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SPEAKER:

It is that time, we are going live.

SPEAKER:

Hi, it is Kim Weeks I am a consultant wellness and education consultant and I have been working with YogaAlliance for some time now on bringing the conversation on the scientific research on yoga to life. I worked closely as many of you know with Sat Bir, good morning, Sat Bir. Or good afternoon, actually full somehow are you?

SPEAKER:

Good.

SPEAKER:

He is our director of yoga research and assistant at Harvard Medical School and that makes our work with him so interesting and so rich and so filled with opportunities to bring you content that helps to demystify, clarify and in some cases summarize the most important things being researched and discovered and known through the scientific community with respect to various aspects of the body. Community is around the world For those of you who are joining for the first time, to give you contact for the first time. This is our 12th week the end of our 3rd month. 12 different topics that we have brought to you during the COVID calamity, that we hope that has been able to help and demystify aspects of yoga and research that you are wanting to know about. Many of you know you can go to Y a.work which will then take you to the section on our website YogaAlliance.org which has a whole, all of the presentations that we have given.

On Tuesdays and Thursdays we go live and we cover topics from anxiety and yoga, depression and yoga, yoga in schools, yoga and aging, yoga and the immune system, yoga and respiratory and asthma, it goes on. These are part of live presentations that we have also, that are lie work that Sat Bir and I have done 26 videos that we put together 7 minutes, I keep kind them infomercials-- calling them infomercials but it truly is a way for you and your community and in your own life to taken the most important aspects of the research that Sat Bir closely tied to and will be come to care so much about at YogaAlliance.

In terms of the sessions and of themselves, Tuesday's as most of you know, we cover one part of the topic we are covering for that week. And when possible, we reserve Thursday's for the conversation as it specifically relates to COVID and in fact, Sat Bir, a few weeks ago, it had to been disease prevention because Thursday you did the coronavirus research, right?

SPEAKER:

Yes, exactly.

SPEAKER:

The Netty pot. For those who are interested in even hearing some of the first bits of research, we have on yoga, the Netty pot cleaning that we know through the yogurt tradition, it has something to do with not transmitting coronavirus and decreasing your symptoms. That is what I took from the send-- session and I'm hoping you're able to watch that session and learn it for yourself, it was so interesting.

That is an example of all the stuff we have been doing. We are including the 12 weeks with what so many people have emailed me it is so nice to hear from you, and I couldn't help but tell Sat Bir myself, my favourite topic because the idea there is a science and scientific research behind yoga as a contemplative practice and/or as a transcendental experience is so amazing and really it seems to me, not just the 21st century, but kind of where we are right now in the 21st century and during a collective social sociopolitical, and health trauma that we would never had known was going to be here 6 month ago. And so today, it is difficult to map COVID to this conversation explicitly



except in the way that it has affected your psyche and affected your brain and your yoga practice because as you will hear from Sat Bir today, we are talking about the scanned research, on perspective people, people who have never meditated before, never done yoga before, who then are studying relative to their experience of yoga as a contemplative practice, how was I measured? We get asked every single week and we completely understand, but I need to explain to you guys that Tuesdays and Thursdays always have overlaps, sometimes there's a little bit of overlap and sometimes there is a lot of overlap and that is because Sat Bir and I feel that when you teach, you give to keep repeating the printables and the underlying things to understand then you can learn the big stuff on top of. Today, will be quite a bit of same slides from Tuesday but hopefully they will be joyfully and interestingly redundant because there's just so much about the brain and about contemplative experience in yoga understood by the scientific lens.

Without further ado, I will hand it over to you, Sat Bir, and say to the audience that I will go dark and we will sit back and relax and listen, look as I said Tuesday in a lecture auditorium and Sat Bir will teach us for about 20 or 25 minutes and then after that, I will take your questions.

I think you know for most Tuesdays and just this morning, we have a super cool function now of uploading. If you see a question that someone has asked you are also interested in or thinking of asking yourself, feel free to upload it because it really makes my job, frankly, easier because I am not constantly scrolling to see what I hope is interesting to you and what I project is interesting to you. I've carried over several questions from Tuesday some unbelievable comments from people that I would really like to share if you are here from Tuesday, I hope it was you and I hope we can connect on this wonderful topic.

Sat Bir, I can't wait and I will see you on the other side.

SPEAKER:

Okay, sounds good, thank you very much and welcome everyone. Today's session we entitled yoga as a contemplative practice and we had a number of titles in mind, we could've called it yoga for transcendence or yoga for spirituality but we will be covering those kinds of topics within and today's lecture in question occurred will be focused on the practical side of the prospective studies that have been done trying to show that we can take people and increase their levels of spirituality or experiences of transcendence state.

Let me go ahead and let's get right into the material. I'm going to go ahead and share my screen here. We need to start with really sort of the definition as most of you know, who have studied philosophy and yoga, it is ultimately a contemplative practice historically." Great Indian scholar call it a method of self-perfection by the expression of the seeker's potentialities in the being.

A union of the human individual at the universal and transcendent existence and of course, the word yoga the core of it means union and it really refers to the unitive state of consciousness. This whole idea of merging into this universal and transcendence introduces us to the deeper construct and I see changes in yoga practice on a temporal timeframe. Over the short term, we talked about this a lot, there is a sense of reduction and sense of well-being, this comes from the physical practice of meditation that can happen through the course of minutes circling over yoga class it is the opposite of fight or flight response, it is the calming of the whole system and Herbert Benson coined the term relaxation response to describe the psychophysiology of this. As we practice over typically months and weeks and months, we start to get a sense of character change and skills that are developing increasing our mind body and awareness and improve our resilience to stress or self-regulation of stress and the motion of physical functioning and this allows us to function better and a lot of the research that is done on yoga and terms of medical conditions and health is really at this low here. What happens to quite a few people who practice yoga your talk about months and years of practice, people start talking about psychological and philosophical transformation. They have this global change in life meaning and purpose and perspective, they change their relationship to who they are and what their goals in life are what the relationship is to themselves and the rest of the world and I think this comes from the experiences that happen in the meditative practices when you go deep into the meditative state. The experience has been coined and called the mystical experience. We are not talking about ghosts, we are talking about a very formal field of philosophy and there is a whole field called mystical experience.

Just to define this, I'm just going to use this quote from a nicely written paper, transient states of consciousness, usually lasting for only a few minutes and distinctly different from normal consciousness. The person typically experiences not a product of personal will or control and has a difficult time expressing the experience in words. They usually are intensely positive, joyful experiences and often the person senses the presence of a transcendent other. Often there is an element of revelation, noetic means seeing sort of knowledge or wisdom. ACET a knowing of a new



truth. An experience of the unity, and a oneness with all of humankind, or the universe. This quote really defines sort of the experience of the mystical state and the mystical experience and has these qualities, the most profound wondrous really is this unitive state and the ineffability means the difficulty describing, it is so otherworldly, it is very different than everyday experiences and when someone experiences a mystical experience, it is completely remarkable and entirely different than what people have experienced typically in their day-to-day lives.

And there is a lot of words that have been applied to this, certainly, in many meditative traditions, there is a number of words, and yoga use the word somebody, their other terms in Indian philosophy, nirvana, bodhi, and from the same traditions, it is describing that state in terms of English language, it is a mystical state we talk about it as a unitive state enlightenment, it is also known in yoga traditions is the awakening or spiritual awakening, other terms or transcendence, deep experience because consciousness noetic experience, flow state, insight, and we will talk was on the called quantum change.

The adjectives many people apply to this is this term here, one this, this is probably the closest you can come in actually describing the experience because it is so profound and so universal. There is a number of other characteristics often people use things like ecstasy, bliss absorption, and rapture.

This has been studied by psychologists and in the early 60s and early 70s, when we had this sort of infusion of yoga masters coming over, it was a very popular practice. This was a paper talking about this realm of different states of consciousness, this was actually published in the Journal of science of all places. Way back in 1971.

Here is the normal state of perception that most of us are into our day-to-day lives. As we go into these meditative states, we start to experience the physical relaxation, there is a tranquility that we become hypo aroused and the deeper we get into that, deeper meditation, ultimately, we reach this yoga somebody state will reexperience the self, this unity with the higher self. The other extreme, people who become compromised in their psychological state, they start to experience anxiety, a lack of increased sensitivity and maybe even going into more psychotic type of states, ultimately, and many people actually have psychosis will actually talk about this kind of ecstatic statement as well. This is a very different stay we will talk with this as well later. In the presentations. There is a sort of spectrum on both sides we are starting to see this conceptualization of how this works potentially psychologically.

And a number of early paper is also talked about this, this one talked about mystical states of conscious, published in the Journal way back in 1972. Then we have recent surveys and recent papers that are talking about the studies that have been done in this area, this is a reading recent 2018 paper which is nicely covering a lot of the research that has been done looking at the appearance of this trend assistance-- transcendent and mystical states.

There is a number of kinds of approaches that researchers have taken. One of them is actually to use psychoactive drug studies because a lot of the hallucinogens they subset people taking substances will have these mystical experiences and these can be studied in a laboratory. And clinical case studies were people reporting the spontaneous changes, these awakenings or spiritual awakenings and sometimes they can be triggered then there is retrospective surveys and practitioners and we covered this on Tuesday, we looked at studies looking at long-term yoga meditation practitioners and looking at the changes and spirituality. Then there are people, a few studies that have been done of meditation as it is happening, some claims that people are experiencing transcendent states than they are trying to capture what is happening with the EDR nerve imaging. Then finally, this perspective studies, can we take normal individuals, give them these can temper lived practices and seeing changes in mystical state or spirituality.

In terms of the research, many people have said these states are so subtle and so sublime, you can't possibly study it. If you can describe it, which we have done, then you can create a questionnaire that measures it and this is the foundation of all because

LECTURER:

It's psychology research. There are a number of questionnaires that have been developed to study to measure experiences of transcendence. This is actually a mystical experience questionnaire and basically, it has items in it that people attribute to their experience and it covers all those aspects that we talked about, the internal and external unity, the unitive state of consciousness and the noetic quality, insightful knowledge or media knowledge, sense of sacredness, obviously positive moods and then there is a whole space, a sense of timelessness and finally, the difficulty describing it in words which is the inevitability. This questionnaire, one of the ber questionnaires that is used to determine the quantity or quality of this experience.



Just to give you an example of some of the early research, this is actually an early study back in 1976 and to the authors are well-known people in the field of meditation. What they did in the study as he looked at long-term meditators and look at this one skill called an absorption scale which is a mystical experience and they looked at the quantified control subjects and different practice meditation short-term meditators and long-term meditators and you can see ghosts responsive effective more people have been meditating the more they have experienced this absorptive experience. This a paper that appeared a couple years ago by a large group of meditation researchers, who were really talking about the future of meditational research and specifically the contemplative nature of the experiences that people could have. A lot of research has been done with meditative practices for treatment of conditions or improving mood state but far less research conducted more challenging domains to measure. Such as transpersonal and mystical. In postconventional stages of development associated in other words, the follow-up to these experiences. However, these components of meditation may be crucial to people psychological and spiritual development and could represent important mediators and/or mechanisms in which meditation confers benefits and could themselves be important outcomes of meditation practices. In addition, since large numbers of novices are being introduced it is helpful to investigate experiences they need may encounter that are not well understood. And in that paper they also did a survey of over 1100 meditators and what they did was they applied the mystical experience questionnaire, these are all the items on the questionnaire and what you can see is that in the colour coding on the left is people that have experienced in this almost always in the dark blue. Then on the far right is people who have never experienced this state. It actually goes from the more sort of obvious things that happened in meditation, feelings of peace and tranquility and feelings of tenderness, feelings of joy. And many people experienced the states because they are very calming. Then as you get down to the more subtle states experience of ecstasy, and encounter with the ultimate reality, and sense of integrity or infinity, there are fewer people experiencing these things. Very clearly you can see there is a good deal of this experience happening in meditators.

In terms of the neurophysiological mechanisms, people are, one of the interests as well, there must be one region in the brain that is responsible for this and we can just nail down what the nucleus is, we will have the solution. It has been suggested by the fact that psychedelics have generated these states.

And so from this quote here, basic scientific studies using classic psychedelics have led to numerous advances in the experiment the study of mystical experiences. These studies collectively suggest that the possibility, the pattern and structure of communication between brain networks constitutes the neurobiological basis of consciousness. Alterations of consciousness are driven by alterations of communication between brain regions. What they are saying is that the evidence or starting point out and offer specific brain region but for a network of interactions among different brain regions. It may be a little more difficult to identify what the network is and how the network generates these states. This is actually further on that topic although the most fundamental questions regarding the sickle experience is presently vague, reductive neuroscience explanation analysis of the biological oil suggested underlying mechanisms of mystical experiences are tractable. In other words, it is possible to do research in this area. We have highlighted an intriguing overlap and findings on classic hallucinogens and meditative practices mystical experiences and changes in activity, conductivity, and oscillatory process of the default network may underlie dimensions especially decreased self referential processing and altered sense of time and space accompany introverted mystical experiences. Really, there is a possibility of being able to understand how the brain is experiencing and generating these experiences.

I can't do this presentation without something being raised, the yoga practitioners are very familiar with and this is the whole idea of the awakening and in its negative experience, what people talk about as a psychosis. And this is a quote from a yoga researcher who has done research in psychotic episodes and is very familiar with yoga practice. This quote is when a person has an altered sense of self, it becomes important to understand and be able to differentiate tendency of school-- schizophrenia from advancement although there may be 2 the superficial similarities in a gross clinical level but to different in their intentions in subtle ways. It's gets a for any alterations of sense and self involved weakening of the ego leading to estrangement and loss of control-- control over mind and senses and a spiritually advanced the ego is not deranged, surrendering to the higher being it undergoes a gradual merging into a higher unlimited self ego effacement. Such a person in fact becomes more aware of this ego by developing mastery against the freedom to use it or let it go. This is a nice quote because it really distinguishes what someone in the general public might experience as an awakening and find it frightening because they have not gone through any meditative training or practices to be able to cope with this experience whereas in yoga, we are actually cultivating the neurophysiological mechanisms and behaviours that are necessary for us to experience this as a true fulfilment of a deeper spiritual experience.



Now, the one thing that I have experienced in my 45 years of yoga practice and lecturing to large groups and yoga festivals is that many people have talked about this transformation." I hear very often for many individuals is yoga changed my life. And it is such a remarkable quote and so we are actually going to do a little survey. If you have ever heard someone say yoga changed my life, please vote yes or no and lesssee will be can come up with. This quote is very interesting, it is not they are saying something mundane, many people will say, yoga fixed my knee, yoga helped me fix my state, this quote, yoga changed my life, they are talking about something much deeper and much more profound. They are talking about a change in life perspective and changing of life goals, people who change their behaviours and change their jobs etc. This is a very profound statement to make and it really reflects what happens to many people who have these mystical experiences. In fact, scientists actually started to quantify this and they have actually named it. It has been named the quantum change. This is a quote from one of the scientists who developed this term, the common response when asked we asked people what had changed in terms of that transformation, 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, in other words, this came after the experience and then was sustained over time. Another major change the quantum want them changes reported is in values and priorities and abrupt and enduring shift in their most central values. There were no longer possessed by their possessions and often characteristics that had been valued at least became most important and those that had ranked highest priorities fell to the bottom. Spirituality though not necessarily religion became central for many.

This term spirituality what we are seeing is that this comes out of his meditative experience through these mystical experiences and really enhances a global tendency and experience of what we are calling a sort of pure spirituality. We can see this in some of the research, this was a study that was done in the laboratory giving people-- and then 2 months later they found the mysticism scale which monitored the behavioural experiences of people had during the state, 2 months later they still had but then 14 months later, they still are aware of that state to some degree. It has long-term last, this is actually a measure of this quantum change. In the scientists, more recently published a paper in 2018 just a couple of years ago where they did an experiment where they had 3 groups, one group if they had a sub clinical dose the other 2 groups had a full dose of psilocybin and they had a degree of support. And that is spiritual support, degree of meditation type practices. This was hi support, high-level meditation practice and what you can see is that the meditation practices to gather with the silicide then had much more profound effect on all touristic and positive social views on positive behaviour change, on spirituality, on the sense of well-being or life satisfaction, and in terms of how spiritually significant was the experience, that also is very highly increased but that kind of meditative support and how significantly was experience in terms of grading the topmost spiritual significant events also very b.

There is a very tight link between these 2 meditative practices and the mystical experience itself. We talked about spirituality and this is what was most measured in research subsequently. To all of this. I need to make a distinction between the term spirituality and religion because many people view them as an ominous to me, they are very different for purposes of my lecture here, and the definition I am really distinguished, given this quote from the Centre website on the page is really nicely written and the link is down here if you want to look at it. The distinction I am making here is one that is conveyed here and that religion is really about faith, it is a set of beliefs and the religious adherents are taught to have faith or belief in that set of values or beliefs. Spirituality, however, in the definition I am focusing on for today, it focuses more heavily on direct experience, spiritual practices as yoga meditation leading to these expanded states of consciousness. This is our definition of spirituality for the purposes of today's lecture. This is the logic model, we present in all of these talks and of course yoga consists of traditional yoga consists of all of these components not just the exercises. They all lead to this improvement on the physical level, flex ability, strength, coordination, balance and gustatory function, which changes psychophysiology and through the mind and body connection changes psychological state as well. All 4 practices also increase self-regulation of internal state both physical and psychological and most important ones are really stress and emotion regulation that over time lead to the states of resilience to stress and equanimity in the face of ups and downs of emotions.

Through the meditative component we focus on the intention that works of the brain increasing our mind-body awareness and mindfulness and cognitive performance and ultimately leading to this very powerful state of metacognition. A sense of self-regulation of thought processes and a distinguishing of our thought processes are more true and central identity for some another words, we are not our thoughts. We have thoughts, but we have separate identity that allows us to react differently to those thoughts or even change those thoughts. That is critical in this long term and the long term benefits of meditative practices. Then finally, through the meditative components, but not necessarily just the meditative component, we are seeing these changes what I am calling spirituality, these unitive states, flow state would lead people into these transformation and changing purpose.

Although this is dominantly done through the meditative practice, many meditators experience. This state in yoga,



there is evidence that a lot of these these are physiological based practices can support this. This is where yoga comes in as being broader component. And of course through all of these changes that cover such a broad spectrum of human behaviour and function, we are seeing changes in the global human functionality that happens on a gross level from physical and mental health and performance to the deeper levels of stress and emotion regulation and mindfulness and metacognition. To the deeper experiences that come from these types of states. Things that will improve positive behaviour, well-being, value, life purpose and meaning and what we define as pure spirituality.

Clearly, this is where we are talking today, and today, we are going to focus on research that is done in a prospective manner. Taking individuals and signing them to a study and then measuring actual changes in spirituality. On Tuesday, we look at the extensive literature that is out there on people who were already practising yoga and their experience in spirituality and then indirectly showing that many of them continue to practice yoga for the purpose of spirituality. Suggesting a sort of positive link between yoga practice and spirituality. But I want to start with a historical study. This is not really knife practitioners, this is long term yoga practitioners but this is one of the kinds of studies is being done to try and see the meditative state as it is happening. This was an EEG study, what they had was advanced yoga masters, and these yoga masters were hooked up and so throughout these panels, different things were going on and they were asked to do different things. And what they said of yoga practitioners, the yoga masters that were practising, they claimed that during, this example, during panel F here, is when they reported that they were experiencing these deeper samadhi states. What you can see is first of all the slowing of the EKG, heart rate is very slow, and as we talked about in the early slight in this presentation, this whole transition in yoga and meditation as you go deeper and relax the autonomic nervous system and quite the system down it sort of a prelude to the states that come into these mystical experiences.

You can see the slowing of heart rate and reduction in overall psychological physiological arousal. Another thing is you consider a remarkably different pattern in brain activity that is so different from the other states when they were not claiming this experience. This was sort of early evidence suggesting that there is something happening with the brain. When we are experiencing these mystical experiences. There is a dearth of studies, unfortunately in yoga practices, and leading to these mystical experiences or changes in spirituality. There are more studies that have been done on meditation practice showing those improvements. I'm just going to show one some of you are familiar with mindfulness and stress reduction with incorporates yoga that's why I'm showing this year because at least yoga is incorporated here, this is a more recent study, this is a variation of the mindful and space stress reduction program called the mindfulness-based awareness program which is helping people with eating disorders especially people were over eating so this was a clinical trial just published a couple years ago the full paper is available at the link at the bottom here and what you can see is that on this questionnaire, this is called the facet, I will describe this later, this is a measure of sort of the meaning and peace, measure of spirituality, or you can see this was a 10 week intervention just at the end of the intervention, you concede that the group that was under the 10 week program had a significant increase in the score control group did not and that was at the 2 month follow-up following the end of the program through spiritual scores were still, there is evidence that we can change spirituality with these interventions. Another intervention which is more yoga is programs that they researched at the Chopra Centre in California. This of course is a meditation yoga practice Centre and they were comparing individuals that were residing at the Centre for a number of weeks. The control group in both cases was a relaxation group, these people came to the centre, hung out, just eat the meals, it was kind of like a vacation retreat, there was no actual practices ongoing. This was the group that practised all of the meditative and yoga practices, there was a lot of meals, etc.

What you might call a yoga watch style intervention. In what you can see is very clear improvements in spirituality that were maintained after one month follow-up after the post intervention. Then another term for this unitive state is non-dual. A sense of non-duality. This questionnaire that looks at this non-dual embodiment and again, that also showed this significant increased that was maintained at the long-term follow-up.

Turning to another study, this is a study we did in Wales and the UK and the question we had-- which was not exactly spirituality but the whole construct of life purpose is actually been coming close to the construct. And on this we saw statistically significant improvement in life purposes and satisfaction in this randomized control trial and control group so this was an 8 week yoga intervention. We also have seen this in studies on patient populations, particularly cancer patients who of course are facing an existential challenge their life may be over because this is potentially terminal disease. This was a study done on breast cancer patients and it was a randomized control, small trial but this is a facet, a functional assessment of therapy questionnaire and they have a spiritual well-being scale and one of the factors on that is the meaning of the subscale, one I showed you earlier on a slide and what you can see in this randomized control the other group had a seat statistically improvement score whereas the control group actually had slight decline but that was not statistical. Another interesting study has been done actually by the TM group. This was



done by practitioners of TM at the Maharishi University. These were all, all these people were regular meditators. They took wide group of them and have them practice the style of yoga that they are now starting to practice within the tradition.

What you can see in the control group these are people to continue the regular meditation practice posttest. Transpersonal self which are sort of measures of this transcendent experience and what you see is really no change. But those people that added to their regular TM practice on a regular basis, the practice of these, you can see statistically significant and major improvements in these more subtle experiences, more subtle personal characteristics. This is interesting that we can actually see now that there is a potential for research showing that the physical postures and exercises actually have a place in enhancing these meditative experiences. That of course is a whole construct behind yoga is that you start with these physical practices ultimately going into the meditative practices and all of these practices together help put you into the frame of mind of the frame of brain, if you will, that is perceptible to these mystical states. I want to introduce another construct which is very similar to spirituality called the flow state. This is an optimal psychological state in full represents those moments when everything comes together for the performer. This is unexperienced people have in action. Flow is often associated with high levels of performance in a very positive experience. Flow occurs when one is totally involved in the task at hand when in flow the performer felt both positive and worried about self or failure. It can be defined as an experience that stands out as being better-than-average in some way where the individual is totally absorbed in what he or she is doing and what the experience is very rewarding in of itself.

Flow represents optimal experience and with different characteristics are flow are described here you can see some of these things are very related to the whole mystical experience, loss of self-consciousness, time transformation, and auto Telematics experience which is essentially this unitive state intrinsically we are rewarding experience that flow brings to the individual and the end result of the other 8 flow dimensions. This really is his mystical experience but it is based in activity and one of the kinds of activity that many people experience a flow of state are in music performance, or art, you will find in sports or people talk about during sports performance, athletes are quote unquote in the zone. The experience of performing and in some cases take on the qualities found in the state of archaic merger. For example, musicians sometimes describe feelings of being taken over or possessed during a performance, a type of ecstasy there may be an experience of being so much at one with the music that seems to be playing itself. This is certainly being taken out of oneself and thus has something in common with oceanic experience. But it is qualitatively different because it lacks the sense of other tranquility that is characteristic-- in which there is a sense of continuity and vitality. There is actually a flow auctioneer which is based upon these characteristics. We have applied this in studies that we have done at the Tangle of Music Institute which is very close to the Yoga Centre, these are probably yoga studies that we did and this was a controlled trial but not randomized. We found that that after 6 weeks of yoga these very young adult musicians who are high-level performers we looked at the dispositional flow scale which measures the flow state and we showed a statistically significant increase in just 6 weeks of practice. Where is the control group that elected the practice yoga had really no changes at all. In fact, we can enhance this flow state with these yoga practices. And in some scales of that questionnaire on the sense of time, transformation, the sense of timelessness, that was a trend toward improvement in the yoga group, the Otto Tillich experience, the positive rewarding aspect of this unitive state and in a sense of merger, you can see the yoga group showing a dramatic increase in the construct. Then there is one other paper that is looked at flow in a yoga study and this was actually done in hypertensive patients and normal subjects and they had a number of meditative practices over the course of an hour and measured the flow state and first of all, you can see the yoga practitioners started off the higher flow state compared to the hypertensive and control subjects. But all of them showed a statistically significant increase in flow state and over just an hour. It is something that we can even potentially measure over the short term.

There is a lot of potential for this research to show us that these types of contemplative practices especially yoga can generate these profound states. I leave by taking you to the YogaAlliance webpage and when you click on the about us link it will take you to the research pages and here we have a whole collection of citations that are available to you, many different categories, many citations review papers, individual studies, you click on the link and you can see the paper and the subcategory that we are talking about for today's content is in the section on transcendence and spirituality. Which has all of these papers at your fingertips. I leave it there, and take it to Kim.

SPEAKER:

Hi, I love that, at your fingertips because it is at the truth you get in and realize there are so many cool things to learn and to know and this is just a reminder to everybody that you will be able to within a few days access the presentation that Sat Bir just provided on our website on the same page you can also just press play on the replay of this thing and



we are finding that the replays of the webinars are just as sort of much as attendance or even more in some cases. We really appreciate knowing that an understanding that because we want these workshops to live on for perpetuity, I guess, maybe not perpetuity but as long as the information is relevant and teachable and doesn't need to be totally updated by hopefully what is the next research coming out. I do want to tell everybody, I forgot to say this in the beginning, I did not really forget but I was thinking do I say it at the middle or the end, we are planning, we are taking a break next week. We are planning on bringing for more of the seminars, webinars similar to this or just like this.

We are hoping to tackle a couple more interesting and important topics for you so please stay tuned for that, and email us and research at YogaAlliance or just hopefully you are following us on Instagram checking out the website or getting the emails, Ashley find our super helpful, they give you sort of a rundown of what is going on. There were a couple of, it is so neat that the top question, the one that has most uploaded today, Sat Bir, is one that got carried over, asked late on Tuesday. It caught my eye as well. It makes me think that it's just like a hashtag COVID question because how can the conversation around community, number one, not being on everybody's mind period, based on everything we have experienced especially in the last 2 or 3 weeks. But those of us yoga teachers, yoga practitioners and studio owners the question of what happens to the community is a huge one relative to how we are practising. The question is is there any research on the different effects of the individual practice verses of group practice? The person on Tuesday and today saying which is more beneficial or have the effects of each been researched?

SPEAKER:

They have not. And we don't have that kind of research and we certainly don't have that kind of research with respect to mystical experiences and transformative states. It is an interesting question, it is difficult to study because what the heart of the issue is there is some subtle interaction between individuals in a group setting that may enhance the sort of deeper yoga experience. But the problem is there is a lot of social factors just mundane social factors like being in a group, we are social animals and we do have an element of the brain that craves social interaction. To what degree is it just sort of a mundane sociological satisfaction of being in a group that is helping that and to what degree is a more subtle interactions? Or merging for example, if we could measure them. Would that make a difference? Even the mundane level, we don't have much information on what is more powerful, the group intervention or the home practice.

SPEAKER:

This underlines so many of the questions that come through. I imagine it is also in people's minds, what about practising by yourself versus with a teacher? Is there anything we can measure that?

SPEAKER:

You have to measure it, you have to do sort of in-depth teacher instruction and compared to a one hour session followed by home practice. And see what the differences are. One of the things about spiritual traditions and spiritual practices that goes back to a lot of the literature and many spiritual meditative traditions is the idea of a master. This is quantified in a book I read that was a book that really sort of transformed me to a large degree was called the master game. The idea there was an order to really successfully engage in the spiritual tradition or meditative practice to achieve all the states, you need a guide, you need a master who is already there. Because there are so many pitfalls and so many ways to get off the path. That without a master to guide you and say, that is the wrong direction, you are straying off the techniques. Just to give you an example. One of the things that strays people is this whole idea of cities. Of these psychic powers so to speak. We haven't quantified whether they exist but let's assume they exist and people have claimed to experience them. Suddenly, they get into those they forget about the original path in achieving these ultimate states of consciousness and get into doing the city power things. That can be something that takes people off the path. Another thing that can take people off the path is fame. Fame and money. These are big ones. We've seen many times in many spiritual disciplines were fame and money can really move someone away from the spiritual path and get totally seduced by that. There are many pitfalls trying to achieve these virtual states by yourself. And so a guide has been talked about in the spiritual literature as something that is important.

SPEAKER:

Yesterday just the class I was taking the master teacher was saying yoga is a study of consciousness. There are so many types of consciousness. Give the sort of, again, consciousness is a big topic and seems to me that if you are studying someone who has been working longer and more with consciousness, you're probably gonna learn about consciousness because consciousness can be conveyed and also shared.

And so, I remember reading this, the next question that was uploaded which is so interesting as well, I don't know if



I'm pronouncing her name right, she sort of zoomed right in and has wonderful commentary on the wellness industry on a lot of the oil that comes out that nonscientific claims that so many in the wellness community will make about this or that healing then she wrote this piece on they tell me to stop my thoughts, they tell me a meditation to cut them off and let me tell you something. My thoughts are creative and that is why I write books. and so she goes on and has this whole sort of interesting existential commentary on the effects of meditation on her. This next question is on whether or not there is any data on the positive or negative effects of meditation and its attendant temporal changes of arousal reduction on creativity and innovative thinking. Do we have any links or data we can make there?

SPEAKER:

There is very few studies on creativity with respect to these contemplative practices, creativity is such a subtle process that it is likely that, and I believe, it is likely we can show that yoga can enhance creative responses. Anecdotally, in these young musicians that we study, at Tanglewood that these yoga practices, we had anecdotal responses from them that they were able to tap creative aspects in their music performances and not open to them for that. And that makes sense. It is a matter of 2 things going on. Number one, with these yoga practices you are quieting down dysfunctional brain process. Dysfunctional thought like depressive thoughts, anxious thoughts and so on and so forth. You are removing, and stress is a big one. You are moving those impediments because if you are under chronic stress, you are a lot less likely to be creative you are just basic means of survival. That is one thing that yoga is doing is it is quieting down those negative mental states and in terms of thought process negative dysfunctional thoughts because those are not helpful for creativity. Then on the other hand, you are enhancing societal cognitive behaviour, metacognition, focus of attention awareness, and that is allowing you skills that more likely achieve these creative phenomenons, thinking of the box if you well. I think we are going to see that at some point in the future but at this point in time, there is really no studies that have been done looking, very few studies that you can find that have been done of meditative practices sort of enhancing the deeper state. It is a 2 edged sword. The default mode network is the brain region that is involved in mind watering and we talked about mind watering being this thing we are trying to get away from but that is because most people are mind wandering too much. Mind watering is not evil, it is a part of life. That is where a lot of the creativity comes from. Bringing mind watering into a proper balance. So the amount of mind watering is in the balance state and the content of mind watering-- wandering.

In the amount you want is in balance, not too much into mind wandering state and maintain that.

SPEAKER:

That is so helpful. There are a couple things I want to say, you guys, we have a video, I don't think it has been published yet but it will be soon on your brain on meditation, it is yoga and neuroimaging, is that what that was the video we did question mark or neurophysiological? Neuroimaging. Obviously, talks about neurophysiological in order talk about neuroimaging but it was a really interesting part of what you just described. He also talked about the mode network in a way to say that was a little confusing to me that super clarifying I hope that was helpful for others. One thing I want to say about this, the stray intention and trauma in your body, reaction by the way are for sure going to be talked about yoga, science on yoga and trauma in July so please stay tuned for that. But I wanted to share with everybody this unbelievable interview with who talks exactly about this physiological experience and what he calls bodies of culture black people who come in with so much rain and tension into life, I know you want to see the research on it. But the genetic component of this trauma, so I shared it with you guys on the chat. It is such an amazing lesson. And so helpful and helped me as yoga teacher.

This next question is so interesting because you talked about the depression as one of those blocks for being able to access in this whole experience. Is there any data or research on whether meditation becomes, depression, if you have it becomes worse with meditation?

SPEAKER:

I don't think that there is any b evidence that that is the case. If we have seen that, it is in terms of adverse events which are localized. Let me give you a better example. Many people are saying, people with psychosis should not practice meditation, medication meditation is a counter for psychosis. I think that is a premature conclusion. I think that unsupervised, and on trade meditation is counter recommended for people with psychosis. What you are trying to do, if you can meditate properly then you are focusing on your thought process. And you are not focusing on the meditative distancing state.

What happens in psychosis is when you hear the voices and you get lost in the voices. Someone intending to meditate who is psychotic, if he does it poorly, will actually facilitate psychotic episodes. That does not say meditation causes psychological events, meditation improperly practice is likely pop possible to lead, there are now studies of



yoga that show positive practice. As long as it is done in a proper supervised manner and again, it is very important state overall this global concern that yoga practice for regular population is not the same as yoga practice for patient population. This is an entirely different thing. You have to bear in mind all of the susceptibilities and all the vulnerabilities that the patient population has yet to be aware of what those are before you can teach them safely. Otherwise you can end up with a psychotic episode and the people are going to say, don't meditate because you have a psychotic episode. And that is, I think, unfortunate.

SPEAKER:

Yeah, that was very well put in just another moment for those of us on the other side of the research that it is not with the degree as Sat Bir has, when you're on the YogaAlliance website, you see he has separated and therefore we have separated the research between what we call basic research, which is on healthy individuals and on research on disease. That is one of the most fundamental understandings has come for me in working with Sat Bir and again I was apologize hopefully it is helpful for you. We are going to end now because we are right at the hour. I wanted to do a quick shut out to the vagus nerve because I keep hearing more and more about it and there is one last question that did not quite get uploaded, we don't have time for more questions, but I do want to ask one minute sound Sat Bir on research that we might be able to uncover. On the vagus nerve. Tell me more.

SPEAKER:

I think it has become a hot topic, the vagus nerve, everybody is talking about it, it is nothing more than a person pathetic nervous system. Everything we have talked about in terms of psychological arousal reducing the activation of the automatic nervous system, that is all it is. The vagus nerve is pride part of the autonomic nervous system. I hear it all the time, but it's nothing more than what we have already known affecting the autonomic nervous system. Manifested by activity. There is a lot of interest in this area because the vagus nerve has not only which go to the organs, and impact the function of the Argus, but this afferents, in fact the majority of nerves and the vagus nerve are bringing information from the body to the brain and so this actually sets a hypothesis that the positive benefits experiencing may be coming from these will we do it, that information is coming to the brain when generating this positive mind and body experience. That is a whole potential area of research of great interest. The whole idea of vagal afferents, their people now they have devices in the whole field of research of stimulation and stimulating these nerves degenerating the effect we do this in yoga. I am not in favour of these kinds of machines when we can develop our own self-regulation, that to me is a much more organic way to do things.

SPEAKER:

Makes me think of the thing on my feet for a while, the little blooper on your shoulder, on your back every time you punch it beats, you might take your arms and put it over your head and move the shoulders back. And breathe a little bit. Maybe that would be just as healthful. Sat Bir, thank you so much, you guys, we will be off rest a bit for week next week. But our intention is to plow ahead and to keep offering you this stuff and keep offering, I for 1 AM going to throw the vagus nerve if Sat Bir can teach us that for an hour because maybe that would be a really cool thing to talk about understanding everything you just said in a nutshell, Sat Bir, and one minute, so thank you guys so much, please send your questions and your ideas and anything you would like to see or know YogaAlliance.org. We continue to have stuff to come and we are looking forward to spending that time next week planning for that. Please feel free to be in touch and Sat Bir, until next time.

SPEAKER:

Thank you for joining and take care.