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KIM WEEKS:

Hi. I am Kim Weeks. I with Weeks Well. I have been working with Yoga Alliance for some time now on bringing the scientific research on yoga to life. I work closely with Sat Bir Singh Khalsa, who is here with me. Good morning, how are you?

SAT BIR SINGH KHALSA:

Very good.

KIM WEEKS:

Great. We have been working together not just to bring you the last 12 weeks of two twice-weekly webinars that bring up and translate and teach us about the particular parts of the body in this pandemic situation. So we hope that these, this is the very last week we are doing it. We hope these 12 weeks have been educational and informational and empowering for you as yoga practitioners and teachers. This is part of what we have been doing in addition to standing up, as we call it, a subsite of the Yoga Alliance website which you will explain as he goes into his presentation and I am happy to also do anytime you need it or like it which describes the way he has helped us curate the information for you, separating lots and lots of topics between research done on healthy individuals and research done on people dealing with disease.

So you will continue to see more and more from us in the days to come. We are in the process of planning what we hope to be delivering to you in July in a form that is similar to this one. Most of all, we love to have you and see you in these presentations. So in terms of the sort of housekeeping of the presentation, as many of you know, we will all be going dark and sitting back and relaxing as though in a lecture hall to Sat Bir Singh Khalsa who will define and discuss the topic for today. After that, maybe a minute 35 I will start moderating questions from you and will have a nice discussion. We do this every single week. On the Tuesday, we try to do a more general, and in the case of this week it really is difficult to separate between COVID and non-COVID, which is what we have wound up doing as these webinars have ensued over the last three months. But we do split the topics from Tuesday to Thursday and to address questions that we often get, yes, some of the information between Tuesday and Thursday is overlapping. But we try only to overlap that information anyway that will help you establish or reestablish, as the case may be, the foundation of what he wants to teach. So today we are concluding the 12 weeks with at least I know a lot of people who are coming in, so hello to many of you who I heard from. Many of us are so excited to conclude the 12 weeks of, you know, really looking at ourselves inside. Looking our society in the face, coming to terms not just with everything happening on the outside but also happening inside via the lens that he offers us. We can offer topics from yoga in the workplace to yoga in schools to yoga and respiratory function and asthma. So many topics we have covered since April to bring the science a little closer to home since we are all at home and so that we can in turn teach ourselves and teach our love ones and institutions and so today we are doing yoga, the science of yoga or the scientific research of yoga as a contemplative practice. I can say for one that I can't wait to hear everything that you have to say both today on the research on retrospective subjects, meaning people that have been practicing yoga and are being studied. Thursday we talk about prospective subjects, people that have not practiced yoga and what influence yoga has on them with respect to how we can measure spirituality, the experience of transcendence and the experience of yoga as a contemplative practice. I can't just wait to hear from you. By the way, I didn't tell you guys, Sat Bir Singh Khalsa is not only our director of research but an assistant professor of medicine at Harvard Medical School. Those two things are among the many reasons we are so glad to have you here with us today. I am going to sit back, relax. I look forward to seeing you guys on the other side. Feel free to chat in and Q&A all the way through. We will answer as we can. I will moderate it later.



SAT BIR SINGH KHALSA:

Thanks very much, Kim. Welcome, everyone. This topic today is really yoga as contemplative practice. We had some debate about how to name this because there are so many words out there that apply to this kind of topic. We talked about transcendence. We talked about spirituality. Some of the words are sometimes not inclusive and sometimes too narrow. We focused on contemplative practice. It focuses on the deeper experience that yoga historically is all about. I'm going to go ahead and start sharing my screen here. We have some definitions here. The first part of this talk will be repeated on Thursday. We are going to show different data on both days. Today, as Kim mentioned, we are looking at evidence from people who are already practicing yoga and what that suggests about the experience of so-called spirituality. The word yoga as is written everywhere means union. It really refers to that union to a state of consciousness. This is a well-known scholar of yoga. He wrote that yoga is "A method eyes effort towards self perfection by the expression of the sequined potentialities lengthened in the being... A union of the human individual with universal and transcendent existence..." A very powerful statement. It really refers to that sort of unity state that yoga ultimately is targeted at.

I see practice in yoga leading to these kind of states in a temporal format. At the beginning when people start practicing over the short term, and now we are talking about days and weeks of practice. Although these kinds of experiences happen over the course of minutes. This is the sense of arousal reduction, the sense of calming and physical and mental well-being. Researcher Herbert Benson characterized this as the relaxation response. It is the opposite of the flight or fight response. The nervous system quiets down and there is a sense of peace and so on. That is why people go to yoga class, of course. As we talked about many times, as people practice regularly over time, now we're talking about weeks and months of practice, they start to develop skills and behavior. They start to improve their mind/body awareness or mindfulness. They improve the resilience to stress and self-regulation of internal state including self-regulation of emotion and self-regulation, important, of thought processes.

Of course, this now empowers people to function better overall and what is a very stressful society. Typically, and not to everyone, but many people who practice yoga over the long-term, now we are talking about months and years of practice and my -- and what we might consider yoga lifestyle practice. People talk about going to a psychological and philosophical transformation. A total change in the way they perceive themselves and their relationship to the world. In fact, it is actually associated with these deeply profound experiences which can be very short-lived but very profound and powerful. These are called mystical experiences, if you will. There are many terms for these. There is a whole field of philosophy called the philosophy of mysticism. It talks about this state of consciousness. It is the mystical experience. These are transient states of consciousness, usually lasting for only a few minutes and distinctly different from normal consciousness. That is a hallmark. It is like nothing people ever experienced before. The person typically experiences them passively, not a product of personal will or control. So sometimes they are even spontaneous. In many cases not even to yoga practitioners. And has a difficult time expressing the experience in the world. That refers to inevitability. It means it is so profound and difficult to describe. The only word that comes close is the word oneness. They usually are intensively positive and joyful experiences and often the person senses the presence of an on inspiring transcendent other. Often there is a know what that element revelation, a sudden knowing of a new truth and an experience of unity is common. For example, This word is really the most powerful that comes close to defining this experience. There are many many terms. These are the terms for many of the Western and Oriental traditions in which this tradition is been scribed and talked about. Samadhi is this unitive state we try to aim for in a yoga practice. In Western terms, there are many terms. Mystical state, unitive state, kundalini awakening. It's also referred to as spiritual awakening, transcendence, peak experience, public consciousness. And of course, there are additives that come close to this. The one that really carries it is union or oneness and non-duality. These are expressing the same kind of thing. Then this is another characteristic people talk about. Ecstasy, bliss, absorption, merger, consumption, rapture, etc.

Research on this is really in a number of places. In some of the research and interest in this was in the late 60s and early 70s when some of these Western practices started to come from India. This was actually remarkable paper published in 1971 in no less than our premier biomedical Journal of Science. It was on this cartography of ecstatic and meditative states. This is on the conscious level and if you go one way, you do these conductive practices that lead you to relaxation, tranquility, this meditative state, which is a hypo arousal. This the response going in this direction. And then ultimately over time as you continue with meditation practice, it leads to that state. As also pointed on the other side it can go the other way. So people get into hyperarousal, anxiety, etc. Going in the other direction. People can have a dissociation through that hyperarousal leading to these psychotic states which also paradoxically they end up in a sort of mystical rapture or experience. I will talk about this a little bit later. This is interesting that even as early as 1970 scientist were trying to wrap their heads around it.



This was published in the Journal of nervous and mental disease way back in 1972, talking about some of the research that had gone up until that point in time using (inaudible) and other early measures. But we now have a growing body of research that's much more modern using neuroimaging techniques and other measures. This is a paper published recently in 2018 with a nice summary of research on these transcendent states. Most of this research is done on meditation rather than on yoga.

The research approaches to studying mystical experiences have been done in a number of different ways. One of them is to actually look at psych work and rope studies -- psychoactive drug studies such as LSD. Because these drugs and this subset of people have these missed good experiences. Then there are cases of people who have reported spontaneous or triggered advances of mystical experiences. Scientists can study these in isolation. Then there are retrospective surveys and practitioners describe these practices. Therein there are more perspective Jody's of getting people to meditate and trying to capture these states with EEG or neuroimaging. Finally there is prospective studies which are with larger population studies with people who are naïve or haven't engaged in yoga or meditation. You try and observe whether these states increasing frequency or intensity.

Many people of argued while yoga is so profound, it is so profound you can't measure it. But if you can describe it, which we did and we described a number of characteristics of it, then you can measure it. This is the basis of all psych logical research. You come up with a questionnaire that includes these assets of the mystical experience. There are a number of questionnaires and some are still being developed. This one is being used a lot. It's the mystical extremes questionnaire. There are 30 items and there are different aspects and subscales to this questionnaire. Looking at internal unity, external unity, the noetic quality in terms of truth revealed, a sense of sacredness. And there is also mood states that are associated with it. Very positive psych logical states. A sense of loss of status -- based on time. Then another characteristic I mentioned was enough ability. The fact that you can't describe it. All the questions in the questionnaire address some facets of the mystical experience and then to come up with a score. And so you are able to actually determine other someone has experienced list and to what degree they have expensed it.

This is an interesting study published in 1976 by Richie Davidson, who is a leader in the field, and Daniel Goldman, he was very familiar to the meditation community. They looked out controlled practitioners beginner meditators, short-term meditators and long-term meditators. I will draw your attention to this middle graph here. This is the (unknown term) absorption scale which measures D punitive state. You can see the response curve. People who don't practice meditation score low and the scores go up as people become short or long-term practitioners. You can see that this correlates with increase in meditation practice.

This paper appeared in 2018 stop it's a remarkable paper and worthy of reading. I highly recommend it. It's free access paper. The link is at the bottom here. This is why a whole team of well-known meditation researchers. They talk about meditation research and specifically research in this particular area. And although much research has been done of the conical benefits of meditation, as we do with yoga, far less research has been done in challenging domains to measure, such as mystical. And changes and evolvment associated with meditation. However these components of meditation may be crucial to people's psychological and spiritual development. It could represent important mediators and mechanisms by which meditation confers benefits and could themselves be important outcomes of meditation practices. In addition, since large numbers of novices are being introduced to meditation, this will help to investigate experiences -- they may encounter experiences which are not understood. Really encountering rationales for why this research is important. In this paper they also did a survey. They surveyed over 1100 participants who said they actively meditate. What they applied was the mystical expanse questionnaire. This is 30 items. These are all 30 items here. They divided up the categories and whether people were expressing these almost always, many times, all the way down to never. You can see all of these things put into this chart here.

So what you can see us at the top, the one that virtually everyone is experiencing is feelings of peace and turn quality. They see relaxation response, the short term effect. Feelings of joy and tenderness, etc. These are the initiating stages. But then as you go further down, fewer and fewer people are starting to perceive these deeper and more profound things. Less than 10% of people said they experience ecstasy almost always. Then certainty of encounter with the ultimate reality. Feel you experienced eternity or infinity. You can see these deeper ones are much less prevalent and more likely associated with long time practitioners.

Now, we are starting to understand the euro's logical mechanisms. We want to know where the brain does that experience happen. Basic scientific studies using classic psychedelics have led to numerous advances in the experience will -- experimental study of the mystical experience. These studies suggest a pattern and structure of the



communication between brain networks constitutes the neurobiological basis of consciousness. Such that alterations of consciousness are driven by alterations in communication between brain regions. Although people have tried to say that it's the nucleus in the brain that's responsible, that's not holding up so well. As like many things in the central nervous system or network properties of communication coming from different brain regions. Again from the same authors, (Reads). This is a very well-written paper and this is available in full format. The link is right at the bottom. I highly recommend this. It reviews the whole field of mystical experiences as well as the work on hallucinogens.

Now, I counsel to do this talk ... I know people are going to be asking about the kundalini awakening. This is one of the big things in yoga practice and then a lot of books. I think it's important going back to that 1971 paper where it talked about psychosis on one side and kundalini awakening on the other. In fact, the experience of people who have psychotic episodes, some of them are very similar to this kundalini awakening which is a very positive experience for meditators. I'm so this is a paper that's really nice because it's written by a yoga researcher who is also a researcher of skits from you. He describes this very nicely. "When a person has an altered sense of self, ... (Reads)."

So there are very distinct differences and it's difficult on the surface if someone is experiencing that kind of unitive state, whether it's a psychotic episode or whether it's a positive kundalini awakening. Now, one thing that I've heard over 45 years of involvement in yoga-style practice and lecturing at many yoga festivals and so on is this quote. "Yoga changed my life." It's a remarkable thing to say. You hear people say "Yoga fix my shoulder. I feel more calm and less stressed." But when people say, yoga changed my life, it's a whole other category. It's more deep and profound. I'll do a raise of hands and a lecture to a large audience and I say, "Have you heard this phrase, yoga changed my life Max" and I hear it a lot. Just for fun today, if you have heard someone practice yoga say this, just click on the yes here so we got a b pole and take a look at that later.

This is indicative of something that likely comes from these mystical states. Even if they are a second long. It's profound enough to initiate this kind of change. It is actually a scientific name for this now. It's called quantum change. This is from one of the scientists who first sort of created this construct of, went in change. -- Quantum change. We asked people what it changed, the answer was everything. However, there were some common areas of transformation in our narratives. They often reported a sense of settled peacefulness and safety as an immediate and enduring aftereffect. That's that positive unitive state carrying on. Another major change that quantum changes reported was in their values and priorities. An abrupt and enduring shift in the most central values. They were no longer possessed by their possessions. Often characteristics that have been valued least became most important. And those that is ranked as high priorities fell to the bottom. Spirituality, though not necessarily religion, became central for many. This introduces this term here. Spirituality. And we are going to focus on this for this talk because we don't have a lot of research on mystical experience and yoga practitioners in the research literature. But we have this construct of spirituality study. This concept is a very interesting one.

We have seen this quantum change and it has been studied. It's been studied in drug studies. This is a drug study published way back into thousand eight by leaders in the field, Griffithson and and Hopkins. They found the people were scoring (inaudible) of the drug (unknown term). In two months later you see a high score on this mysticism scale. They did a follow-up and came back 14 months later and found that was still happening. In other words, this is made a permanent change in that experience. And they followed this up 10 years later with this study just published a pump -- couple of years ago. What they did in this study was interesting. They gave people this drug as a low dose and then at a high dose and they had a standard support which is stop meditative practices and information, and high support with more meditative practice and instruction in this area. And what they're looking at here is these are six-month changes. And when you can see is this dramatic increase in positive social effects, positive behaviour changes, and increases spirituality and a sense of well-being and life satisfaction. You can see how b they are. How significantly -- significantly spiritual was the experience? You can see that putting together meditative components together with the drug that generated that mystical state really led to some profound quantum change in these individuals, including changes in what we are going to talk about come over to spirituality. Let's talk about spirituality. We need a definition.

The definition for this talk, because it is often conflated with religion. I took this definition off the web. This is from the (unknown term) Centre website. It's a well-written site and there is a lot of text on that distinguishing religion and spirituality. The bottom line and one that I agree with for the purposes of research is that religion is about faith, it's about belief. It's about accepting the religion's teachings etc. You are taught to have faith in a deity and surrender to the divine. Our spirituality is more focused on experience. It often comes out of spiritual practices such as meditation and yoga and were expanded states of consciousness. So spirituality in our definition for today is experience based whereas religion is belief based. That's the distinguishing aspect when we are talking about this spiritual state.



Only talk with this, I bring forth our logic model. For more basic yoga practice, we are making changes on the physical level, physical changes to reduce tension, improve physical and respiratory function. There is a mind/body connection here that can affect psychological function. Self-regulation of stress and emotion is a key factor. This idea of regulating internal state. Being able to face the ups and downs of emotion. These are important. I showed you that 1971 study that showed that this relaxation effect is part and parcel of moving into the next phase, which is the deeper experience. One of those is that metacognitive state that comes from the focus of tension, increasing mindfulness. Mindfulness is highly correlated in many studies now with the ultimate experience of these mystical experiences. This is an important characteristic and of course this metacognition is the basis of yoga sutras.

That finally leads to what we're talking about today, spirituality. It is driven in large part by these unitive states. Transcendent flow, we'll talk about next Thursday. It leads people to this deep transformation and change in meaning of life purpose. This leads to human flourishing on the gross level to the deepest makes humans can have. We should not demean these physical components in terms of the relevance to the mystical experience.

In fact, there are people who are practising breathing techniques such as holy Tropic breathing which is said to lead people into a preparation for experiencing these states. It's not just a cognitive effect. They can be affected by physical manipulation of the body itself. That's why we have also known -- asanas. These are the techniques that lead us ultimately to this goal which historically has been a mystical state.

Let's take a look at some of the retrospective research on yoga practitioners that gives us the sense of how important spirituality is and how it may change. This is a slide I have shown before. This is a study we did with getting yoga practitioners in Austin, Texas. We asked them why they were going to beginner's yoga. Seeking mystical experience was one of the reasons people gave. It was on the radar, better than alleviating health conditions or illness prevention. This is also been verified by more recent studies. This is 2016 and what they found in this study was that the original primary reason to adopt practice by students was 5%, whereas for people who eventually became teachers for yoga, it was higher. It was 7.1%.

It was also an additional reason to practice. It may not have been a primary reason, but look at the numbers here. This is 24% and 32%. So many people gave this as an additional reason while fewer gave it as an initial reason. This has been replicated by the yoga alliance yoga Journal study way back in 2016 as well. Reasons for starting to practice and spiritual development. They also offer motivation to continue practising. The spirituality held up, it was 23%. It is on the radar as people using it as a reason for having it as a reason to continue the practice of yoga.

Now, we move on to this study. This is a study that was done in Australia. In this study, they asked for a reason why people who are beginning. Here is a reason for the spiritual pot. Only 20%, much less. Less than the components of health, fitness and flexibility. However, as a reason for continuing practice, it jumped from 19% to 43%. So virtually doubled. There is something about people beginning yoga practice. They begin for one reason but this becomes a major reason as to why they continue. We see this now in similar studies. This is the US study. You can see a new primary reason to continue practice. This is now 23% of regular practitioners and 50% of teachers. The largest of all of the primary reasons to continue practice. So it's really jumped. It's improved substantially after people of started practice. It's also an additional new reason to practice in a big way. It's become powerful reason as to why people continue to practice. Suggesting that they have experienced some degree of spirituality and that is become more important to them.

That's really highlighted here in the same study. Now they are looking at current primary reasons for practising yoga. It is in the US 16% the largest of all of the reasons. And in terms of teachers, also the largest. 44% of teachers and say that it's the current primary reason for practising yoga. Fully found in this study was that over 62% of students, 80% of teachers reported having changed their primary reason for discovering other reasons. For both, the top changed primary reason was spirituality. This suggests that most initiate yoga practice for exercise and stress release, but for many spirituality becomes the primary reason for maintaining practice.

We see this also in this study which is much more recent, published and thousand 19. Again on the US population. The original reason for practising yoga was 11% was given as a secondary reason. But the current reason jumped from 11.6% to 26%. Again, only second to prevention and health promotion. So again, just verifying this increase in the increase in spirituality.

Finally, this was the study just published in 2020 in the UK. They also looked at initial reasons for practice and current



reasons for practice. So what you can see is the initial reasons are in orange. Well-being was a big reason. Almost 40%. Fitness was a huge reason, almost 20%. Spirituality was way down there at 2 1/2%. But what is the current reason for practising? Look at this jump. A tenfold increase to almost 25% of practising now. The current reason is spirituality. Second only to well-being. Again just verifying this phenomenal change. And people obviously being in direct evidence that people are experiencing these changes in spirituality and that becomes important to them.

Another study. This was done with long-term yoga practitioners. They found in this study was the same phenomenon. If they compared initial physical reasons for practising our initial spiritual reasons for practising. The physical reasons dominated the spiritual reasons. But in terms of continued practice, that changed substantially. Practitioners had greater additional and continued physical intentions than spiritual intentions. However, spiritual intentions became more salient and more prevalent over time, suggesting that Western yoga can cultivate spirituality. Results also show that practitioners with spiritual intentions reported significantly higher like logical well-being. It is shown in this slide here. People whose goals were spiritual had higher scores on soca logical well-being than those that were there just for the physical postures and exercises.

Now, this is a study, the same study that was done in Australia. But in this study, what they were looking at was perceived change. These long-term practitioners reporting how much better or worse they had gotten on a number of factors. One of the factors at the far end is a spiritual health. But you can see is of highly skewed here with these bars way back in the back too much better and better and spiritual health. This suggests that it's clear that they have improved and they are importing -- reporting improvements in spiritual health.

I like this study, done way back in 1990. They interviewed a Ashram residence. People living the lifestyle on a day-to-day basis. They gave phrases to individuals in the study. (Reads). So very clearly components of the mystical experience. And in the green bars, you can see how many had a positive response to those issues, having experienced those. You can see that the likely bars are the residence. Almost 90% have consistently experienced that. Much less than the people in these dark green bars. There is something about living. This of the indirect evidence that there is something about living a yoga lifestyle that predisposes you more of these mystical experience qualities.

We've also done a survey study and all the things we did in looking at long-term practitioners, we had a measure of transcendence. We correlated that experience of transcendence with how long people practised, hours per week, lifetime errors, total count. There was a statistically significant correlation. In other words, the more people practised, the more they were expressing transcendence.

This was a study done on Ashtanga yoga practitioners. This score themselves on a scale. The score was higher in the yoga practitioners than in the controls not boxing yoga.

They scored higher than the controls again here. This is a study done in Germany. What they did is broke up the yoga practitioners and those were practising at high level, moderate or marginally. They had a spiritual well-being questionnaire and those people that were practising at high levels had the highest scores and spiritual well-being. On subscales of that question on hope, connectedness and experiences of sense and meaning, which are very close to these unitive states, also the high-level practitioners were ones that had the highest experience. So clearly there is a dose/response affect. The more you practice, the more likely you are to experience these mystical components is -- or expenses and the psychological effects associated with them.

Finally, this is an interesting study. They look to people practising yoga, meditation or practising prayer or multiple practices. Now, the yoga did not do as well as the meditation. The yoga is in the light grey. This is the kind of any experience -- kundahlini experience. But it has much higher scores than control group. So higher than the control but less than the meditation group. And then over here, the ocre group has a little bit less in terms of the total mysticism scale than the meditators, but more than the control and non-practitioners. And the mixed people who were purchasing a mix of practices also were high. So in this category, you can see where they practice both yoga and meditation. This suggests indirectly the people who practice yoga and ad meditation are more likely to have these experiences and those people who are practising just the physical postures for the purpose of exercise and so on.

So, that leaves us back to the yoga alliance page. We have research pages. If you go to the About capital is link and click on log. -- That. There are links to collections 226 different categories of research. Basic research, physiology, and assuming mechanisms, special populations like children and the elderly and a whole number of categories of yoga research for different diseases and disorders. The category that you'll find this in is in the Transcendence and



Spirituality category where we talk about all these different characteristics under the papers. There are a few papers you can click on. And also other publications. So with that, I'm going to stop and let Kim take over.

KIM WEEKS:

hi. Thank you for that, that was so fascinating. It's so fantastic to have the uploading capacity now. Anyway, I appreciate it. I've been going back and scrolling and as many of you have seen, lose my train of thought because I can't grab something but I think might be good to ask. So, the question that really has had the most likes is a take on a question we so often get. And so on going to filter the questions so everyone can hear me doing it to understand how to ask these questions and how I have learned to ask them of you. And that is since most of the research comes from the meditation studies, can you talk a little bit about the science and any research we've seen on the role of asana in practice and the underlying question is around the semantics. And I know we touch on it sometimes in these talks but I don't know if we define it well scientifically, movement meditation. How we measure people in the same way we are measuring them now. Could we measure them with a neuroimaging machine all they are doing yoga movements?

SAT BIR SINGH KHALSA:

very difficult to do and of course the movement is not only a big part of yoga and tai chi which are contemporary practices, it's also part of many spiritual traditions. American Indian dance, African dance, Sufi twirl. These things are all contrary practices and very much involve the body. And obviously, it's very difficult to study that. More difficult to study and we have much less research, it's true, in yoga and these mystical experiences then we have a meditation. But it will be difficult to study movement. In terms of the rationale, always a water pretrade in the logic model was the effects on the body directly translate into the mind. I mean, if you are breathing technique, you immediately start to see (unknown term) activation and from that model, that whole reduction and hypo metabolism that occurs during these practices is the prelude before you can get into these ecstatic states. So, it is a way in. It is the way in. On that side the limbs of yoga start with asana and end with (unknown term). But I mean asana are at the bottom and then you work your way up to the deeper states. And that's how it works physiologically as well. You can yourself down and then you're able to meditate and that facilitates the change. So as I mentioned, there are people that actually do these breathing practices to generate these states. There is a very definite connection but a lot of research has not been done in that area. It's very difficult to get this research done. It's impossible to get the federal government to fund it.

KIM WEEKS:

on that count, there is the next question which is such a great question. It reminds me of this podcast I listened to over the weekend with Sean Carroll. He is a quantum physicist who interviews all kinds of people. He interviewed Nobel laureate David Baltimore. Do you know about him? The guy that created the Baltimore classification. He won the Nobel Prize for appending or adding onto some question that (unknown term) himself had. But he says to him, the most interesting biological question is the origin of consciousness. So biological question for him and this question for us is there any science on how meditation or mystical expanses contributes to diet or fluid urges? How does this relate to the quantum change?

SAT BIR SINGH KHALSA:

while the quantum changes really this change in perspective. So let me put it in very simple terms. The majority of society has very materialistic goals. People want to make a family, they want to have a good income, they want to be famous, they want to be rich. Realistic goals in life. We know from psychological research that ultimately those goals do not lead to fulfil not our happiness. If the more spiritual -- it's a more spiritual internal goals that can be trickled as a quantum change. People go from the materialistic to these deeper goals. Not I think is an important factor in all of this. It takes into a different way of thinking. Different way of valuing different things ... a values mouth, mental health, taking care of your body. And lots synonymous with optimizing bodily function. When you optimize bodily function, you optimize the best human experiences, which are without doubt these mystical experiences. And these mystical experiences are just associated with all these psychological positive changes, kindness, compassion, unity. When you are expands in the universe is one, that means those non-duality. But the other way to phrase this. It's not duality. You are one with everyone else. There's no separation. And that context, you and the other person in front of you are the same being. You experience everything is one. Many people have called but essentially pure love. That is that pure essence, that pure bliss, that pure merger into the universal consciousness. Select the beauty of this.

Of course, there's a lot of philosophy around us. The philosophy of (unknown term) etc. And is mostly religions that are fully focused in his field of mysticism.



KIM WEEKS:

again, I definitely thrown a couple of bits here and there, but it strikes me that west of the day line, our ego has an... I don't want to say got in the way, because that is pejorative. But it is interesting to reflect on the way that... not only back to your religion and spirituality slide, but also the way that we have developed our religious and spiritual practices in this country, you know? I was part of this documentary a few years ago from the study on the nuns, None of the Above. Did you hear about that? 46 million people and designate affiliated with None of the Above religious affiliations, but yet have all of these spiritual experiences and communities they were forming, etc.

SAT BIR SINGH KHALSA:

we are starting to see this trend in society as a whole that people who affiliate themselves formally with our religion are a decreasing percentage of the population at the expense of those who consider themselves visual -- spiritual but not in line with religious tradition.

KIM WEEKS:

it's turned into something else. The phrase has evolved but it essentially captures the same thing. It was done by (unknown term) or (unknown term). This is also a great question and lots of people want to know the answer to because it is affirming to get evidence for what we already know to sort of feel good in the namaste bond. What evidence that there contradict these findings? Please up enough I misunderstanding this. How is the other part approached? What -- what do we note contradict this?

SAT BIR SINGH KHALSA:

it is difficult to contradict some of the extremes. When someone says they experience something, you consider they are psychotic or... and that is one of the major criticisms of this area is that these experiences are frivolous. They are not significant. They are similar to psychotic events and don't have any meaning. To say there is a universal flow of energy that you can move into, that's nonsense, New Age gooey stuff. You can't say anything against that because we can't measure it. But the closer we get to the physiology that shows that these experiences have relations with physical and central nervous system changes... the best research is a hallucinogenic research. This is a substance in which 40% of people who take the substance in a research study explains the mystical state. This is very clearly a real phenomenon. So I mean, you can argue against that and say, "Oh well, you're just messing up the transmitters and having the solid Stupid experience that's not meaningful for quote but I tell you it's meaningful enough to these people that they change their lives. Then you have to discount all the people who are parks in yoga who said "Yoga change my life". Which of the few.

KIM WEEKS:

and oh my gosh guys. Did you see that 99% of the answers were "Yes, I've heard that before." I haven't seen a statistic like that in a while so it was nice to see. This is a variation on the first question, but still interesting. So interesting and important. Has a specific type of meditation been studied that seems to bring about submissive goal effect -- mystical effect and does it vary depending on the practice?

SAT BIR SINGH KHALSA:

everyone wants the best technique. To be the best one and I don't want to waste my time with the others. Forget it. It's not there yet. We don't have that. There are only -- so many forms of meditation. There is single point focus or concentrated meditation which is common in yoga, focusing on the mantra and the breath. But that is a beginning technique for people who engage in mindfulness-based stress reduction which is a mindfulness technique where the focus of attention is on the flow of thought and sensation. To me, these are variation on a theme. What you're doing in all these meditation forms if you are focusing your attention. You are engaging the attention and that is simple -- like a similar euro is logical function for stops some of the subtleties change in terms of people's experience overall. But some of the central processes and experiences will be the same.

KIM WEEKS:

OK. So one of my favourite questions, I don't know if you can see but I appreciate this so much. For many of us who meditate regularly, I just going to read it straight because it's so great. The daily practice can be for those who meditate daily regularly, can be like barfing up all of the undigested mental matter that is keeping us from an experience of peace. The practice, it can feel uncomfortable, but afterwards, so much better. Sometimes worse but often better. In other words, the benefits are felt during daily life rather than during the practice itself. Are there any studies on the benefits of this?

SAT BIR SINGH KHALSA:



of course. Go back and look at the webinar on phonics stress. Emotion regulation and stress. Preventing that. Those are very clear and obvious in fits of regular practice. And in terms of this analogy of hygiene, taking care of it, the person talked about barfing up the bad stuff. My teacher had a cleaner one. His description was that when you're just going on in your daily life, garbage piles up in your living room. If you don't take out the garbage by doing yoga practices every day, the garbage pile just builds up until eventually it starts to dominate your life. You have to walk around it, you have to smell it. It's right to interfere with your life. And so yoga practice and meditation practice are a form of hygiene to keep your mind at a livable level, if you will.

KIM WEEKS:

yeah. On the next question is also so great and I would like to connect the dots between what you just said and the next question. I have this daily seated Dragon Mac practice and with my teacher recently, I've been talking about the value of the supine and then sitting up. And there I was getting up every morning to do it. The benefits were amazing and I felt great. But as I've been re-incorporating an easier supine really relaxed breathing practice before then get up, totally different effects during the day and my body and in my mind. It's just such a great moment in time even for me to say and see that even though you have this practice, the practice continues to be quantified, qualified, experienced in different ways because every day is different. You wake up every day. As the quantum tunneling effect for every moment is potentially infinitely different from every other one. This is a simple question but such a good one about the overlap between spirituality and well-being. Can you clarify what you are saying about that?

SAT BIR SINGH KHALSA:

the spiritual experience has his unitive state. If you look at the mystical experience questionnaire, one of the facets of the mystical experiences, one of the cardinal facets puts in all of the questionnaires that describes this is the positive effect. The positive mood state. It's part of that. It comes out of that unitive state. How that's linked and how that's triggered, well that's neurophysiology still has to happen as we start to understand which parts of the brain are involved in that experience and well-being. But the two are very tightly linked. It's part of the mystical experience. The more you experience the mystical state, the more you're going to experience these positive states. That's why in that one study showed, there was an increase in blobs of well-being in the people who are more spiritual in their practice.

KIM WEEKS:

think back to the words I wrote down, (unknown term) and ergo traffic ... am I saying that right?

SAT BIR SINGH KHALSA:

I don't even know. It's an old paper. Some of these papers are hard to read because they make up their own terms. Really, it's just referring to those two different directions. The hyperarousal that can lead to... (inaudible) the adoption -- and the reduction in arousal that can lead to potential for mystical experiences.

KIM WEEKS:

the reason I brought this up is to conclude because that slide with the difference between the hyper and hyperarousal was interesting to me. That inconclusive -ness between the two... I was thinking about the two... I was thinking about the well-being and the mystical side of yoga and how if you are practising correctly, you will get over to the hyperarousal side and you will know and you can at least be looking at yourself and feeling those things.

SAT BIR SINGH KHALSA:

while that one paper I showed with the slide about the kundalini awakening to scribing the difference between a psychotic state and a spiritual state and in the spiritual state, there is self-control. There is a sense of managing this because you've been practising these techniques, you've developed self regulation of thought processes. Skits of phonics on the op. cit. extreme. These are things they are not able to control. That's one of the cardinal dissonances between and negative cuddly awakening and what some scientists have called a spiritual emergency which happens spontaneously to people and sometimes it can be very frightening to people. Because they are not prepared. They don't have these pot leg regulations skills that come from meditation type practices that are in yoga and meditation. And so yoga and meditation really provides this platform. You're not only preparing the body, you are also preparing the mind enters how the mind games. Your relationship to ego, what your ego is and so on. Someone who is very attached to his or her ego and suddenly experiences is ego in this state, boom. It's frightening. It can be a really negative experience. Whereas people who have prepared their whole platform of psychophysiology to be ready for that...

KIM WEEKS:

exactly. That's the perfect way to end. The questions are so amazing. As I said you guys, we will pull them over to



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Thursday if we can't answer them today. It was caught on one screen. I'm going to make it longer next time so I see it more. I prefigure participation. Thank you very much. So lovely talking to you. We will be on Thursday at 12 o'clock talking about the prospective studies. People that have not studied our practice meditation before and/or yoga and what that has to do with the mystical experience on what science has shown us. I've a great couple of days and we look forward to seeing you guys again. Bye.