with robes and beads and sandals and everything. No, no, no, this is something we have to start taking seriously.

Dave:

It's one of those books that stands out because there's so much skepticism that you've got to put it all out there. It's a similar thing with, I wrote my Anti-Aging book. There's so many people who say, "No, you can't do this." Look, people have been studying this for hundreds of years and there's all this knowledge and we just ignore most of it. And it's kind of frustrating. And so you put the knowledge together and you say actually there's so much here. Anyone who's halfway curious can't deny that it matters. You could argue about eight second hold versus five second. But that's what data and science and universities are for, but you can't argue it doesn't matter anymore. So I've become over the... So really this is probably looking back your influence was the first one here.

If every day we're combining 30 pounds of air and a pound or so of food, I know an awful lot about how to manipulate the food to get the results I want, right? Upgrade Collective, you guys have learned tons of this in the class, but we don't really learn that much about how to manipulate the other things we're combining with that, which is the air, the rate of flow. We're all happy to an intermittent fast. Well, how often should your air intermittent fast be? And I touch a little bit on carbon dioxide and air fasting in other words breathing, but it's maybe five pages of the fasting book. So when you look at this and that equation of air and food, how much do you think food matters versus breathing matters?

Do you have to get the food right for the breathing to work? Do you have to get the breathing right based on what you eat? How correlated or connected are they?

Patrick:

One influences the other. And it's kind of strange because people with bad diets tend to have bad breathing. If you go into a fast food restaurant and you see somebody who's quite maybe obese there and look at their breathing and look at the food they are eating. Now, what's feeding into the other? Just the human body is so complex and there's so many bi-directional relationships. And if our breathing is off, we can pretty feel lousy, always in increased sympathetic drive, increased stress response, poor sleep, caught for breathe, feeling air hunger. You don't tend to want eat good food. You tend to just go for comfort and you don't want to do physical exercise because if you go out for a walk or jog, you feel excessively breathless. So there is something. The two go very much hand in hand, and I'm going to be biased towards the breath.

I really would want to because I think... And actually in fact, if I was to improve one thing, I'm writing a new book at the moment, and this is going back to the problems I had when I was in secondary school, that's high school and university. I had poor concentration and I had a poor attention span. And society demands that we have good concentration and attention span. Society demands that but nobody's teaching us how can we improve concentration and attention span? So in terms of Maslow's hierarchy of needs, that needs to be revised for today's world. And deep sleep is the foundation. That's what we have to get right first and then functional breathing and then breath aware, body aware, mind aware and self actualization. So I don't think we have anything without that deep sleep. And if you look at diet, people who are having sleep apnea, that's going to impact hormones, increases grab and they food, put on more weight, increased sleep apnea, insomnia, mental health issues, are very tired and with poor sleep. And breathing is tied in with both.

And the whole sleep industry has really, really been neglected here. If you think of one of the main gold standard of treatment is a C-PAP machine and 50% of people abandon it after six weeks. It's hardly a success. What about the 50% of people who are not able to tolerate it? And there's a huge connection here with breathing. I wrote an article with two ear, nose and throat doctors. It was published in the Journal of Clinical Medicine about two months ago. And it's a 10,000 word article exploring the phenotypes of sleep apnea. Basically, sleep disorder breathing has changed quite a bit in the last seven years and breathing exercises tie in very nicely. So it's just starting to get that awareness out there, but it does come back to that, Dave. I think if you get sleep right, a lot of the other things can fall into place.

Dave:

I believe you're right. And the connection with breathing and sleep is there. And as someone who always hated sleeping because I have other things I'd like to do, I've gotten to the point where I'm really, really good at sleeping. So I get a six and a half hours and I am fully rested. And all of my data sources say I'm fully rested, which is ridiculous because I think there was a lot of times in my life where I would have slept for longer, but I wouldn't have gotten very good sleep. And so it's that quality thing. Mouth taping has been important and certainly the circadian stuff, my circadian lighting company, True Dark, the glasses and not eating too close to dinner, all of those add up. But man taping has been the thing.

I've also talked about the Ujjayi breath and I think I taught it in the sleep challenge or at least it's one of the free giveaways or something which is a way to rapidly fall asleep. This is something I learned in yoga. Can you talk about the Ujjayi breath and what that does versus all the other ones that you're going to teach us here in a minute?

Patrick:

Yeah. So with Ujjayi breath where there's restriction, I don't teach myself those restriction of the throats. We have to ask the question, what's the volume or the tidal volume that's taking part there? I think it's going to vary according to the instructor. You could have one instructor who's taken quite follow breaths and even though there's restriction of the throat and you can hear quite an amount of noise from the sound of breathing, which you might have another instructor who is taking very light breaths. So the tidal volume is going to be different. And if we think of if you want to influence the autonomic nervous system, it's all in the exhalation. If we have a fast and sharp exhalation, we activate a stress response. And if we have a slow and prolonged exhalation, we activate the body's relaxation response.

So I'm not sure if I'd be doing fast rapid breathing before going to sleep, I'd be doing the opposite. I'd be downregulating, which a very soft breath in through the nose and a really relaxed and slow breath out. And that's what's happening with Ujjayi breath is that the respiratory rate is quicker or it may not be, but the tidal volume is smaller, is shorter and as a result minute ventilation is reduced, the person's breathing less air and that's going to stimulate the vagus nerve, the increased carbon dioxide. So if you feel air hunger, if you feel air hunger during it, it stimulates the vagus nerve. And by doing that, then it's going to bring the body into relaxation and mind.

Dave:

So what that is, guys, if you've not heard of this at Ujaay, U-J-A-A-Y, it's you breathe in through the nose really slowly, almost like you're about to snore like... Right? You don't want to be going a little further if you restrict anymore, but you do it really slowly, right? So and that trickles in and for most people I know, three or four of those, it kind of knocks you out. It makes you really tired and that's likely the vagal nerve activation. But if you'd do, you'll be like... A good teacher should tell you not to do it quickly and you'd probably end up blowing your nose on yourself because it's only through the nose. So that's one of the many different and there's thousands of different breaths if you'd look at traditional Chinese medicine and all. I want to know how did you pick which breaths to cover in your book? Because I mean, you could have written 10 books this size to cover the world's knowledge on breathing. So what made the cut?

Patrick:

So I have a nice suite of exercises. We can work with a three year old, four year old child to an 80 year old man and everybody in between. In order for those exercise to upregulate, downregulate, really it's fairly simple when it comes down to the breathing though. You have to ask any breathing exercise what's it doing. How is it effecting the biochemistry, which is focused on carbon dioxide, how is it effecting the biomechanics, which is focusing on primarily the diaphragm and how is it affecting the psychophysiological resonance frequency breathing in terms of the autonomic nervous system. And then we ask, is it a stress or exercise or is it a relaxer? And you can pretty much put every breathing exercise into those little box. So we have exercise to upregulate, exercise to downregulate, but I think the key here is, Dave, it's not just about the breathing on the mouth, it's about the breathing, the person when they leave the studio everyday breathing patterns.

If I have a student coming in and if I just work with a person's breathing, just working with her breathing probably with me is only a very small percent of the time. I'm more concerned how is that person breathing when they walk down the street, when they do physical exercise, when they get into stress, down-regulate before sleep, how are they breathing in sleep? And I think that's really important and yoga has an enormous potential by embracing breathing to the depth and the potential that it can

do, because I would have loved being a 15 year old with poor concentration, with poor sleep, going into a yoga studio and for the yoga instructor saying, "Number one, Patrick, I need your breathing through that nose day and night." I was a chronic mouth breather.

Number two, if I show you how to breathe a little bit less here, we can improve your blood circulation and oxygen delivery. Now, that's new information for many people out there. Number three, I'm going to improve your biomechanics, but the connection with posture and spinal stabilization and the emotions. Number four, I'm going to have to bring you out of that sympathetic drive into a more balanced, autonomic nervous system. And that could be done in yoga, the potential here to transform lives. And we shouldn't just think of breathing as being it's this one silo. And that's the way it is because the issue with breathing is that we are trained according to the tradition. And I was trained originally according to the Buteyko tradition. I cannot change the Buteyko method. Of course, I will tweak it here and there as best I can with my own students, however, with the Oxygen Advantage, I set it up that it was not going to be constrained by any tradition.

It was free to embrace all traditions. And it wasn't just for a part of yoga, but it was for performance-based because I wanted to get a technique out there that men would do and that men would embrace. And that's very important. I remember I was given meditation and mindfulness. Mindfulness and functional breathing patterns back in 2010 to 2013, Ireland was a mess with anxiety as a result of economic crash here. And I gave small classes to 3000 people over a course of two or three years, 90 to even 95% of people who attended were females. And I remember thinking, where on earth are all the men? Because it was the men who were dying most by suicide, but yet they wouldn't embrace breathing and they were stuck in their heads drowning and tired.

And that's part of the reason why we brought out the Oxygen Advantage. I wanted something that was for the common and the normal person and not just use breathing as a means of training the breath for performance, but training the mind. Because if we can train the mind, that's the filter through which all of life's perceptions we analyze. And it's very important to know how the mind works. And what I'm going to say is mindfulness does not work for the very group of people who need it the most, because if you have a lousy sleep pattern, and if you have dysfunctional breathing, you can do all of the mindfulness in the world. It was developed two and a half thousand years ago. Mindfulness is wonderful. And I have to say that because I've done it and I've done the Vipassana course. It's absolutely wonderful. It's not sufficient.

Dave:

Well said. If you don't have cells that can make electrons effectively, you don't have enough energy to do personal development work all the way. So that's why when people are doing the 40 year's end and stuff or if you have metal poisoning or toxic mold or anything, doing the work that's supposed to work, it's too much work because you just can't bring it. And so you've got to fix the biology enough to start bringing it with the mindfulness, which then makes it easier to fix the biology. But a lot of people say, "I'm just going to start with mindfulness, but I'm going to eat a Snickers bar first." And it just doesn't work like that, right? And if you look at mouth breathing as the lung equivalent of eating a Snickers bar, you don't get the same effect from your meditation or your yoga class or even your bike ride.

And because of you and James and just playing around with it, when I go for a bike ride, my mouth is closed as much of the time as possible. And my kids have learned it and we've talked with them about masks. And so they've both learned, okay, breathe in through your nose when the school makes you wear a mask some of the time, but not the rest of the time in a way that makes no sense. And they've noticed a difference from that as well. But let me ask you that before we get into teaching some of these things that work on those four pathways, the biochemical, biomechanical, the cadence,

those sorts of things. What is the effect of wearing a mask on your breathing? And I'm not looking to be pro or anti masks, what does it do in those four things around biomechanics?

Patrick:

In terms of... Well, it really depends on who's wearing the mask, because if you have a person with a little tendency towards anxiety or panic disorder or asthma, or a female going through the latter stage of the monthly cycle, if you have air hunger, and then you put on a mask and that's going to amplify the air hunger, how is the person going to react to the feeling of air hunger? They will naturally react to the feeling of suffocation by breathing fast and shallow. So it's going to mess up the biomechanics, but it's going to put them into a fight or flight response. It's not enough to tell people to wear a mask.

Dave:

Isn't that a good thing though, because if we can put more people into fight or flight response, then they're more obedient.

Patrick:

Well, it depends.

Dave:

Oh sorry, I was wearing my government hat. I am so sorry. I'm not an elected official. I take that back.

Patrick:

But you know what? People are saying that the masks are reducing oxygen saturation. Okay. Let's break that a little bit down because that's not technically correct.

Dave:

Yeah. Let's talk about that.

Patrick:

The mask pool carbon dioxide. So when you re-breathe that carbon dioxide rich air back into the lungs, you increase CO₂ in the blood. And this causes a right shift of the oxyhemoglobin dissociation curve, meaning that hemoglobin, which is the carrier of oxygen in the blood releases oxygen more readily. So when hemoglobin starts releasing oxygen more readily, you will see that the blood oxygen saturation will drop. So the SpO₂ while wearing the mask is going to drop a couple of percentage points, but not necessarily because oxygen can't get in. It's because hemoglobin is releasing oxygen more readily. So I think-

Dave:

Because you breathe more CO₂.

Patrick:

Exactly.

Dave:

Okay. Most people who talk about the health effectiveness do not understand what you just said, but breathe more CO2 that actually for breath periods can be good for you because it releases more oxygen into the tissue. But if the oxygen is released from the red blood cells, you have less oxygen in the red blood cells. But if you do that for long periods of time, what's the physiological effect of that?

Patrick:

In terms of, again, if you're bringing in more CO2 over a period of time, your breathing is not normally going to react. It's different for me because I can cope with the air hunger. And I understand the air hunger, but for a normal, say a teenager and you have the teenager wear a mask for six to eight hours, I don't think it's good. I think it's going to be really detrimental to that kid in terms of how the child is reacting with their breathing patterns. We should be teaching the child, the teenager, the person with anxiety or panic disorder, if you're wearing the mask, understand not to hyperventilate in response to the feeling of air hunger. It's the hyperventilation that is not good. And it's like any stress. If you're exposed to a prolonged stressor for six or eight hours a day, several days a week, we have to ask the question what's going to happen to the long-term breathing pattern of that individual?

Dave:

All sorts of things go down if you're exposed to chronic stressors all the time. Your fertility goes down, your hormone production goes down, your health goes out, all sorts of bad things. So brief periods of stress seem to work, chronic stress doesn't and we know that. In your book you talk about reducing the rate of breathing to between 4.5 and 6.5 times number of breaths per minute. How do I know if 4.5 or 6.5 is right for me? And how does it apply to teenagers or perimenopausal women? I mean, there's all these different groups and that's a relatively large range. So how do we know how much to breathe?

Patrick:

You don't. I'm not saying that the respiratory rate all day every day should be that, what I'm saying is take 10 minutes twice a day or 20 minute twice daily and pay attention to your breathing. And you could choose a good average of six breaths per minute, breathing in for five seconds and breathing out for five seconds. And this helps to strengthen the bar reflex, which is a very important function within the autonomic nervous system. It's the sensitivity of your bar receptors to changes in blood pressure. I keep it simple, our major blood vessels have pressure receptors, so you're talking about the aorta, I'm just talking about the carotid artery. And the pressure receptors are continuously monitoring our blood pressure. When blood pressure increases, the bar receptors respond by sending immediate signals to the blood vessels to dilate and the heart rate to come down.

And conversely if blood pressure drops, the bar receptor send immediate signals for the blood vessels to constrict and the heart rate to increase. And the sensitivity of our bar reflex, which is so important as an indicator of the functioning of the autonomic nervous system, it's the sensitivity of the bar reflex, which is influencing the vagus nerve. And vagal tone then is evident by heart rate variability. So the research over the last 30 years coming from St. Paul, I never pronounce his name right Laira and others that you're slowing down the respiratory rate, that you can help to strengthen the bar reflex. When you look at people chronic conditions, people with emotional issues, or they're physically unwell, they typically have reduced heart rate variability. And now that people are wearing wearable devices, which is very good, it's giving them feedback of their HRV.

But the real question to ask here is how can you optimize your HRV? And that's when nose breathing during sleep, breathing light, even though when you breath light and you feel air hunger, your HRV can dip, but after the exercise, your HRV will increase. Breathing slow and breathing low. And that's

why I brought together the acronym LSD, light, slow and deep breathing. And here again, Dave, people focus on one dimension. If you go down to your local studio, the focus may be on the biomechanics, but not necessarily looking at the biochemistry or resonance frequency breathing. If you go to your heart rate variability instructor, they're focusing on resonance frequency breathing, but they're not looking at the biomechanics or the biochemistry. And again, we have to look at the breathes. And I'm not here to complicate it. I was teaching the biochemistry for 15 years, and then I realized, oh my God, I'm stuck in this tunnel vision. I really have to start broadening here because the breath is deeper than just one dimension.

Dave:

All right. When you're talking about breathing light, can you demonstrate that? What is breathing light? What does that look like?

Patrick:

Yeah. Breathing light is you could have an individual and they're sitting down and take attention out of the mind and onto the breath and focus on the slightly cold air coming in and out of the nostrils and really slow down the speed of the air coming into the nose and then allow really relaxed and a slow and gentle exhalation. The whole objective is, can you slow down your breathing that the breath in is almost imperceptible? Can you slow down your breathing that you feel hardly any air coming into your nose? You're breath is silent. You hardly feel any air coming into your nose. And at the top of the breath you allow a really relaxed and a slow and gentle exhalation.

And again, you come back to the inhalation and you're really soft in the speed of the air coming into your nose almost that you are hardly breathing at all and the top of the breath again, a really relaxed and a slow and gentle exhalation. So it's just by focusing on the area just inside the nostrils and deliberately slowing down the speed of the breath. And by doing that, by having a really soft breath in and a relaxed and a slow and gentle exhalation, the objective is to breathe less air, to take about 30% less air into your body. And you know-

Dave:

So I'm watching all the Upgrade Collective members pass out and fall over.

Patrick:

That's not going to happen.

Dave:

That's not going to happen.

Patrick:

Well, let's explain what's happening. This carbon dioxide is not just this bad guy that's out there. It's not just this waste gas that you read in every newspaper, in magazine and everything else. Let's look at the functions of carbon dioxide. I'll tell you that I had cold hands and feet for decades and it is so common that people with dysfunctional breathing have cold hands and feet. And I've used this for thousands of people. Gently slow down the speed of your breathing for short pockets, not by holding the breath or tensing the body, just by softening the speed of the air flow coming in and out of the nose and allow

carbon dioxide to increase a little in the blood. You feel air hunger and the body is very sensitive to that increased CO₂. The feeling of air hunger is not because your oxygen has dropped.

Your oxygen has to drop by 50% before that stimulates your breathing. So when you breathe a little bit less air and you feel air hunger, it signifies that carbon dioxide is increased in the blood. What is happening when you expose your body to an increased CO₂? You stimulate the vagus nerve. You know you're stimulating the vagus nerve because you have increased water and saliva in the mouth. You'll also go drowsy. That's why we use this as a down regulator before sleep. But it influences your blood circulation. 70,000 miles of blood vessels in the human body, we can have to dilate them. It influences oxygen delivery. It helps with the airways. So what I really want to do is improving functional breathing patterns. And this of course can be assessed by using a simple tool called the BOLT score, your breath hold time. And the BOLT score, I know it may be shocking for many people like when they're measuring their own, but don't worry about what you get.

But for people to give it a go, you take a normal breath in and out through your nose and you pinch your nose with your fingers and you time it. How long does it take until you feel the first definite desire to breathe or the first involuntary movement of your breathing muscles? So it's not the maximum amount of our breath hold time, it's a physiological reaction to breathe. Now, Professor Kyle Kiesel from Evansville University did a study of 51 individuals in 2018 and his conclusion was that if your breath hold time is above 25 seconds, there is an 89% chance that dysfunctional breathing is not present. Now, I have met eight, nine thousands people working with them with breathing and I will say that the vast majority of them were less than 25 seconds.

Typically, when we have an athlete coming in they're about 20 seconds and our goal is to get them up to 40 seconds. And then you have people who have anxiety and panic disorder, their breath total time could be down to 10 seconds. Let's just even look at this population, 75 to 80% of the population with anxiety and panic disorder have dysfunctional breathing. 75% of them, they're in that fight or flight. And it's not that they're having a panic attack, it's just mainly that their breathing is a little bit faster, it's upper chest breathing. They may have irregular breathing. They have their mouth open maybe at night. And this is feeding into their anxiety. And that's been overlooked.

Dave:

Let's do this then. So in order to measure that, you take a normal breath in and then a normal breath out. So Upgrade Collective, we've got around 40 or so people dialed in our audience. So if you guys are not driving or something, why don't you try doing this and just in the chat window type your numbers, we're going to see how good we are here.

Patrick:

Yes. But your group might be... I'm assuming that you've got quite a number of high achievers in your group.

Dave:

Yeah. They're all 80-second breath empty hold times on average. I'm kidding. And when you're listening to this episode, when it's published anyone can do this. So all you're doing is a normal like a five second in kind of breath and you breathe out. It's kind of worker's breath.

Patrick:

Yeah. It's just normal. So you don't change your everyday breathing pattern. You're just having a normal inhalation and a normal exhalation. And then you hold your nose or it's better if you're holding your

nose and then you're simply timing it in seconds how long does it take until you feel the first definite desire to breathe or the first involuntary movement of your breathing muscles.

Dave:

Do you breathe out like all the way in to the lungs as much as you can, just a natural exhale. So there's some oxygen in there. And then 25 seconds doesn't sound that crazy. Okay.

Patrick:

Yeah. It's a functional residual capacity, but you'll be surprised and even with especially different subgroups, I would think in the normal population about 20% of the normal population have dysfunctional breathing. But in people with lower back pain, it's 50%, people with anxiety it's 75%, people with asthma it's about 30%. So in different pockets it affects. And then females with PMS, changes in hormones is going to influence breathing patterns. And the main thing is just to relax into it. So you keep holding your breath until you feel the first definite desire to breathe. And you may feel the involuntary contractions of the diaphragm or it may be like a swallow in the throat. So sometimes it feels like a swallow because your diaphragm from breathing muscle is connected with the operator with dilated muscles. And then when you let go, Dave, the breath at the end should be fairly normal.

Dave:

So I got 37 seconds there.

Patrick:

That's pretty good.

Dave:

I could feel my heart was beating faster, but I didn't have a strong desire to breathe.

Patrick:

Yeah. And your breathing there even though it might've come in through the mouth, it seemed quite normal at the end of it. But that's good.

Dave:

It was because my nose was still like opening from being pinched. But part of this too is I'm playing with some of the new tech that's coming out at Upgrade labs. So when I released that, you guys will be excited to hear about what I'm doing there. I think that works. So one of our guys, Aski had 51, 18, 32, 33, 27, 16. Heidi who's in her 70s, 14 second first impulse. They didn't want to breathe until 31. Nice Heidi. 45 seconds. So we have some pretty good distribution. Much higher than average people were above 25 seconds. And then someone here at 47, wow, that's amazing. So I would say if you're listening to this, you can do this test for yourself. You just need a little stopwatch and just see, are you above 25 seconds? And if you have anxiety, which so many people have, you might not even know you have anxiety, that was pretty much me until I was 30. There's a reason to be anxious, therefore I'm not anxious, I just want to punch you. Okay. That's different. Is that like all of violent? Is that what I'm saying?

Patrick:

On the violence.

Dave:

Back when you started doing your work, I'm talking about. You were describing all this stressed out man.

Patrick:

Yeah. Well, it's especially back then, but I think a lot of men oftentimes we're very disconnected from our body. And I think it's normal that people don't realize when they're stressed but sometimes stress just catches up on us. And we don't quite feel it until we're away from it and we have something to compare it to. The breath hold time, there was a fairly helpful measure in terms of stress as well. Now, it doesn't always work a 100%. It's only an indicator if I'm working with somebody, I look at their breath hold time, but I also monitor their breathing pattern. But typically, when you have a person with a lower breath hold time, they normally have faster breathing rates and a more upper chest breathing. And if they have a low breath hold time of say 10 seconds, they'll often complain that they feel air hunger and they have irregular breathing. An irregular breathing pattern then that's feeding into that anxiety. So it's certain pockets of the population.

Dave:

Okay. I'm still a little bit confused. You're talking about breathing light. We breathe where we can barely feel or sense the air coming in and out. Okay. That's one of the three things, you'll talk about breathing deep, but if I'm breathing light, don't I also breathe deep because I'm breathing really slowly. So I want to fill my lungs all the way or those are separate techniques?

Patrick:

No. You can do them together. It's a good question because I think a lot of people what they suspected if you're to breathe with lateral expansion and contraction of the lower ribs that you have to take this full big breath. No, no, not at all. Like even if you were to just sit there and put one hand either side of your lower ribs, so on the sides is better. And you're looking just where basically the base of the ribs. Now, as you breathe in, your ribs should gently move out. And as you breathe out, your ribs should gently move in. And the reason that we have the hands either side of the lower ribs is because it's a good gauge of degeneration of intra-abdominal pressure because it takes pressure to push the ribs outwards.

Now you could even really slow down the speed of the breaths that you're taking a very soft, gentle breath in to your nose, and a relaxed and slow gentle breath out and have optimal movement of the diaphragm. You don't have to take a big breath to breathe low. And I think that's a mistake that people make. And the diaphragm breathing muscle, again, what does it do? It's massaging the internal organs. It's helpful for lymphatic drainage. The heart is just sitting on top of the diaphragm. So every movement of the diaphragm, it's improving return to the blood flow to the heart. It's connected with the emotions. What I think really important aspect of the diaphragm is, it's providing stability for the spine. And functional breathing and functional movement go together.

Dave:

You can definitely feel the spinal alignment when you do that. And there's lymphatic drainage that happens when you're filling the lungs up like that. And I'm thinking about the art of living and breathing techniques. I did this every morning for five years for, geez, it must have been in my late 20s, early 30s when I did all this, but it is kind of funny because the way you do that is you do a set of them with your

hands down here. And you do a set with your hands up here and a set with your hands behind your back, which was to force air into all three lobes of the lung. And you do it in each of those things with slow, medium and fast. So it was sort of like a little 15 minute in the morning exercise the lungs. And I really did neurologically weird stuff that was beneficial, I would say.

And it sounds like there was some aspects of this because we've got breathing light from your Breathing Care book. Breathing light, then breathing deep and then you got breathing slow. And so what you showed us earlier with the breathing light, we were almost by definition because it's light. It's going to have to be slow, otherwise it's not going to be light and it didn't have to be deep, but it probably would be deep. If it was really slow, you'd want to fill your lungs all the way.

So then you get your LSD light, slow and deep. You have another chapter in the book that I think is worth talking about. And it reminds me of a chapter In Fastest Way, right? Fasting for women, there are some studies that say it's different and your chapter 12 is yes, breathing is different for women. And it's like we keep figuring out that women are not just little men or the converse of that that men are not just large women. So what is different for breathing with women? How does breathing shift over the course of a typical month? Does it change at perimenopause? Does it change in menopause? Walk me through all of that.

Patrick:

Like anatomical female breathing is different in terms of the size of the airways. And even females doing intense physical exercise, airflow is more turbulent. So they have to work harder to get adequate air. But I think the biggest changes is hormonal during the monthly cycle. And none of this is new. This was first documented back in 1905. And we're talking about days 10 to days 22 of the monthly cycle, mid luteal to mid follicular phase. There's an increase in progesterone and there's an increase in estrogen. And progesterone is a respiratory stimulant. So breathing will typically become faster and harder. And what I mean by harder is that the size of the breath becomes larger. This can cause carbon dioxide levels to fall by as much as 25%. Now, when carbon dioxide levels fall by as much as 25, it can increase pain and it can lower pain thresholds. It's putting the female into more sympathetic activation, increased panic, increased anxiety, fatigue, and air hunger. But it's not going to affect all females the same, but it's especially going to affect females with already poor breathing patterns.

So say for example, during the earliest stage of the monthly cycle, if you have a female with a BOLT score of 15 seconds and then she goes to mid luteal to mid follicular and her BOLT score is dropping and she has symptoms of PMS and she's not necessarily accrediting the symptoms of PMS to changes in her breathing patterns as a result of changes in hormone. And it affects epilepsy, depression, asthma, fibromyalgia. There's females that will meet the diagnostic criteria for fibromyalgia during the latter stages of the monthly cycle and don't meet them in the early stages. So I think it's very, very important for females to track their breathing patterns across the monthly cycle. And also, is there a time for a female to be exercising hard and a time then just to back off a little bit? And that's also something that we should be taking into consideration. So the other aspect in females is post-menopause that has result of sleep disorder breathing.

So progesterone for the younger females seems to protect the airway from collapse. So when we're talking about obstructive sleep apnea, obstructive sleep apnea is when the upper air way collapses during sleep. And if it collapses totally that we stop breathing for more than 10 seconds, that's an apnea. So the younger females are protected in some way maybe due to progesterone that it's causing a stiffening of the throat that the throat is less likely to collapse. But post-menopause, when hormones level out, the increase of sleep disorder breathing is quite significant. And it can be as much as 300%. And we've seen it with anecdotal evidence that females who are mouth breathing can have

increased nocturnal sweating and increased hot flashes, et cetera. And by getting them breathing through the nose that it can help alleviate that. And it may be because of the impact on the autonomic nervous system.

Again, it comes back to what I hear people talking about sleep and they're talking about sleep hygiene and all of that is of course very good. Don't eat late at night, don't drink alcohol, have a cool bedroom, an airy bedroom, terminal regulation, blue light filter glasses, all great stuff. The elephant in the room is breathing in the night through the nose. And it's also associated with light slow breathing, because if we're breathing light... Like I'll give you this example, let's go into plight about females and men, to make the sound of a snore through the mouth it goes like this. And now if you close your mouth and try and snore through your mouth, you can't. To make the sound of a snore through the nose and it goes like this. But if you breathe slow through your nose and you take a very soft, slow breath into your nose and relax slow breath out and when you breathe slowly try to snore and you'll find it's more difficult.

So the whole thing about sleep medicine is that the focus has been on the anatomy on the airway but no engineer is going to look at a pipe without considering flow. Sleep medicine has ignored the breathing component and sleep disorder breathing. They have ignored how is the person breathing outside of their sleep? Because it's their breathing during the day that influences their breathing during sleep. And if we can improve their breathing patterns during the day, we can improve their breathing patterns during sleep. So ideally the mouth is closed, the tongue is resting on the roof of the mouth. Breathing is in the night through the nose. It's light, it's slow, but it's driven by the diaphragm because the diaphragm breathing muscle is connected with the operator with dilator muscles. Now think of your normal individual with sleep disorder breathing, they're lying in bed mouth open, they're breathing fast and they're breathing upper chest.

The tongue is more likely to fall into the throat. Their mouth is dry. Their throat is dry. Their throat is narrowing because of the inflammation as a result of the trauma, but also because of the upper chest breathing. It reduces lung volume and the throat is more likely to collapse. And for me I think that 20% of road traffic accidents is related to driver fatigue, but there is something really sinister going on for children. When we think of sleep disorder breathing affecting two to 5% of the childhood population are prone to sleep apnea and about 10 to 15% are prone to sleep disorder breathing. There was a study that was published in pediatrics in 2012. And I think she is an American researcher called Karen Bonuck, B-O-N-U-C-K. And she looked at 11,000 children in Stratford upon Avon in the United Kingdom, children with sleep disorder breathing, which includes snoring, if it was untreated by age five, these kids had a 40% increased risk of special education needs by age eight.

Now, if my stats are right, there are three million kids in America with cognitive difficulties. And the problem is that if these kids are growing up and if they have poor sleep quality, it's causing brain damage, and that's not an exaggeration, this has been overlooked, Dave. Nobody seems to be talking about it. It's not good that these articles and papers are stuck in the journals. They need to be brought out into the public domain. How many children go into their doctor today with their mouth open? And will the doctor ask, is the child breathing through the nose during sleep? Is the child snoring? Is the child stopping breathing? And is the child... It's only when it's very obvious is it being addressed and all of those kids are falling between the stools.

Dave:

Yep. It's one of the reasons that toxic mold is such a big thing for me. I grew up in a basement with aspergillus and probably stuck buttress based on all the symptoms. And I've heard other times in life, you cannot be a nose breather if you're sleeping in a room with toxic mold and there's a hundred million

structures that have this. So all of a sudden it's an environmental input that then causes swelling in the sinuses. So then you have to be a mouth breather, which then causes damage on top of the damage that's caused by neurotoxins that you're breathing anyway. And is it any wonder that a kid like that can't pay attention in school or has emotional regulation problems or asthma or punches people a lot, which would kind of describe all of my middle school and below time. And you look at it and you look at the extent and the scope of the problem of breathing and then you'll get all the environmental things or the kids who have milk, which makes a lot of slime in your nose for a lot of people.

So then you can't be a nose breather. Although if you tape your mouth, you'll eventually get past the slime. But how many eight year olds are going to do that? Very few. So this is a major thing and there's tons of doctors who listen to this show. So if you see that kid coming in with their mouth open and crooked teeth, maybe it's time to talk about that. What would you tell doctors? Okay. Let's say that they just heard about this and they're going, "Oh my God, I thought ketosis was radical mouth taping. They're going to take my license for sure." Okay. Maybe they're not thinking that, but how would a doctor tell a patient to take action about this?

Patrick:

Well, I think the first thing is just common sense, what does the mouth do in terms of breathing?

Dave:

Okay. So I'm going to tell them on this, your kid is a mouth breather, right?

Patrick:

Well, if a child come in to me, I'd say what we're going to do is we're going to work towards restoring nasal breathing. And I would explain it to the mom that if the child is mouth breathing, they're typically breathing a little bit faster and upper chest. It can impact her sleep. Children with sleep disorder breathing have 10 times the risk of learning difficulties. It can impact their cranial facial development. Of course, I don't want to scare the life out of the mom, but I would really encourage the mom to embrace nasal breathing. Now, normally when we're working with kids and parents coming in, we spend as much time working with the parent because oftentimes the parent has chronic obstruction of the nose. So we show the parents how to decongestant her nose. We show the parents how to slow down their breathing to influence their autonomic nervous system.

So by working with the parent, the parent then is the one that's working with the child. But coming back to it, what does the mouth do in terms of breathing? And I was at a conference in Chicago back about five years ago and a professor of medicine stood up and said there was no difference between breathing through the mouth and breathing through the nose. And I don't know, I really couldn't believe it. The mouth does zero. It has zero functions, no function whatsoever. It doesn't moisten the incoming air, it doesn't regulate volume. You harness nasal nitric oxide at very, very minute quantities. Mouth breathing is activating the upper chest. It's a faster breathing. The nose imposes a resistance. Your breathing is two to three times out of the mouth during the day. Your mouth then imposes a resistance to your breathing that's two and a half times out of the nose during sleep even when people exercise with their mouth open. Why?

Your mouth is doing zero, zilch, nothing. And one professor of sports medicine, George Dallam from, I think, it's Colorado State University, D-A-L-L-A-M. He has been interested with nasal breathing and athletes for the last five years. And he did a small study of 10 recreational athletes. And he got them to breathe exclusively through their nose during all physical exercise for six months then he tested them and they had 100% of their work rate intensity, nasal breathing versus mouth breathing. But the

respiratory rate with nasal breathing was 39 breaths per minute, with mouth breathing it was 49. The fraction of expired oxygen was less with nasal breathing. In other words, their body was utilizing oxygen better.

Dave:

That's the primary measure of mitochondrial function is how well you use the oxygen you take in. So their mitochondria worked better because they were nose breathing further.

Patrick:

And that's interesting. And they had 22% less ventilation. So even though they achieved 100% of their work rate intensity, they did it with 22% less ventilation. Now, I can understand why somebody goes to the gym. And especially when they exercise moderate to high intensity, the air hunger is getting quite challenging. But at the same time, I would encourage them do your best to sustain nasal breathing because your recovery is better. You're also more likely to enter flow states. Football around a field has improved visual spatial awareness with nasal breathing versus mouth breathing. We have to think of the connection of the nose and the brain. And there's a very interesting study. I didn't write about it, but I've kind of touched on the book. There was a study that was conducted in the United Kingdom, looking at women who were on the pill and they met their partner.

And then six months later, they come off their pill and the change in hormones and in selecting their mate, they had a different outlook to their mate when they come off the pill versus when they were on the pill. And it was reflective of factory, the nose. We select our mate based on nasal breathing. So does some stuff here... Sniffing out danger is a term that we often hear. Like what is it? Sniffing out danger, the nose is performing more functions than we give it credit for. And one doctor back in the 70s said it performed 30 functions, Dr. Maurice Kotrlik, but then I kind of see. I remember I was at a conference in Italy, Enrollment 2016, and many medical doctors and dentists, orthodontists were at that conference.

And one medical doctor from Italy showed a video of a patient walking down the corridor of the hospital. And it showed the gait that the patient had a poor gait. They weren't walking very stable. And the doctor stopped the patient, got the patient to put the tongue into the roof of his mouth, breathe through his nose, kept the camera rolling and immediately with good tone resting posture and nasal breathing, the gait of the patient improved. So I think that the tongue and breathing through the nose is serving more functions than we actually probably realize.

Dave:

It's a fruitful area for biohacking. One of my ultimate fantasies has been to use a tongue printer. A lot of people haven't heard of this, your tongue has so many nerves on it. So blind people can actually see with their tongue. They have like a dot matrix printer that will push a little dots on their tongue so they can actually see around them and it wires into the brain really well. So I've always wanted to hook other biofeedback systems like the neurofeedback. I do it for the ears then up to my tongue because your tongue is such an amazing thing for proprioception. A sense of where your whole body is in space. And if your tongue is well-informed because it's relaxed, it's going to change how your head sets.

And there's probably some proprioceptors in the nose that I don't know about, but it's weird because if you're, say, doing normal things and somehow you bite your tongue, it's usually because you got exposed to a neurotoxin, your oxygen levels were low, your brain isn't working because you lost track, your automated systems lost track of where you were in space. So when you realize, wait, why did I bite myself? Something caused that. But we don't think about any of this, but it's a major important

system. It's just a sub-level system that's why would anyone care about your tongue? But I think it's kind of important and interesting. I love it that you brought that up. And I want to ask you about your fifth appendix in the book, which is one that I was impressed you wrote, and it was nasal breathing versus coronavirus. Tell me what you think about that.

Patrick:

Yeah. I was surprised that there has been absolutely no mention of the importance of nose breathing. And when we think of the gas nitric oxide first discovered on the exhale breath and the human being in 1991, it's antiviral, it's antibacterial, it redistributes the blood, helps to redistribute the blood throughout the lungs. It increases the pressure of oxygen in the blood by 10% and could nasal nitric oxide mitigate the effects of COVID-19? And that's only a theory I've put out there. I can't say for sure. Of course, I can't, but, yes, we have to ask the question that the nose is the first line of defense in terms of airborne viruses coming in the human body. And there has been absolutely no mention of breathing through the nose, none whatsoever. Now, even in terms of people who are unfortunate enough to get coronavirus, their blood oxygen saturation is dropping.

There is a way to breathe to improve your SpO2. And that's not by breathing fast and shallow, but it's by breathing nose slow and low. Because every breath that we take, the last 150 mil of air doesn't reach the small air sacs and the lungs, it stays in that space. And if you have an individual who is breathing rapid, fast breathing and shallow breathing, they are leaving so much more air in that space unless air is reaching the small air sacs in the lungs for gas exchange to take place. So there was a paper then... After I wrote that article or maybe at the same time, there's an article written in Elsevier, *Microbes and Infection* is the name of the journal. And the researchers talked about the importance of nasal breathing during sleep. And there are anecdotal observations that by taping the mouth during sleep, it may help to reduce viral load and to give the immune system an adequate time to mount the effective response.

Because they said a lot of the challenges with respiration happen early in the morning. And if the individual is there with their mouth open, they're bypassing the nose and they're not harnessing nasal nitric oxide. So here is a gas that we produce naturally as human beings inside the nose. And we harness it when we breathe in the night through the nose. If we hum, we can increase it 15 fold. Humming just by vibrating the nasal sinuses, it's helping the nitric oxide to come out of the paranasal sinuses into the nasal cavity. Breathe holding also increases it. Now, there's clinical trials looking at nitric oxide for the treatment of COVID.

And one product that was clinically tried here in the United Kingdom, they tested it with I think it was 77 people with COVID and they showed that simply inhaling nitric oxide it reduced symptoms duration, and it helped the people recover quicker from the disease of COVID. Now we have to bear in mind that nitric oxide is completely safe, no side effects. It is administered to babies with respiratory distress. The human nose naturally produces it. And even if to encourage people, breathe through your nose, but also if you wanted to take nitric oxide externally, why not? It should be also offered to people.

Dave:

Do you mean like whippets?

Patrick:

Whippets.

Dave:

The little nitrous, I guess it's nitrous not nitric oxide things that you can use to make whipped cream, but that people like to inhale at Burning Man, is that what we're talking about?

Patrick:

No, I'm not familiar with the product. No. Well, the product is called SaNOtize. I've nothing got to do with it, but I just thought it was interesting. Here's a product, it's an inhaler with nitric oxide and it's been shown to be effective in the treatment of COVID and no mention whatsoever. And I contacted the medical doctor that's very much in the forefront in Ireland, and I sent them on the information and I asked them, "Could you please just start looking into the possible potential of nasal breathing here?" And no, it didn't happen.

Dave:

Well, when you find something that has a broad spectrum improvement in all physiological functions, things like cyclical ketosis, things like not eating toxins, like breathing, right? You go lower and lower and lower foundationally, everything above that improves. So it's no wonder that immunity would get better. And if you just gave everyone an excuse to go use laughing gas, that's not a bad thing either.

Patrick:

No. The nitric oxide though is a little bit different. Though it's a nitrous it's probably a-

Dave:

I know, nitrous versus nitric unfortunately. But nitrous oxide will also raise your nitric oxide levels at least if you have the right enzymes running in your system, which you should, unless you have the NOX one, two and three genes that are messed up in which case maybe not. Patrick, your new Breathing Cure book is going to be a Bible of breathing. I think everyone who listens to this show and has for years, we're always looking for things that make us perform better and things that are broad spectrum. And there's some books that you really ought to have on your shelf. And when it comes to breathing, there are two really important foundational books out there. And the Breathing Cure book that you just came out with is an encyclopedia. It's got all the stuff that you'd want to know about it and that's one of them. The other one is James Nestor's and James has also been on the show. He's a friend as well. And if you have those two books together on your shelf, you're going to just sit there and go, "Wow. I get why, and I get how."

And there's some why in both books. They're both worth your time to read. And I will just tell you if you read my book, The Bulletproof Diet or any of my other nutritional books, air is as important as food. And I haven't written a breathing only book and I'm not planning on it because there's a couple of fantastic books out here and yours is one of them. And you're the guy who first turned me on to how important this was about 400 episodes ago. So my personal thanks to you for that. I would like to go from here and bring some questions on from the Upgrade Collective because the whole audience here has been just raring to ask questions throughout our whole interview. And I'm going to put those on my YouTube channel. So if you guys want to catch the questions, check them out on YouTube. And from there, just thanks again for your work in the world and pushing on this for 20 years. I think the time of breathing has come.

Patrick:

It has. One person said to me about two years ago, he says, "It took you 20 years to be an overnight success." I'm delighted to say that it's finally getting some recognition. And I have to say to James

Nestor, he has done monumental work and he is achieved more with his book than we have achieved in 20 years. And it's raised all BOLTs. It's been really tremendous to see his book get out there because it has put it into the imagination of people.

Dave:

Well, I mean, he mentions you in his book as well and the Buteyko clinic. And what it comes down to here is there are always a few crazy people working on groundbreaking stuff until one day they're not crazy anymore and what they're saying is obvious. And I've seen one of those before, and it's always 10, 20 years of kind of banging against things. So thanks for doing it because it takes a certain kind of longevity and endurance but it's probably one that's easier when you're taping your mouth at night. So at least you have that affection.

Patrick:

Yeah. Well, it was like this, when I was working with people all those years and still work with people, nobody could say to me it didn't work. I have seen it firsthand with myself and I've seen that it could be reproduced with other people. And I'm not saying anything is a 100%. It's never a 100%. It depends on compliance. But here we're talking about basic physiology that can influence all of the major disciplines of medicine, dental health, movement, mental health, sleep, respiration. And these are significant. And I think there is a role for breathing and in time, breathing will be embraced in medicine. I really think it's going to happen. It may not be driven by the profession, but it would be driven by doctors individually. And then it will happen.

Dave:

Yeah. It'll happen.

Patrick:

Yes. I think so.

Dave:

All the good stuff starts with doctors and they have to fight their medical boards and all to get the medical boards to stop being stuck in the 1970s. And it turns out mouth taping works when you're dealing with someone like, I don't know, a Monsanto executive or someone who won't allow you to practice medicine the way you're supposed to, what you do is mouth taping combined with nasal taping at the same time. And if you just hold them down for a little while, until they can make the world a better place, that seems to work really well. So anyone who tries to stop your doctor from doing whatever you and your doctor want, they're your enemy. It doesn't mean you should tape their nose and mouth at the same time, you should ask someone else to do it. Patrick, let's get some questions from the audience. Susan, you want to go?

Susan:

Thank you so much for this conversation, Patrick. And I'm really looking forward to your new book. I had two questions. One is around tongue position and the other is about altitude. So the question around tongue position is that you've mentioned several times linking tongue position to breathing. And I've been trained in various breathing techniques, yoga techniques and so on. What tongue positions do you link to breathing day-to-day as well as your breathing exercises that you've found beneficial?

Patrick:

Yeah, it's an interesting question. I suppose we haven't gone into the detail of the tongue that you might've Susan. There's another discipline myofunctional therapy that's they really explore it. But we want to have the tongue resting in the roof of the mouth and its three quarters of the tongue resting in the roof of the mouth and the tip of the tongue shouldn't be touching the top front teeth. It should be just placed slightly behind the top front teeth. And what's called the rugae. Now, normally when I'm working with students, I'll ask them to make the popping sound because to make that sound, you have to elevate the tongue into the roof of the mouth and that's where the tongue should be. And I always say to students as well, ideally we wake up with the tongue resting on the roof of the mouth in the morning because the tongue has got two places to be. It's either on the roof of the mouth or it's encroaching the airway. And if it's encroaching the airway, it's causing restriction to breathing and that can increase the risk of sleep disorder breathing.

Susan:

Day in, day out the tongue sort of resting in that position where it's not at the roof of the mouth and it's not completely flat at the base of the mouth, but doing that clucking sound and then letting it rest there. Okay. Thank you. And then on altitude, as one who lives at 7,500 feet above sea level, I'm wondering how altitude affects your recommendations for day-to-day breathing exercises to help improve living, sleeping and training at altitude.

Patrick:

Yeah. In simple terms, it comes down to improving alveolar ventilation. And we can achieve this by breathing slow and low. I'll give you... There was a study that was conducted. I can't remember the researchers, but they left at the 39 individuals who were at a height of 5,400 meters. And their blood oxygen saturation had dropped down to 80%, which is severe hypoxia. They got the individuals to slow down their breathing to six breaths per minute without increasing minute ventilation. So in other words, while they were just the respiratory rate down to six breaths per minute, the tidal volume increased proportionately. So minute ventilation remained the same and they increased their RVO. They increased their blood oxygen saturation 80% to 89 point something percent. In other words, from severe hypoxia to mild hypoxia. It would be very interesting to measure your blood oxygen saturation at seven and a half thousand feet.

I'm assuming you're well climatized, probably your blood oxygen saturation is going to be normal. But if you had an individual who just arrives and their blood oxygen saturation is down to 93% and I remember after reading information from Bernardi, he's an Italian cardiologist who's very interested in yoga and breathing. And he spoke about his patients with chronic heart failure, that they had exercise intolerance, but also their blood oxygen saturation would drop. And then a student came to me and she had chronic heart failure and her blood oxygen saturation was dropping down to 92% when she was walking.

Now, I simply had her put her hands either side of her lower ribs and I simply had her breathe in very slowly for a count of five and out slowly for a count to five and within about a minute, her blood oxygen saturation increased to 96%. So simply by changing breathing patterns, nose, slow and low, it's improving alveolar ventilation. And many people at altitude will naturally revert to mild breathing, fast breathing, shallow breathing because of the feeling of suffocation. Number one, it doesn't get rid of the feeling of suffocation. Number two, it's inefficient and it's uneconomical.

Susan:

Thank you very much. That's super helpful.

Patrick:

You're very welcome, Susan.

Dave:

Let's do one more.

Steven:

Hi Dave. Thanks for the opportunity. Hi, Patrick.

Patrick:

Hi, Steven.

Steven:

Hello. My question is related to iron deficiency. So I heard that if you have iron deficiency, then the ability to put the blood to carry the oxygen is lower and that it can run out a little bit sooner. So I noticed that when I play tennis that we keep running laterally and then suddenly you find out of breath and you're completely tired and you lose the point sometimes. So does deep breathing alone or breathing alone help to fix the problem, or we should also look at iron deficiency and use any supplements or anything else supposed to?

Dave:

So basically you're saying, do we need to make sure we have enough iron in the blood for breathing to work?

Patrick:

It could be, Steven, but I'm not sure. That's been asked for sure. One person might have a breath hold time or BOLT score of 16 seconds anyway and have adequate iron. So I think there's more, you'll have to do just a little bit of investigation and I'm not sure either depending the extent of iron deficiency what breathing will be sufficient. With the breath, we can improve efficiency, but we also need to make sure that we've got adequate iron as the carrier of oxygen.

Dave:

You can train hemoglobin affinity for oxygen with things like intermittent hypoxic training, some of the stuff we do at Upgrade labs, but I think there's probably some level where if you just don't have enough iron, it doesn't matter what happens, but it's probably lower than you'd think. And just for people who hear this, if you're looking at anemia and you're not looking at copper and iron together, you're doing it wrong because a lot of people think they're iron deficient or copper deficient inside their cells. So you've got to look at both of those. Just a little extra biohacking point. Patrick, thank you for all of your knowledge, your 20 plus years of studying breathing with maniacal focus that only a mouth taped person could have and doing good in the world with it. And thanks for inspiring me to pay more attention to breathing several years ago.

Patrick:

Yeah. No Dave, and thanks so much for you as well, because this is how the information is getting out there. So I'm very grateful. It's been great. Enjoyed talking to you.

Dave:

Enjoyed it as well. Upgrade Collective, thanks for the intelligent questions and keeping me company on the show. And I will see you all in the next one.