KIM WEEKS: It is Kim Weeks with weeks well. I have an wellness education and consultancy. I'm so glad to see everybody again. We missed you last week. I am part of the scientific research on yoga effort at Yoga Alliance and I'm joined as always by Doctor Sat Bir Khalsa. How are you doing Sat Bir?

DR. SAT BIR SINGH KHALSA: I'm doing great. Is it hot there like it is here?

DR. SAT BIR SINGH KHALSA: We are getting a mini heat wave in the next few days.

KIM WEEKS: It is hot. We are so happy to be coming back to you with the same format we have had with the previous, well it is going on for months now, of these Zoom lives on the scientific research on yoga and a certain topic that we have brought a focus to with respect to how we can help people as best we can during this wretched pandemic and all of the issues that we face cross-sectionally, intersectionality and around the world. Today we are so happy to see so many of you logging in and saying hello. Because obviously the scientific research on yoga and trauma is a huge topic. But those who are just joining, I know we have a considerable higher number coming today then we have had toward April and May, I just want to make sure if you're joining for the first time, hello. We are so glad to have you and so glad to see the returning students. For these sessions Sat Bir will give a 20-30 minute PowerPoint presentation in which the screen goes dark and he schools through the PowerPoint teaching us about the signs that lies behind not just trauma and PTSD, you will notice a big focus on PTSD today. Anyone who knows trauma or works with trauma understands the relationship between trauma and PTSD. Sat Bir will continue to talk about that throughout. When he is finished with this presentation, we will start fielding questions from you. Number one, any time during his presentation please feel free to send a question to the Q and A. Certainly continue asking as we start to moderate the questions.

Secondly, we have instituted a real cool function on Zoom which is the up vote. You can up vote questions you see that interest you and it will rise literally to the top of the chat box. When we did this for a while in the beginning we were not able to do it. I look forward to your questions. I have many as well.

A quick note about the scientific research on effort at Yoga Alliance. It is gaining momentum and a lot of steam thanks to you, thanks to your interest, thanks to your questions and emails to research at Oregon -- Yoga Alliance.org. Tell us what you want to know more about. As a Sat Bir will show you later on in the presentation our website@yogaalliance.org has a science section and it. It is under about us@yogaalliance.org. There are 26 total categories of studies of categories of research that have been done. We will talk more about that as the presentation goes on but I want you to know about it and be able to go there and ask questions about it if you have any because the citations, the research studies that lie inside each of these 26 categories have been so helpful for all of us as we work at Yoga Alliance to bring this information to you, but I've heard from you that the citations are really helpful also because now you feel more empowered to read and understand them. More empowered to ask the questions that will get the answers that will be able to help you take this newfound knowledge. If you will this intersection between your internal experience at yoga and the external data that is now been researched and shown together. You can go into a class and have a language and really learn about this language and how to teach people new to yoga, used to yoga, getting back on the wagon with yoga. Whatever it is. We are just here to give you more information about the science. Sat Bir I look forward to hearing what you have to say. I enjoy doing this video with you. Our video from Yoga Alliance on yoga and PTSD is coming out soon. Sat Bir really breaks down the topline things you need to know about the scientific research on yoga.

Today he will get really into the details and we look forward to your questions on the other side. Without further ado,
Sat Bir I can't wait to see what you have to say.

DR. SAT BIR SINGH KHALSA: Thanks very much, Kim. Welcome everyone. In terms of the research that has been done in the most clinically significant manifestation of that is a disorder we now have come to understand as post traumatic stress disorder. This is all on a spectrum. People will have traumatic experiences that will resolve quickly or they can develop posttraumatic stress disorder which in many individuals can be a lifelong phenomenon.

I'm going to go ahead and share my screen and get PowerPoint started here. I think it's interesting to provide a little bit of a historical background. Posttraumatic stress disorder like many psychological conditions is not recognized and defined as any other psychological conditions like depression and anxiety until well into the 21st century.

This is one of the obvious manifestations historically was set in World War I a lot of soldiers were being traumatized by that conflict. They called this shellshock for lack of a better term and did not understand the nature of it.

It did not change that much. Impact some of you who have seen this famous movie patent with George C Scott playing patent. He was visiting a hospital and came across soldiers who were not physically wounded but obviously suffered from posttraumatic stress disorder and he slapped them both and called them cowards. This was a dramatic thing but even at that point time there was some degree of understanding this was potentially a disorder and he was told to apologize.

It has become well understood and well recognized as a discrete phenomenon and disorder. You will see more recognition of it in the public. This is covered on Newsweek using. The idea of coming up with new to help cope with this disorder. There is a US stamp now. It has been mentioned in the current pandemic when we have many healthcare workers who are under traumatic situations and starting to experience symptoms of trauma.

We actually now have a number of sites, you can go on any of the government sites, the CDC center for disease control, the national Institute of health for the World Health Organization and they all have adequate descriptions and discussion about PTSD. One site that is nice is the national Center for PTSD which is hosted by the US Department of Veterans Affairs.

You can go on the site and there is a lot of resources here. Videos, treatment recommendations. It is a common disorder about 7-8/100 people were 7-8% of the population have PTSD at some point in their lives. About 8 million adults have PTSD in a given year. This is only a small portion of those who have gone through trauma. About 10/100 women develop PTSD. That is about 4% for men or four out of hundred.

There's a research conference annually that goes on talking about bringing together scientists at the international trauma conference. It is hosted by one of the leaders in the field who is well known in this area Bessel Van Der Kolk. He is of the trauma research foundation that supports this conference and is one of many treatment centers now who are interested in treating patients with post traumatic stress disorder.

Let's talk about post traumatic stress disorder. There are diagnostic criteria. The diagnostic criteria are basically saying when you reach the point where this is clinically significant? It is an arbitrary cutoff because people will have symptoms of trauma that do not necessarily need this, nevertheless, they are suffering. This is sort of the criteria for the formal diagnosis.

First of all, it requires exposure to a traumatic event that involved or held the threat of death, violent or serious injury. The first criteria, of course, is if you experienced the traumatic event or you could have just witnessed in person the traumatic event. You do not have to be the actual subject involved. The other thing is you can get it indirectly. So learning that someone close to you experience or was threatened by the traumatic event could also cause this. The other thing that has come to the floor for recently is the whole idea of exposure to smaller traumatic events or exposure to graphic details of traumatic events on an ongoing basis and generate trauma. For example, paramedics who deal with traumatic situations on an ongoing basis and of having a higher incidence of PTSD.

The symptoms are very discrete and very noticeable. In order to qualify for the criteria you have to have one or more the following science. You relive the experiences of the event, images or memories. You have upsetting dreams or nightmares about the event. The flashbacks occur as though they were experiencing the event live. There is a sense
of timelessness as though the event is happening in time right now. That is really interesting and really addresses some of the aspects of the neurophysiology disorder. And then also ongoing or severe emotional distress or physical symptoms if something remind you of the event. People can be triggered easily to have a flashback or an event.

In terms of clinical criteria, for more than one month after the traumatic event. You avoid situations because they remind you of the event. You don't remember important parts of the traumatic event so memory is impaired. You view yourself, others in the world in a negative way. It is impacting your global view. You lose interest in activities and feel detached from family and friends. There is emotional numbness irritability or angry outbursts. Dangerous or self-destructive behavior. Constant vigilance. There is a sense of hyperarousal. You are always on guard innocence and startling easily as a part of that. It can affect your sleep and also your cognitive performance. These symptoms will cause significant distress or interfere with your ability to go about your normal daily tasks. This is the important part. This is when any kind of psychological condition becomes really significant -- significant when it starts to interfere with your life.

There are treatments for PTSD. These are the conventional treatments. It has comprehensive listing. It includes what we are going to talk about today which is some of the reference to treatments like yoga but the conventional treatments are really psychotherapy which is really addressing the cognitive feature in other words treating PTSD is a psychological condition, a mental condition. There are a number of these. These are trauma specific therapies. In other words, and some of these therapies you are talking about therapy, and to some degree may be reliving the therapy. The other approach that has been used conventionally has been the use of medications typically antidepressants.

If you look down here in terms of effectiveness you can see where there is improvement to be had. Only slightly more than half of the psychotherapy treatments are taking people out of PTSD and less than half for medications. So there is room for additional, need for additional treatment for posttraumatic stress disorder. Meditation of course is cognitive therapy in a number of studies have shown that meditation has efficacy for trauma and treatment of PTSD. This is a paper published in 2018 and is a growing area of interest and you can read the full paper here at the link at the bottom of the page and from this paper they've got a model which shows which aspects of PTSD weathers rationale from meditation addressing.

Intrusion symptoms, intrusive thoughts, focus of attention, potential bias if you will be active in terms of addressing that. Avoidance is a characteristics of PTSD, reduced additional bias to trauma stimuli and if you have seen previous webinars you know yoga meditation practices can generate improved cognition altered stress repressed thoughts.

Then there is disassociative responses or people with PTSD are associated with their bodies to a large degree and engage in physical activity less than people without PTSD. One example of a number of research studies that have been done a meditation for post traumatic stress disorder's by Joel Borman looking at repetition of mantra and practice of meditation in the tubers of the left represent two measures of post traumatic stress disorder and this is the PCL and clinician administered PTSD CAPS and you see the reduction in symptoms is significant compared to the control condition and a number of other characteristics that go along with PTSD is anger, quality of life, spiritual well-being and clearly another cognitive strategy meditation does have efficacy for PTSD.

What's interesting about PTSD although there are a lot of psychological symptoms there's a host of physical symptoms of anger or violent outburst, dangerous or self-destructive behavior, hyperarousal or you're constantly on guard earlier.

People can experience panic attacks which is shortness of breath, dizziness, sweating, nausea, raising her, disassociation, lowered physical activity. A host of physical symptoms such as muscle tension, chronic pain, headaches, stomach pain diarrhea, and neurological, respiratory and musculoskeletal and cardiovascular disorders and PTSD is not just a psychological condition, it is of mind, body condition.

This is a paper vessel van der Kolk wrote (Reads) interoceptive body oriented therapies can't directly confront a core clinical issue in PTSD: traumatized individuals are prone to experience the present with physical sensations and emotions associated with best. Of past experiences embodied in current physiological states and action tendencies in the trauma is rejected and brother. Scriptures century perceptions, movement, emotion and thought therapy may be most effective if it facilitates self-awareness and self-regulation.
He’s gone on to argue trauma is actually in body, his senior body as well as in your brain in a nearby so the most effective strategy would be a strategy not only having cognitive components this also addresses the physical aspect and there is evidence that conventional exercise has been shown to be effective for PTSD.

This is a journal published in 2019 (Reads) a narrative review of extant studies provides encouraging evidence that aerobic exercise interventions or as adjunct to standard treatment may positively impact PTSD symptoms.

To give you an example another aspect of Bali tension is, of course, relaxation in this look at breath regulation that slowed breathing practice compared with progressive muscle relaxation and but they found that both therapies had statistically significant improvements, so on both of these PTSD measures, GCL – see NPT S-T they had reductions in respiratory function, breathing has direct access to the automatic and hyperarousal symptoms so this whole idea of slowed breathing can reduce at hyperarousal and maybe a neck is him -- mechanisms using in the efficacy of trauma and there is a yoga practice which has been used in a few studies with trauma.

This went into wrestling was done in a study with tsunami survivors in southeast Asia in the pipe is therapy and found positive improvements in the PTSD score and the posttest was one week later which was really remarkable because many who have this disorder lifelong in here is evidence of the treatment dominated by breathing practices that can show benefits and is short as one week so in my vision there is real potential for breathing practices in a very powerful component in terms of improving trauma.

This is our logic model we show in all of these webinars enters evidence and research showing all the four components, physical, postures and exercise, techniques, election -- relaxation techniques have been show to have improvements in PTSD scores and so it makes sense if you put them altogether you should probably have better benefit of the physical level we improve flexibility, strength in mind and body connection.

Self-regulation is mostly through stress and equanimity in face of emotions and we know stress is severely disordered in PTSD patients and they have mood disturbances in the mind-body awareness is critical because people are dissociated from their bodies so you increase the mind-body awareness and improve that and bring them back into their bodies from that perspective.

I think there’s something to be said about the spiritual component from the elbow to help people change their perspective of life and, of course, through all of these components we see changes in global, human functionality and the ones having the most relevance for PTSD are the physical aspects, stress and emotion and let us turn to the scientific and clinical trial evidence and before that it has become something that has become very well known and popular certainly in the yoga community and this is the book The Body Keeps The Score and treatment can be effective as someone who worked with Doctor as a yoga teacher was David Emerson who have published these two books well-known in the yoga community as trauma-sensitive yoga in therapy

And Gail Parker wrote a book on restorative yoga and Daniel wrote a book on cognitive and behavioral therapy and I just pulled these books off of Amazon and there's many more. In terms of the clinical trial evidence this is 2018 review of mind-body interventions for PTSD followed by another 2019 review of mind-body or military veterans with post traumatic stress disorder and this is a paper in that international Journal of yoga therapy talk about yoga therapists handling of trauma and more recently in 2019 there was a specific paper Yoga as an Intervention… and in 2020 the Journal of trauma and disassociation and there is a growing interest in this area in a growing body of research and ongoing studies in this area.

Just to show you a few of these this is the most recent study published out of Doctor Bessel better cold -- Doctor Bussell's work and post treatment is also lower than the control group which had of the client by mid treatment and this is a study by my colleague Julie Staples conducted under the VA in New Orleans.

This did not have statistically significant improvements in the PTSD scale but they showed consistently improvements in hyperarousal measures and this is one of the best outcomes of yoga practice, ability to manage this risk system in PTSD. They also showed improvements in sleep score and also daytime dysfunction.

I laboratory was funded by the Department of Defense to conduct a yearbook trial post traumatic stress disorder in
our instructor was Jennifer Johnson and also a yoga therapist. And in the trial we had a single trial he had a number of veterans and we use clinician administered PTSD, which is the gold standard interview in stock statistically significant reductions by the end of the 12 week treatment period and they had both practices but he had to attend the classes and home precipice – by practice where they were to do it at home and for hyperarousal also show statistically significant reductions in hyperarousal had a sturdy -- had a pretty b change.

We also did on veterans with the same intervention and compared to the control group and on the four subscales reexperiencing hypo arousal also improvements in a self-report measure of PTSD show reductions over time and then have also looked at other measures, and this is another trauma scale, the impact of events scale and on exclusion, avoidance and hyperarousal we showed improvements in yoga in the dark ours compared to now change in the late ours.

This is another side looking at other aspects looking at mood state and sleep and you can see the improvements in positive mood and the decline in negative mood states so addressing the emotional problems and PTSD patients have an anxiety was reduced substantially in sleep also improved and is a major complaint of many people with PTSD succeed declines in insomnia in the index.

An execution of a study at the University of Toronto was the other intervention over eight weeks and you can see made in posttreatment the nova intervention in the dark hours dropping in the control group had no chains and we still used to stress improving and two measures of perceived stress scale and depression anxiety and stress scale all showing reductions in stress management over time.

The final study I was involved in was a combination of yoga and cognitive behavioral therapy in the therapy focus more on the thought and solve thought regulation process so there is an overlay between yoga and CBT because yoga does achieve some degree but CBT is very specific and has been use alone is a treatment proposed traumatic stress disorder in which you can see in the PTSD checklist a nice drop by posttreatment and that was maintained at long-term follow-up showing these treatments last and that is important because you can get short-term gains that might revert back to original symptoms but it's important to do follow-ups.

I wanted to and with personal experiences of some participants. One participant the trial that we ran with yoga and veterans and there are some interesting characteristics. He said (Reads) I was nervous, I didn't know what it was going to be about…I thought this was going to be nothing…I was going in for the money because it was a paid thing, but I too was something beautiful and was very useful.

This follow said there is free cash I may as well do it. It was beautiful. I loved it and felt full of energy that did not feel stressed out. I felt very motivated and after the first week I was really into it in my blood was flowing, hardly better and I was doing it at home and brought to my stress level a lot and I was more focus and understanding. My temper came down a lot, I got flexible, and lastly, my belly went down and I lost 10 pounds. If you do these yoga practices they have effects, they change your brain and your body. Regardless of what your belief is as long as you do the practice you get the benefit. The other thing that is peppered throughout these quotes in these two paragraphs the idea is changing both the body and the cognitive functioning or the emotional function.

A study done in Toronto specifically did a qualitative analysis on a lot of the participants. I categorized in cherry picked some of these that addresses the corporate components we talk about in our model. Physical fitness, self-regulation, mind-body awareness or mindfulness in the spirituality component. These are quotes from actual participants in the trial. And the pastor was consumed by emotions. With yoga, I could breathe in link my body and mind. I could feel my legs shaking at times, my arms aching. For the first time, I could sense my brother. I noticed that with this yoga overall I felt better afterwards. Everywhere in me. My mind and body. This highlights the whole physical component of PTSD. It is a mind-body disorder. When you address the body you get this kind of improvement.

In terms of self-regulation I would say my biggest benefit is I have been more emotionally balanced. Often after class, I would feel really b and balanced and really, really alert. But like deep calm. I would be able to return to that feeling the days I was in class. As you practice over time, the self-regulation improves the skill.

In terms of mind-body awareness, I would be more aware and think more clearly how to best respond. Out we do that I would feel really peaceful after inches people to work with my emotions and experiences in a healthier way.
And then finally you do not expect much change in terms of an eight week intervention in spirituality but here's an interesting quote. "With yoga, I had a connection of mind, body and spirit. During the practice when you become aware of those three things are be aware of them, it seems like things are more possible. I had more piece. The idea of finding increased peace of mind. I mean what could be richer than a sense of you know, spirit, my spiritual self."

Clearly I think there is a lot of potential for yoga as a treatment for PTSD and it is great to see there are a number of studies ongoing for studying the benefits of yoga for posttraumatic stress disorder.

The one quote that I think really stands out for me is this one here from that same study. "Psychotherapy is very emotionally taxing because you have to rehash and rehash and bring it up again, the trauma. I stop going to a psychotherapist because I did not want to talk about things anymore, and that's what I liked about this because I did not have to talk about those things. Because that can get exhausting. And it read traumatizes. In this, you didn't have to rehash the story."

Here the mind-body practices are offering something the conventional psychotherapy practices do not. That is you do not have to talk about the trauma. You to the practices and the symptoms resolved. It is like happening behind a curtain behind closed doors. You do not have to talk about the trauma or relive it. That is actually something yoga may have over an advantage of psychotherapy.

I taking out to the Yoga Alliance pages. When you click on the about us that will take you to the research pages that shows appear and then you have three categories of research to look at, basic research, special populations of diseases and disorders. Altogether there are over 20 categories that we have research set up for. You can go and click on those and you will find the trauma under the other mental health conditions category and you can look at review papers and the links are there for either the full text of the abstract or you can look at a notable publication that is.

With that, and move it over to Kim and we will take some questions.

KIM WEEKS: Even a week break and I did not forget, I promise. It is such an honor to be with all of you and to see these questions and read the insight, sensitivity and reflection into the questions you asked. We are going to do our very best to answer as many as possible and before we do want to just let everybody know about what we are doing in July.

I have been saying for weeks, weeks and weeks now please email us and tell us your ideas. We opened the chat box up several times and tell us what more you want to know. I am so grateful for the emails for research@Yoga Alliance. As our team huddles to figure out the best way to continue to present information like this to you for the rest of the year we are taking July keeping in mind people's vacations and the disaster we are all in any way to change it up a little bit.

In July Sat Bir and I will be here on Zoom in this format two times. Today July 6 and July 20. Which is two weeks from today. In between those two times at this very time we are going to hop over to Facebook and post the two of us Sat Bir and I live with experts in the field with subjects Sat Bir has covered the weeks before.

You will see this all in the information and Patricia is letting you know as well. Today we are on Zoom and doing the same format that many of you have grown familiar with. Next week, same time different place, Sat Bir and I will be cohosting a panel. 1-2 people to present their practical applications and experiences relative to yoga and trauma. Relative to yoga and PTSD and then we will be taking your questions over there. We are still working on the panelist that will be with us next week. We are open to hearing your thoughts and what you would like to see in the group next week. I just want to let you know that is how we are going to do it. A lot of these questions we will follow up on even then.

Sat Bir, can I ask a question before we delve into the specific questions. Can you speak to the spectrum that you talked about before we went live that leads us from trauma to PTSD and how it is as you go professionals, yoga enthusiasts, yogis and dedicated yoga people. We can distinguish between understanding trauma and somebody's body and PTSD. I know you have the slides and I appreciate that so much but I want to put a fine point on that so
everyone attending can hear you.

DR. SAT BIR SINGH KHALSA: There is really no difference. Trauma is PTSD and PTSD is trauma. PTSD has drawn a line in the sand. That line in the sand says about this line you have PTSD and below the sign you do not have PTSD. If the PTSD score, let's say for example is 100, and above 100 you have PTSD and below you have just trauma. The poor guy with 99 and the guy with 101 they are pretty much living the same disorder.

So PTSD really is the clinical criteria. It is there to sort of point to something that deserves a clinical attention because the criteria for that really the major one really is it interfering with your life. People can have mild traumatic experiences which do not interfere with their lives and a lot of the small traumatic experiences resolve themselves after a month or two. That is like other psychological conditions like insomnia or depression. These things can come and go.

But when you get to the situation where it is there all the time and it is interfering with your life in a major way, that's important and that is why we need that sort of diagnostic criterion of PTSD. When you do a study it's more difficult to study amount condition because number one, these things resolve on their own. So was the treatment effective or did it resolve on its own? You do not know the answer to that. You need more room to grow in terms of the room to improve is what you really need in a clinical trial. So with post traumatic stress disorder you have that sort of marker. This is a really severe condition and therefore it's much more room to improve as opposed to taking mild trauma where there is not much room to improve and much more difficult to measure statistically.

But really it is all part of a specter. It is all a gray area. Trauma starts with the traumatic event and that is where trauma is from. Regardless of what kind of event that is whether the sexual trauma, war, poverty or COVID and then moves up in terms of severity and how people respond.

KIM: We have some questions about COVID we are going to get too. Fascinating question it's such a good one it may be difficult to answer but it is worth it in my opinion. And by the opinion of a lot of up votes as well. This questionnaire has read meditation can increase stress and trauma and loss it teaches you, the meditation technique itself for the meditation techniques, how to deal with the thoughts that bubble up that interfere with your focus. Are there any studies on trauma being re-triggered if the meditation technique does not did -- teach how to deal with the thoughts bubbling up from the trauma?

DR. SAT BIR SINGH KHALSA: Apologies to the question because I think it's a nonsense question. Meditation by definition is the control of attention. It is the development of metacognition. I think what you're trying to meditating but not effective we meditating or taught to meditative -- meditative properly. This is the same problem we have in schizophrenia or psychotic disorders. People who say that meditation is counter indicated for psychosis. Because people can then start to focus their attention and they start to focus on the voices they are experiencing then they have a psychotic episode. So, yes, there can be adverse events if you do not practice the technique properly.

If you're practicing meditation properly you're not focusing and following the thoughts. You are letting them go. You are observing them and maintaining a distance from those thoughts. That is metacognition. You come to the understanding that your thoughts are just thoughts and you do not need to react to them. You can react to them less, you can even change those thoughts. That is metacognition. If you are practicing those thoughts appropriately you will get the benefit. Regardless of the style. Whether it's guided imagery, open focus or guided meditation or mantra meditation single point focus. These are all forms of attentional focus. So is cognitive behavioral therapy for that matter. That is what it's about. It's learning the process of controlling your thought processes and reacting to them differently. Understanding your thoughts are just thoughts and that distinguishing and that leads to the state of metacognition. As long as you are meditating and practicing CPT appropriately you will develop it and that should provide benefit.

KIM WEEKS: I thought the question was great and I appreciate the answer. And I appreciate you answering this way. You help us slice through the questions and get to the science. That is why we are all here learning from you. You address this some and I will say to this question Bessel's book talks about this a lot specifically childhood trauma and sexual abuse. The question is asking do you know of any more studies that have been done on yoga for trauma and sexual abuse especially when traditional therapy has not been effective?
DR. SAT BIR SINGH KHALSA: I am not sure the research has teased that apart. As you saw from some of the statistics only a fraction of people get benefit from conventional psychotherapy or from drug treatment. There are a lot of veterans who have gone through all kinds of psychotherapy on multiple drugs and they still have the trauma. There's anecdotes of those people getting into a yoga program and it works. There is no comparative studies yet looking at treatment failures from psychotherapy or treatment failures for medication and then looking at that. It's a great study. I think it is worthwhile because then that would even add to the positive benefit of yoga as an alternative or complementary treatment because it is doing something that modern medicine has failed to do which is resolve the disorder when conventional treatments that are dominant have not succeeded.

KIM WEEKS: Something I learned over the weekend as I was researching this if you look at the NIH budget in the $5.3 million set aside for cancer research and then you dig in and look at the handful of millions of dollars that have been certified for NCCIH and this is a shout out to everybody to let you know the more we talk about this and ask questions the more we get together as a community the more funding for stuff like this that will happen.

A lot of these questions that get asked are so specific they are two specific. They are great questions but we are just beginning to ask the questions what does yoga do. Somebody asked in the thing, I don't think it's been uploaded that much but how is yoga defined in these studies and you've offered plenty of information across this presentation for everything the more we learn the more we will be able to ask questions like this. I just want to say 5.3 billion to 11 million. I understand why but I think as we envision a different and new world we can try to manifest, a few more million dollars Do you recall what mantra was studied for PTSD?

DR. SAT BIR SINGH KHALSA: Everyone is asking what is the magic mantra, the greatest, fantastic most beautiful form of yoga. I don't think there is such a thing we haven't done the comparative studies. As I've answered the questions along to all of these webinars the only we can make his generalizations at this point in generalizations are number one, the style of yoga incorporated all four components of posture, breathing, meditation is likely going to have more benefit than to a yoga style that just as postures.

The more you get into yoga the more focus it is on personal development and growth and more than a yoga body and on another level it is personal preference and then makes a big difference because you know what feels good to you, if you go into one class with one focus in another class in a different focus you have different experiences and you will gravitate to one or the other and you experience what you benefit and adherence and practice goes along with that.

If you are going to a yoga class were told to go to and it's not resonating your engagement in the practice is going to be marginal oh it is time to go to yoga I guess I have to go and if you have a practice of yoga that resonates for you physically, emotionally it will resonate with you and you will want to go.

And that makes a big difference so is a question of having a traditional style with all the components but also engaging in a practice that gets you involved in UC yoga exercise studies have benefits so if you engage into the stuff are going to get benefits.

There's a fatal weakness in my body and that is if people actually have to do something and we have a medical system that convince the population the doctor is responsible for their health so give me a pill and I don't want to do anything and that is upside down and responsibility should be on individuals engage in practices that can help bring them back to normal function.

KIM WEEKS: So the bottom line is you don't know what mantra they used?

DR. SAT BIR SINGH KHALSA: People are allowed to select a mantra for mind-body medicine where they treat! Teach for brother practice a apical word that has meaning for you and it is a spiritual word having special meaning may get a benefit because your belief is engaged as well.

If you're Christian you pick a Christian mantra and if you are Muslim you pick a Muslim mantra and that gloves you to get -- that allows you to get engaged.

KIM WEEKS: I have never in my career as a yoga teacher and practitioner have never filled as still and calm and content in clean is after engaging in a mantra meditation in the Himalayas when I was there on a retreat and I did not
know what they were saying but I walked out feeling change for life and I have not in the same sense or at least how I remember it.

I want to do a quick shout out to a guy who is doing fascinating work up in Minneapolis and was you know, it's unbelievable, Minneapolis but thank God so I want to say as a medic but she's not a scientist but a psychotherapist and social worker so he's been doing amazing work around trauma stored in black people or Native Americans who experience trauma in this European dominated world and this person's is it in their DNA and he would say yes.

DR. SAT BIR SINGH KHALSA: You can't store it in your DNA and that sense because once an adult you cannot change your DNA, change or activity and PTSD is changing specific genes because bodily functions are controlled by specific genes but the one thing that you can maybe make a change in DNA from generation to generation is from the time of conception because the sperm and ova care that information and can be modified so there is some evidence of transgenerational stress that have is at time of conception and now you have an alter gene expression because the sperm gosh 13 makeup has been altered in subtle, subtle ways and that can make a difference in terms of creation of a new individual if you will who is now much more prone to stress.

This has been argued as something transgenerational in the World War II generation going to the next generation and it's an interesting idea.

KIM WEEKS: It is in on behalf of yoga alliance many of you have gone to some of these lives and we are offering some really good and maybe Tricia consent of link out to some other programs have coming up in July, but I'm thinking how important it is your teaching -- the genes learning to read express himself.

It was in the Disease Live and you want to speak to that for a moment because as we begin to see genes altered not congenitally we can also see that they can be altered, can actually change their expression through mindfulness meditation, and yoga

DR. SAT BIR SINGH KHALSA: It is measuring the activity of genes and how genes are expressed. You've got a gene for every function in the body. There's genes that control insulin in the stress response and those genes are going to have altered activity genes have not change, but their activities have altered so what we have seen is that unchained expression with yoga practice we are changing the activity of the cheese, that are involved in the stress response are highly activated.

When people practice skill, their gene expression was reduced so the that -- gene regulation was down regulated and some teens were improved and functioning enhancing your immune function and is just a measure of all the biochemical pathways that influence gene expressions because there's many molecules in the body that directly impact on turning genes on or off at the most classic example that everybody knows if he spoke a lot of cigarettes you are likely to get cancer so your turning on genes that can produce a cancer tumor and that is gene expression and when you leave -- lead a healthy life and eat plant-based foods you can deregulate those cancer genes and it's like any other genes involved in PTSD. GIMs we have GIMs we have six minutes and we don't have a follow-up on some of the questions so please bring your questions over to Facebook and we grab in any way because we are continued to move toward launching a blog and we see all these amazing lack potential topics the two questions I want to get is on children and yoga for children in trauma, but even before that because I think will be able to do too, this whole idea with COVID and this person chatting it is a psychologist and yoga teacher teaching in a PTSD complex at UCLA and all trauma is together and COVID falls into this category.

Other resources available yet for treatments and if so are there any tools to assess impact if the PTSD criteria is not met?

DR. SAT BIR SINGH KHALSA: You can complain about the symptoms of trauma and they aren't of PTSD necessarily and you don't have to meet the bona fide criteria of PTSD to be suffering significantly so you can get treatment and I don't think the trauma caused by COVID is different than trauma from anything else like sexual assault, racial disparity, more in this the same phenomenon in your whole stress response system has been dis-regulated, completely out of breath, is been overwhelmed essentially.

There is this thing called resilience that's invested in the stress response system and is possible to improve her
resilience so two people going into the same combat situation one will experience trauma and one will not have trauma and desperately due to personality Doug, childhood upbringing but also due to their own internal resources and their ability to cope with stress in their tolerance and resilience to stress.

So one's person's range with what they can tolerate is within the range and the other persons is not and that is when the system is overwhelmed and they come up with PTSD and that ties into the whole idea of children. Their b research on adverse childhood experiences and what happens with people who have dramatic or high stress experiences if they don't get resolved they end up being lifelong risk factors for continued stress or trauma and that is basically the whole system is this regulated on a chronic, permanent basis and that is what happens in PTSD, Vietnam veterans are walking around experience aspect experiencing what they did in 1970 and it is possible to resolve that these techniques and therapies. GIMs with respect to children Jim in he had great videos Gama

SPEAKER: Talk about specific guidance or ideas he would have for several people who have as how to help kids going to trauma and kids and teens in and outside of school.

DR. SAT BIR SINGH KHALSA: Is a clinical question and I do not know the answer to that and I don't know of any studies that have been done certainly with mind-body practices and I am not familiar with the literature and unless a specific population is habit I'm just not there in terms of my expertise so I will have to defer that to an expert.

SPEAKER: We will make sure! Note Yvette at Yoga Alliance Ubuntu keep offering this information to help elevate the conversation and to make more intersectional in a more inclusive conversation and more effective for our practice and not just for ourselves but for the world and obviously the world needs yoga right now. It never did and but it does not appear is always such a delight to be with you and we will miss you later this week but we decided to do this month is way and see if we can widen the circle a little bit and change it up with terms of medium so we are on Facebook next week Monday at 12 o'clock and bring in a couple of people to perform a panel so they can speak and present and we can answer those questions from here and those questions there. So we loved having you. So much and we will see you in a week and Facebook. Bye.