Michael Roesselin:

We are live today on Rebel Health Spotlight. I am here with Patrick Mckeown. Patrick, thank you for being here.

Patrick Mckeown:

Pleasure. Thanks very much, Michael.

Michael Roesselin:

Yeah, I'm excited about this one. It's a topic that I in the last couple of years have become quite interested in and passionate about, and it's often overlooked. I am excited to do what I can to make sure that more people know about it, so today we're going to talk about breathing. You may hear that and think, "What are we talking about with breathing? And why?" I think that we were talking before we came on air that it is easily the most overlooked thing. When people are trying all this elaborate stuff to get healthy, no one ever mentions to them or they never think about, "How am I breathing? In what ways am I breathing, and how can this affect my health?" So we're going to learn about that.

Patrick is the author of a couple of books. He leads trainings and organization around breathing techniques at Buteyko Clinic. Before we get into that, I want to know, you didn't grow up being like, "I'm going to become a breathing expert. I'm going to get really into breathing." I know your story a little bit through your book, but if you could share how you got into becoming one of the world's more well-known teachers on breathing and breath techniques and how that impacts health, that'd be great.

Patrick Mckeown:

I don't think anybody chooses breathing as a career. You fall into it. It's a little bit like that. Anybody who teaches breathing, I think many people it will stem because of their own issues and especially issues that breathing play the role to help make them better. My issues were asthma, stuffy nose, and poor sleep. Of course, if you have asthma, you don't just have asthma, you also have a stuffy nose. And if you have a stuffy nose, you're more likely to have poor sleep. And if you have poor sleep quality, your concentration is impacted, your focus, your attention span, your energy levels, so there's a lot resting in that.

Going through the Irish education system for 14 years not being able to concentrate and focus, at 14 years of age, I left school altogether never to go back because I didn't feel I could fit in with it. I did go back one year later and get into university and got my degree. My degree is in economics and sociology, so completely removed. I was in the corporate world and highly stressed because my physiology wasn't in the right place. There's always pressure in the corporate world, but the question to ask is, is it the situation or is it the person's physiology that's feeding into that pressure? For me, with poor sleep, you can imagine, Michael, trying to survive and perform at your utmost absolute best having lousy sleep quality and a nervous system that's in this constant fight or flight response. That's where I was. I came across breathing by accident in 1998. I put it into practice. I still wasn't going to be teaching it. It was only in about the noughties. '02 was when I trained, and so that's when I started teaching it full time.

Michael Roesselin:

Wow. So it was really you were just looking for solutions for yourself and trying to figure out. You probably read an article or heard about a thing or something piqued your interest and you gave something a shot and you noticed a shift. I also grew up with congestion and sleep... I don't have sleep apnea, but I snorted a lot, I had trouble breathing at night. If it would've been today, I would've been diagnosed with ADHD and ADD, but it was the '80s, so I wasn't. That low quality sleep, I've now seen studies that demonstrate that kids with mouth breathing and poor sleep, it's exponentially increased diagnosis of ADD and anxiety and all kinds of other

troubles. So I'm sure that this, unbeknownst to me, was a problem for much of my life as well. And so you found these techniques, and it made a real shift for you. I'm curious, what we're talking about here, how is the breathing dysfunctional for a lot of people?

When I first read your books and a couple other books on breathing, the thing that caught me most is that what I thought would be a good thing is actually a problem. And that my understanding of breathing was completely reversed to the point where I had to listen to one chapter in your book two or three times because I had such a mental block around carbon dioxide is bad. Right?

Patrick Mckeown:

Mm-hmm.

Michael Roesselin:

I don't know, can you give the intro overview of where our breathing is really dysfunctional?

Patrick Mckeown:

Yeah. Many people believe that it's good to take these full big breaths. You hear the instruction is so common in some yoga studios. If you were to listen to the breathing of the students, you would hear their breathing. They are intentionally breathing more air in the belief that the more air they breathe, the more oxygen that's delivered throughout the body. That's absolutely false. When it comes to dysfunctional breathing, it's when we develop a habit that our breathing is off from a number of different dimensions. Well, it could be one dimension. One dimension could be from the biomechanical point of view. So instead of breathing with good recruitment of the diaphragm, we are breathing higher in the upper chest. That would be dysfunctional breathing from a biomechanical point of view.

And then there's dysfunctional breathing from a biochemical point of view. That's when our breathing is a little bit too fast and/or hard, that we are breathing a little bit too much air, or we could be breathing a lot too much air. But it's when we over-breathe that it's causing a loss of carbon dioxide from the lungs and blood. And the loss of carbon dioxide from the blood drives up blood pH, causes arousal of the brain, and the brain becomes more excitable, increases stress response, blood vessels constrict, there's reduced oxygen delivery throughout the body, airways constrict and it puts the body into a stress response. And also, the person who has poor breathing from a biochemical point of view, they often feel that they're not getting enough air. Their breathing is a little bit faster and harder all the time. They feel they just can't take a satisfying breath, and of course, that's going to put them into an increased anxiety as well.

And then there's breathing from a psychophysiological point of view, the mind-body connection. We assess that using different questionnaires such as the Nijmegen questionnaire or the Self Evaluation of Breathing questionnaire. Breathing is complex, and often breathing instructors focus in on one different dimension without realizing actually breathing is multidimensional. If researchers realize that breathing is multidimensional, well then, the breathing instructor should be also understanding that breathing is multidimensional. There is an overlap, and there's some correlation there. Okay, some studies say it's not that strong. I don't know if I agree with that. But yeah, I think it's interesting. I think breathing is one of those functions that, yeah, we can pick up bad habits and could be based on genetics, people with perfectionist tendencies, trauma is a big one, chronic stress is a big one. Talking all day can impact our breathing. If you believe that if you breathe more air, it's good for you, that's not good. This can change our breathing patterns.

Michael Roesselin:

Yeah, thank you, that was really thorough. We have a newborn in the house, so I've been in the breathing books. Authors always reference, "Look at how baby breathes and that the belly always moves, always moves, and it's always moving." I have yet to catch him take a breath where his belly doesn't move. That's because we haven't learned any dysfunctional patterns or habits. It's a loop too. So if you have that upper chest breathing and the shallow breathing, that signals to the body that you're under stress. But when you're under stress, it will cause unconsciously this shallow breathing. So then there's this loop of external stress makes physiological breathing stress, which makes more stress, and you get stuck in this shallow, short breathing.

I have a master's degree in exercise physiology. I was trained in a lot of things involving breathing that caused me to pull my hair out when I was reading your book and then James Nestor's book and one other one about carbon dioxide and that, you just mentioned, when there's low carbon dioxide causes vasoconstriction and less oxygen delivered, and that actually more carbon dioxide dilates the capillaries and blood vessels, gets more oxygen to the tissues and allows you to do more with less air, right?

Patrick Mckeown:

Yes.

Michael Roesselin:

That was so against everything that I'd ever been told, and it was hard to accept. We were talking before we went on air that I incorporated some of your breathing exercises when I was living in a town here in Italy with really steep hills and I was breathing light, quiet. What always sticks with me is your instructions in the book of nobody should be able to hear it. If you can't even hear it or feel it, then it's as light and as low as you can go. So I was trying to do that with a weighted vest on a hill. Now, I did my best, but there would be an air hunger there. So when you're doing these practices, there's a little bit of an air hunger, and that almost is building a muscle just like you would build in the gym, right?

Patrick Mckeown:

Yeah. So during rest, we want breathing to be silent. We talk about light, slow and low, light, slow deep, LSD. During physical exercise, your metabolism does produce more carbon dioxide, your muscles require more oxygen, so your breathing will increase. But the most important thing is to maintain nose breathing, because when you breathe in and out through your nose during physical exercise, especially if you're a recreational athlete, by breathing in and out through your nose, carbon dioxide is not able to leave the body so quickly through the nose because of a smaller exit. And as a result, it increases in the lungs, carbon dioxide, which in turn will increase carbon dioxide in the blood leaving the lungs. So now you're doing physical exercise with higher carbon dioxide. You feel air hunger. The whole objective is to continue doing your physical exercise with the higher carbon dioxide in the blood, because over time your tolerance of carbon dioxide improves and your ventilation reduces.

So then after a few weeks, when you do that same physical exercise, you won't need as much air, you're less likely to gas out, your everyday breathing pattern is improving. And also, when you're doing physical exercise with your mouth closed, you're protecting the airways, you're conserving moisture, you've got a greater communication between the nose and the brain, you've got improved visual spatial awareness, you've got increased oxygen transfer from the lungs into the blood. But also because of the higher carbon dioxide in the blood, you have vasodilation, as you mentioned, and also hemoglobin releases oxygen more readily so you've got more oxygen getting to the working muscles. I really find it bizarre that the sports scientists have hardly ever looked into breathing during sports given that breathlessness is often something that hampers somebody. You could be a strength and conditioning coach and you're seeing an athlete and the athlete is breathing

disproportionately, the athlete is dysfunctional breathing, which in turn will contribute to dysfunctional movement, which is increasing the risk of injury. How come they've missed this one? And they have missed it.

Michael Roesselin:

Yeah, it was a huge paradigm shift for me coming from that background to learn it. The ability to take in and utilize enough oxygen is the limiting factor for athletes in a number of sports. That's what determines how far they can go. That's what determines how good they are or how they perform more than a skill in a lot of, especially endurance sports like running and swimming and biking and triathlons and things like that. It's literally how efficient can they be utilizing oxygen is the rate-limiting factor. So you would think that they would be on board with this. I know I've read your books and case studies that you guys have some pretty outrageous results with high level endurance athletes who start incorporating some of this, but I'm sure you even run into world-class athletes who hear you say this and they're like, "No, come on, you want me to do what? You want me to run with my mouth closed and breathe through my nose?"

Before we really just switch to where people can find more information, I want to just touch on the nose breathing, mouth breathing thing again, because you mentioned that it allows less carbon dioxide out, but there are so many other reasons to breathe through the nose than the mouth. You talk about this, other teachers talk about this. If people make one change in their day-to-day way that they breathe right off the bat, would you say that being conscious of always breathing through your nose versus the mouth would be the biggest change to make? Or can you just talk a little bit about the importance there?

Patrick Mckeown:

I think it's the most simple. I think as long as you have your mouth open, forget about all other breathing exercises, a waste of time. Waking up with a dry mouth in the morning, you're going to be less likely to spend so much time in deep sleep and more likely to spend more time in light sleep. So you wake up feeling unrefreshed. States of mind, if you're a mouth breather, you're more likely to have agitation of the mind. When we think about the quality of life that we as human beings experience, we interpret everything through this thing we call the mind. The mind is more agitated and there's greater rumination of thought. We don't have the energy levels to partake in what we need to do. Our sleep is impacted, our mind is all over the place, we can't deal with stressful situations as well. So I think it's very important. I think it's a tool to help with resilience.

A very simple exercise, even though we say to athletes to breathe in and out through your nose, we do understand that at some point the intensity of the air hunger gets too much that you have to switch to mouth breathing. Maybe that's about 40, maybe it's about 50 liters of air per minute, depends on the athlete, and it also depends on their nasal airway, and it depends on their existing underlying breathing pattern. But Michael, if we were just to go for a walk with our mouth closed, do yoga with the mouth closed, and especially yoga, it should be done with mouth closed and relatively silent breathing. Can you imagine the yoga instructor who's encouraging their students to breathe in and out through the nose with better recruitment of the diaphragm, with increased carbon dioxide in the blood, with improved blood circulation, with improved oxygen delivery, with harnessing nasal nitric oxide into the lower airways, increasing blood flow to the brain?

If you do your yoga with your mouth closed, I would expect that the partial pressure of carbon dioxide in the blood to increase probably by about maybe three or four millimeters of mercury. And every one millimeter increase of carbon dioxide in the blood will improve blood flow to the brain by three to 4%. So you've got a group of students in there in the yoga studio, they do all of their asanas with their mouth closed, breathing in and out through the nose, and they have increased blood flow to their brain by 10, 12%.

It's the simple tools. And then you might ask, "Well, how come over-breathing or how come the belief that it's good to take these full big breaths as come into being?" It seems to have happened around 1880. There was a

movement in Europe called the hygienic movement, and people at the time were dying with tuberculosis. With the hygienic movement, they believed that if you took these full big breaths germs would not spread throughout the body. So that's where it started. Britain, of course, being part of Europe and also colonization of India, India was under the British Empire at the time, so the idea is probably they transferred from Europe to India-

Michael Roesselin:

Disseminated to the rest of the world.

Patrick Mckeown:

Correct.

Michael Roesselin:

Interesting.

Patrick Mckeown:

So yeah, yoga, breathing changed. I've written a new book on yoga breathing, and we looked at and I also enlisted the work of a scholar. She's done a PhD in the history of yoga. She went back to the Sutras. What was the original intent of breathing in yoga? It wasn't the way it is now. It was more akin to what we do, nose, light, slow, low, build up your tolerance to carbon dioxide.

Michael Roesselin:

I've been practicing yoga for over 15 years, and I switched the way I breathe in class after reading your book, and I'm literally always the only one. [inaudible 00:18:09].

Patrick Mckeown:

Yep. We need a huge change. And the power of this, I also feel that breathing, why has it taken so long and that such a simple tool with enormous power has been forgotten about? It's because it's been taught so badly. Genuinely.

Michael Roesselin:

There's no trillion industry with money behind it.

Patrick Mckeown:

Well, that's part of it. But if somebody was able to communicate and show the benefits. I worked with a world-class swimmer this morning, just first nine o'clock this morning. Last night I was working with a musician. Last week I was working with about 40, 50 athletes preparing for the Summer Olympics. I'll get these guys to practice this, and they will experience it, but I'll talk about the theory first in a way that they understand and in a way that's accessible and appealing to them. But more importantly, I will get them to practice it, because it's the practice. I think the science is important because all too often ideas and opinions are taken out of thin air and used as part of breathing training, and there's absolutely no relevance or there's no basis on these ideas, and that's not good. So if we want to get breathing out to the people, we need to make sure that we communicate it in a way and also for the people to experience it. That's my quest, because it has been forgotten about.

Michael Roesselin:

[inaudible 00:19:38] experience of doing the practices is what... I read the books and I was like, "Oh, this is really cool in theory." And then I could walk up huge hills carrying heavy stuff, and I wasn't breathing heavy and people thought I was a freak. I thought, "This is nice. This is much more comfortable. So I'm going to stick with this." There's so many other benefits outside of that.

I know we're going to stop soon, so I want to share where people can find you in your work. You mentioned a new book. I didn't know about the yoga breathing book. I have your other book, The Breathing Cure, up there. Can you just share about your trainings? I know there's two sides or two training programs, and then any other place people can go. I know you have the mouth strips too. You mentioned waking up with a dry mouth. If anybody out there heard that and thought, "Oh, that's me," they've created something for that too. So just share anywhere people can find your work and trainings.

Patrick Mckeown:

So our health arm for respiratory and sleep and anxiety and pain disorder is under buteykoclinic.com. That's B-U-T-E-Y-K-Oclinic.com. Our physical and mental performance arm is oxygenadvantage.com. We also have released an app about six months ago, and we put a lot of work into it. The app is entirely free. It's called Oxygen Advantage. To give you an example of our commitment, I put $150,000 into the app, and we put it out there for free. It's really about our quest to get the information out there, because it has been held back. So yes, we're on the normal channels, social media, et cetera. The new book is called Breathing for Yoga. It's quite a big one, it's about 500 pages... Or is it 500? I think it is, yeah, it's 190,000 words.

Michael Roesselin:

[inaudible 00:21:34].

Patrick Mckeown:

It's the same size as The Breathing Cure. Why did I bring out books that are so big and detailed? Because I really want to show that it's such an important topic, and I wanted to reference it. In the Breathing for Yoga book, I referenced with about 700 papers, because I wanted to show again, there's something here, look at the solid foundation. So yeah, so that's it, Michael.

Michael Roesselin:

Beautiful. I'll have to check that one out too, and I'll get the app. Kudos to make, apps are an adventure to create and especially-

Patrick Mckeown:

For sure.

Michael Roesselin:

... are not simple. I've been down that road, and it's not an easy one. Before we leave, I just want to give them one simple practice or exercise or thing they could switch or change, something that would be a needle mover for people who may not be in the best of health right now and they want to do something that they may be able to feel in a short amount of time.

Patrick Mckeown:

If somebody has got agitation of the mind, doing meditation and focusing on the breath and slowing down breathing can be a little bit tricky. Why not try small breath holes? Because that can improve blood flow to the

brain, it has a calming effect, and you don't have to do much. When there's a lot of agitation of the mind, start off with this exercise, take a normal breath in through your nose and out through your nose and pinch your nose and hold your nose for between three and five seconds. 3, 2, 1, let go. Breathe in through your nose, and now just breathe normal for about 10, 15 seconds, three or four breaths. And then again, take a normal breath in through your nose and now through your nose and pinch your nose and hold, 3, 2, 1, let go. Breathe in through your nose, and then you're just breathing normal for about three or four breaths.

And then after a couple of minutes of that, practice it for four seconds of a hold. So you breathe in through your nose, you breathe out through your nose. And silent breaths, so it's a silent breath in through your nose, a silent breath out through your nose, and you pinch your nose and hold, 4, 3, 2, 1. Let go. Breathe in through your nose, and then you're just breathing normal for 10 to 15 seconds. If you're comfortable then with that, increase your breath hold time to five seconds. You could practice that exercise for five minutes every hour if you wanted to. We have used that as a great starting point for people with panic disorder and anxiety to help stimulate the vagus nerve, to help improve blood flow to the brain, but also to help to desensitize the person's reaction to air hunger. Because very often people with panic disorder, they're terrified of the feeling of suffocation. So we give them a microdose of it to desensitize their reaction. And of course, we want to increase carbon dioxide in the blood, we want to reduce the chemo sensitivity to carbon dioxide. So nice little exercise, but a lot going on with it.

Michael Roesselin:

It's easy to do. I've actually done that one myself, and it does have a nice calming, relaxing effect. Thank you for sharing that. Thank you for all the work that you're doing and being an ambassador for this huge missed opportunity for so many people to shift their health, improve their athletic performance. If there's any athletes listening to this, this is a game changer. You're doing great stuff, and I really appreciate your time coming on here, I know how busy you are. I look forward to collaborating more in the future and going through your trainings.

Patrick Mckeown:

Great stuff. Always a pleasure. Thanks very much, Michael.