

## Mindful Touch: A Guide to Hands-On Support in Trauma-Sensitive Yoga

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***[Trauma-informed, yoga-based] touch has literally given me a chance at life. For most of my life, I have isolated myself, not trusting anyone and fearing connection and touch. There are no words for the profound changes I am experiencing. I am becoming the person I had only dreamed of, living life instead of existing."***

- Student, trauma-informed mind-body (TIMBo) program

The fast-growing and increasingly influential field of trauma-informed yoga generally discourages the use of touch in yoga classes, considering it ill-advised and even damaging. My 11 years of experience in the field of yoga and mindfulness practices for trauma survivors contradicts this strongly held and widely shared belief. After years of listening to students and evaluating feedback, I've gained significant insight into how and why touch can be profoundly healing, as well as an important component of trauma-informed yoga offerings.

In 2006, I founded YogaHOPE, a nonprofit dedicated to sharing healing yoga practices with women navigating challenging life transitions in the wake of traumatic events such as domestic violence, homelessness, drug addiction, or sexual assault. In 2009, I developed the TIMBo (trauma-informed mind-body) method, a simple, accessible, and highly effective research-based program for women recovering from trauma. YogaHOPE has implemented TIMBo successfully in diverse locations including prisons, homeless shelters, rape crisis centers, substance abuse treatment centers, and public hospitals in the United States, as well as among women living in Haiti, Kenya, and Iran.

These experiences—along with years of studying research exploring the relationship among human connection, trauma, nurture, and touch—have enabled me to understand that it's not the variety of touch that matters but rather its intention and quality. Our 100-hour TIMBo training simplifies the repertoire of touch used by our yoga teachers and facilitators to just three simple, safe, and supportive modalities: touch on the back of the heart, touch on the soles of the feet, and touch to the head. This simplification aligns with our overarching focus on what enables the experience of touch to be maximally nurturing, healing, and empowering. Primary factors that we have found to be most important in this regard include the quality of teacher/facilitator presence and intention, along with their facility with nondirective and choice-based touch.

With proper training and understanding, I believe that yoga teachers can incorporate safe, supportive, and mindful touch into the trauma-informed yoga classroom in ways that are powerfully healing, positive, and effective. This paper introduces the scientific theory and research supporting this understanding of touch, and it explains the significance vis-à-vis the neurobiology of trauma. This paper also offers concrete guidelines and best practices for trauma-informed yoga teachers interested in exploring this method in their work.

### Touch, Survival, and Growth

Human touch is necessary for the survival of the species (Ardiel & Rankin, 2010). In fact, some scientists believe that human connection is our most critical survival need. In *Social: Why Our Brains are Wired to Connect* (2013), Dr. Matthew Lieberman makes a compelling case that “food, water, and shelter are not the most basic needs for an infant. Instead, being socially connected and cared for is paramount. Without social support, infants will never survive to become adults who can provide for themselves.” And as every involved parent or caregiver knows, in the earliest years of our lives our sense of social connection is registered largely through physical touch.

Human touch as a survival need was never more evident than when Mary Carlson, a researcher from Harvard Medical School, observed an overcrowded Romanian orphanage where row upon row of babies were lying neglected in their cribs. The staff was so overworked that babies were rarely touched, even at mealtime. These children, Carlson discovered, were dying at an alarming rate.

Once the orphanage workers were told to hold and touch the babies (and did so), the death rate dropped significantly. Today, gentle massage is routinely offered to premature babies in hospitals to help increase growth and reduce stress (Asadollahi, Jabraeili, Mahallei, Jafarabadi, & Ebrahimi, 2016).

The benefits of touch extend into childhood and adulthood. In schools, students who receive friendly touch are more likely to participate in class. Adults are more likely to give something if touch accompanies the request. Receiving nurturing touch can support healthier eating choices (Field, 2010). In hospitals, supportive touch has been shown to help the healing process. It has a positive effect on patients’ capacity for pain management. Research demonstrates that

touch interventions may benefit critically ill individuals and improve clinical outcomes (Papathanassoglou & Mpouzika, 2012).

We instinctively understand that a simple touch on the shoulder or hand to the back can communicate compassion from one person to the next. Research shows that supportive touch produces more cooperation among groups of people working together (Hertenstein, Holmes, McCullough, & Keltner, 2009; Kraus, Huang, & Keltner, 2010). This makes sense, as friendly or nurturing touch releases the brain chemical oxytocin, which helps us feel more trusting and trustworthy. This enhanced capacity for trust supports the development of healthy interpersonal relationships and social-emotional well-being (Kosfeld, Heinrichs, Zak, Fischbacher, & Fehr, 2005; Heinrichs, von Dawans, & Domes, 2009; Zink & Meyer-Lindenberg, 2012).

In the brain, touch promotes neurophysiological responses that release chemicals and neurotransmitters that help reduce stress, pain, and depression. In the body, touch stimulates the vagus nerve in ways that help reduce stress and enhance immunity (Kerr, Wiechula, Feo, Schultz, & Kitson, 2016).

### Neurobiological Wiring

If touch is so vital for human survival and growth, why is its use in trauma-informed yoga so widely rejected and controversial? Answering this question requires taking a closer look at trauma and the changes one might experience as a result. With this deeper understanding, it becomes evident that touch has the potential either to help or harm a trauma survivor. Our work as yoga teachers is to maximize the likelihood of helping. I believe this is entirely doable, if the teacher is comfortable with the process and ready to learn and practice appropriate guidelines for safe and supportive touch.

To understand the impact of trauma on the brain-body system, it is useful to think back to the Romanian orphanage. While observing the babies in their cribs, what struck Carlson was the silence in the nursery. There was no crying, no babbling, not even a whimper. Upon physical examination given at age two, Carlson found that the babies had unusually high amounts of a stress hormone known to cause brain damage and, in some cases, death (Carter, Lederhendler, & Kirkpatrick, 1999).

Hundreds of babies were silently suffering in their cribs. It is heartbreaking to imagine the thousands of infants who died soundlessly due to severe deprivation of nurturing touch. When we consider that these children remained silent while being stressed to the point of death, we can also marvel at the human organism's ability to adapt to its environment (McEwen, 2010). From the moment life begins, human beings have a remarkable capacity to assess the safety of our environment via sensory input and literally wire our neurobiology in response. This ongoing assessment and rewiring has a direct influence on our behavior and capacity for social engagement (Porges, 2009).

When the babies in the orphanage found that crying out for comfort (a human infant's natural behavior for getting his or her survival needs met) was futile, their neurobiological systems increased the sympathetic survival (fight, flight, freeze) response. This, in turn, decreased their capacity for social engagement. Those who survived this intense and ongoing trauma, research showed, experienced long-term attachment disorders (Bifulco et al., 2006).

### Touch Aversion

Impaired social engagement, decreased social-emotional health, and increased social anxiety result in an aversion to, or unhealthy relationship with, human connection through touch. A self-perpetuating cycle of personal disconnection and social exclusion reinforces feelings of unworthiness and mistrust. In the process, aversion to human connection through touch is continuously reinforced.

When touch is absent or unwanted during our developing years and beyond, our neurobiology codes touch as threatening. While originally designed to support our body's survival system, over time these internal wirings may become maladaptive. Even after our personal circumstances change in ways that might allow for a much higher level of healthy human connection, our aversion to touch may persist. Due to earlier internal patterning, we may instinctively correlate any type of touch with feelings of terror, helplessness, and powerlessness. This deeply ingrained reaction can cause our systems to override the feelings of reward, safety, and trust that experiences of caring touch would otherwise produce.

Often, our present-moment perception and reactions are informed by a past experience. In the case of trauma specifically (Schoore, 2002), we can lose sight of our

present-moment reality and become lost in a cycle of reacting to our own internal sense of fear and terror. This is precisely why trauma-sensitive yoga teachers often (wisely) avoid touching students. It is also why the creation of a safe environment and adhering to best practices is a priority for facilitators of the TIMBo program, which is designed to minimize the likelihood of students' losing connection with present-moment reality.

### Decreasing Reactivity, Increasing Connectivity

Happily, research suggests—and years of experience in the field confirm—that we can change such deep patterning concerning how we perceive and respond to touch. Teachers and mentors engaged in yoga service are using mindfulness practices to support trauma survivors in becoming more aware of—and comfortable with—their internal body sensations. My own personal experience, work, and study strongly suggest that these practices hold the key to helping trauma survivors positively renegotiate their perception of touch. Providing tools and support that enable trauma survivors to increase their internal awareness of how they respond to touch, while at the same time decreasing reactivity and increasing a sense of safety, allows their neurobiology to rewire once again, this time in ways that allow for a positive experience of nurturing touch.

When we create environment in which the risk of perceiving touch as threatening is minimized and students can choose whether to receive the nurturing touch that is offered, we develop new opportunities for them to experience touch in ways they may have never experienced before: unconditional, supportive, and healing.

The implications of this are far-reaching. When we accept touch as supportive and nurturing, our body's stress response is downregulated. We experience increased vagal tone and parasympathetic activation. Our bodies naturally produce more oxytocin and opioids (Jakubiak & Feeny, 2016). All of this plays an important role in increasing social, psychological, and physical well-being. As one TIMBo student explained:

*[The classroom] touch enabled me to feel safe enough to allow into my body a new and profound positive experience of being touched. That in and of itself is tremendously healing and opened a pathway into my body that had been blocked for decades.*

The trauma-sensitive yoga field is right to recognize that touch is a powerful tool in the yoga classroom. What has not yet been adequately recognized, however, is that the power of touch should not be seen solely in terms of its negative potential. Touch is vital to human growth and development, and it can be profoundly healing. Integrating the healing power of touch into the yoga classroom has enormous positive potential. Utilizing it safely, however, requires being personally attuned with the method and receiving appropriate training and support.

## A Safe Environment

Everyone has a personal life narrative that lives in one's body. How that narrative interacts with the current environment plays a primary role in determining our sense of safety. No matter how trained or experienced, yoga teachers are likely never to know the degree of safety felt by each student in their class. As teachers and guides, we must acknowledge that safety is an individually felt experience.

This internal experience shifts and changes, however, as interpersonal trust and classroom predictability are established. As students' sense of safety increases, they are more likely to make choices that carry more risk—such as electing to receive touch. Here's an example of what that might look like in the context of a trauma-sensitive yoga program:

*A local homeless shelter has been offering a trauma-informed mindfulness and yoga program twice a week for the last seven weeks. The group is closed (no revolving door). The classes are structured and predictable. After the fifth class, the instructors began to offer touch during the yoga portion of the class.*

*At the start of each class, the instructor has all students close their eyes and raise a hand if they prefer not to be touched. The touch that is offered in class is simple, supportive, consistent (and therefore increasingly predictable), nondirective, and noninvasive.*

*Ellen, one of the group members, regularly opts not to be touched. Her instructors have noticed that she carefully observes the class while participating in it. After seven weeks of studying how, when, and where touch was offered, Ellen opted in.*

*This was an important moment for Ellen. She made what felt like a risky choice, but not before minimizing the risk as much as she was able to by gathering as much information as she could. She had the time she needed to determine her own level of safety.*

Ellen was able to make a meaningful choice that maximized safety and potential healing benefits because of the environment that was created. Without it, she would most likely never have opted to experience touch and would've been less prepared to have a positive experience with it if she had.

## Predictability Is Vital

Unpredictability is one of the most common contributors to the development of post-traumatic stress disorder, or PTSD (Foa, Steketee, & Rothbaum, 1989; Perry, 2007). This means that any sense of unpredictability in a yoga class may activate an encoded somatic response ranging from hypervigilance to dissociation among trauma survivors. These responses are not always avoidable and can actually be a part of the healing process, provided that the student is able to observe the activation with a sense of grounding and a curious interest (Thompson, Arnkoff, & Glass, 2011). But when the environment is unpredictable, it is much less likely that students can observe themselves with this sense of wonder (Grupe & Nitschke, 2013).

In a predictable environment where students know what to expect, they are less likely to experience activation and more likely to make some new choices—which can include the choice to sit with uncomfortable somatic trauma responses in the body. Creating this sense of predictability is an absolute must if you are planning on incorporating touch into your classroom. Important guidelines to follow include:

- **Keep your group closed (if possible).** Seeing the same faces each week for one, two, or three months helps students establish a sense of familiarity and trust. If possible, set start and end dates for your classes. After the first round of programming (e.g., eight weeks), register a new group and repeat your curriculum with a second closed group.
- **Ensure consistency of instructors.** Consider having classes taught by teams of two or three teachers who can commit to the full duration of the

program. If one instructor has a conflict, avoid replacing him or her with an unfamiliar sub.

• **Keep the practice consistent.** Though it may seem boring to you, sticking with a simple and predictable sequence will add a sense of predictability for students, particularly if your group is closed. Over time, they will feel more assured, confident, and safe through knowing what to expect from class. This increases the likelihood that they will be able to relax their minds and pay more attention to the sensations of their bodies without activation. This, in turn, increases the capacity for emotional regulation and prepares students to receive and benefit from healing touch (Craig, 2011; Farb, Anderson, & Segal, 2012; Allen et al., 2012).

### Build Relationships and Trust

Developing appropriate relationships and building a community of trust is important for any trauma-informed class. For a class that involves touch, it is an important precursor to offering that option to students.

Trusting and mutual relationships are built on a foundation of empathetic expression, which engages parts of the brain involving emotion regulation and social networks (Gu, Hof, Friston, & Fan, 2013; Stimpston et al., 2011; Hofmann, Grossman, & Hinton, 2011). In a closed group, you can try to connect empathically with your students through simple expressions of mutuality, such as “I can relate to that,” “me too,” or “I get it.” If your group involves discussion, you can create even greater mutuality and empathy by connecting group members to one another with simple prompts such as: “Who can relate to what is being described here?”

Creating opportunities for mutual and trusting relationships to develop contributes to students’ feelings of safety, which increases the likelihood of them choosing to accept touch. With time, this approach can help students move toward healthier relationships, both with others and themselves (Meyer-Lindenberg, 2008).

### Empowered Choice

As teachers, we can mindfully offer information that can help diminish the anxiety, disorientation, or confusion that can sometimes accompany a feeling of not

knowing. If your group is not closed, it is important to offer a very short and simple description of what to expect before the start of each class, with an emphasis on normalizing all classroom experiences. During all classes, it is helpful to let students know when there are one or two remaining breaths in a pose. This supports relaxation and a sense of safety in the body, as it may minimize the anxiety that can accompany anticipation.

If you are planning to offer touch, it is important to give students as much information as possible regarding what to expect at the start of class, perhaps even describing or demonstrating what the touch might be. It is vital that students have the opportunity to make an empowered and informed choice *for themselves* about whether to receive touch or not.

To support this capacity, students should practice making other choices in class before touch is introduced. Teachers can cue simple options such as having the eyes open or closed, exhaling with the mouth open or closed, lifting a leg up or not, and so on. Through making such choices, students can build confidence while beginning to trust that your class is in fact committed to unconditional acceptance and safety.

*Empowered choice* allows the student to make moment-to-moment decisions to either observe their bodily experience with a sense of curiosity and wonder, or to take action that counters trauma-induced feelings of powerlessness and helplessness. When students begin to make empowered choices in response to the sensations they feel in their bodies (even if those sensations are uncomfortable), they gain an awareness of their bodies that is empowering and healing. In the process, they enlarge their capacity to self-regulate, a vital resource that can be taken “off the mat” to help navigate the stresses and triggers of everyday life.

### Safe and Supportive Touch

Safe and supportive touch is simple, intentional, non-invasive, and nondirective. As such, it is generally quite different from the postural “assists” provided in traditional yoga classes. That said, it’s impossible to guarantee that touch won’t be perceived as invasive, despite our best intentions. But we can minimize the likelihood of this by maximizing opportunities for students to feel safe and supported.

Nondirective touch does not suggest to students that they should be doing anything different or moving under the direction of the touch. The intention is to help bring awareness to the student's *inner body*. In the TIMBo program, we have found that the greatest value of supportive touch is that students can become aware of their internal sensory landscape and observe how it shifts and moves within the duration of the touch. With nondirective touch, the student can take the time necessary to feel a sense of trust in their body—and this can take some time.

In contrast, directive touch (such as alignment-style assists in many traditional yoga classes) can sometimes bring trauma survivors into overly close contact with feelings of helplessness or powerlessness. This, in part, is why many trauma-informed yoga methods simply prohibit touch altogether.

This is unfortunate, as safe and supportive touch can be healing. If it is rooted in empowered choice and kept simple and consistent, students who opt to receive it can gradually grow their capacity to notice the feelings they have in their body before, during, and after the touch. Over time, the internal body response of the student will change—and the student will have the capacity to notice that change.

Such shifts have the potential to move their overall sensory and cognitive experiences of touch in a more positive, trusting direction, which can have a profound impact on their overall life. When a student has a new experience of trusting support, it is felt in the body and becomes a new somatic reference point. And as we know from the story of the Romanian orphanage, these new reference points can save lives (Kiamanesh, Dieserud, Dyregrov, & Haavind, 2015; Arditte, Morabito, Shaw, & Timpano, 2016).

### TIMBo Protocols

In the TIMBo program, we use only the following three forms of touch:

- ***Shoulder and back of heart (when standing).*** Mindfully approach the student with the intention of being seen or noticed (audible yogic breathing or placing yourself in his or her peripheral vision are some ways to do this). On your exhale, place one hand on the student's shoulder and one hand on the back of his or her heart. Try to make full palm contact without adding pressure. This will

help your touch feel supportive but not directive or aggressive. Breathe with the student while maintaining contact through the duration of the posture. Be very mindful that the hand on the shoulder is not too close to the neck.

- ***Soles of feet (when prone).*** While the student is lying prone, hold the feet so that you can make contact with the soles (e.g., place the thumb of each hand on the bottom of each foot while gently wrapping fingers around the top). Allow the student's foot to remain resting on the floor. (Do not lift the leg up.) Breathe into your touch. You are likely to feel the student's body relax a little more with each breath.

- ***Cradling head with hands (when prone).*** While the student is lying prone, sit comfortably behind his or her head. As you prepare to touch the head, rub your palms gently together so that the student can ready him- or herself for your touch. Place your hands on each side of the head somewhere above the ears, angling fingers toward the back/base of the skull. Breathe with the student for several minutes. Again, be mindful not to be too close to the neck or the face.

Contrary to massage-like movements, safe and supportive touch is touch that does not move across the body at all. By placing the hand on the back of the heart (for example) and breathing, we are allowing students to feel worthy of care. Because trauma survivors often have pronounced feelings of shame (feeling fundamentally flawed and unworthy of connection), this lingering touch can be powerfully healing as they recognize that they are not inherently untouchable.

### Comfort and Self-Care

It is important to make sure that you feel physically comfortable and supported before you place your hands on any student. If you are not comfortable and supported yourself, it will be more difficult to communicate comfort and support in your touch. Here are some tips for making sure you are comfortable.

- ***Choose wisely.*** Assess the height of your student, the accessibility of his or her body, and the touch options that you have in any moment to make the best moment-to-moment decision for your comfort. For example, if you are very tall, it will be uncomfortable for you to place a hand to

the back of a person significantly shorter than you. You can take a wide stance to find more comfort, or choose a different assist (perhaps hands on shoulders) or a different person. If you are heading to a student in Savasana, take a look at accessibility. Is there enough room for you either behind the head or at the feet? Squeezing yourself into a space that lacks enough room is not good for either one of you.

- **Ground yourself.** Make sure you are fully supported before you place your hands on a student. For example, if the posture is a standing posture, make sure that your stance is allowing you to feel fully supported by the floor so that you can focus your intention on the student and not be distracted because you feel shaky. If you are preparing to offer a head or foot assist, sit on the floor as opposed to crouching down. If you need a block to sit on to better support you, feel free to carry one around. Squatting or crouching can be bad for your body, and the lack of support minimizes your ability to be truly present for your student.

- **Practice nonattachment.** Offering nurturing touch to students can be a powerful experience for both the student and yourself. However, it is important that you notice if you are attached to any particular outcome. We are creating a space (both in the class and in the experience of touch) within which the student can access present-moment awareness. In order to truly facilitate that, we must fully believe it is enough. By attaching to an outcome, we run the risk of judging ourselves if our expectation is not realized. Once this happens, we can find it more difficult to trust that our presence alone can offer something powerful.

### Teacher Intentionality and Self-Worth

The intention that the teacher holds while offering safe and supportive touch is just as important as the touch itself. Once you mindfully create as safe an environment as you can, offering supportive touch provides an opportunity not found in our busy day-to-day lives: the time and space to help our students feel worthy of love and belonging, simply through the act of *being present*. The intention with which you offer touch will be personal to you, but a shift from *doing* to *being* is important.

An intention can be something that you set for yourself or the student. You can orient yourself toward your intention before you begin touching students, and reorient yourself any time during your time with the student. You can also silently repeat mantras to yourself such as “*You are worthy of love and connection*”; “*You can let go of fear, breathe, and relax*”; or “*I am offering you nurture and care*.” These mantras can help us remain with our intention, keep us present with the student, and override any feelings of judgment or doubt that we may have.

It’s important to be honest about how you feel in regard to touching students, including the beliefs you hold about yourself. The power of safe and supportive touch rests partly in the belief you hold that your students are worthy of love and belonging. But it also rests partly in the belief that you are worthy just as you are, and that your simple presence (e.g., a hand on the back of someone’s heart and your breath) holds in it a great offering. The experience of touch can be profoundly healing not only for your student but also for you, as you feel in your body the gift of feeling worthy.

### Alternatives to Touch

The idea of touching your students might stir up uneasy feelings. Honor those feelings and listen to them. This might not be a practice you are comfortable engaging in. If so, there are alternatives that offer similar opportunities to students and potentially more comfort to you.

For example, you can allow time in your class to support your students in touching themselves. Placing a hand on our heart, solar plexus, stomach, or throat can bring us into immediate contact with our bodily sensation. When you create a safe and predictable environment, students may feel more willing to make contact with their *own bodies* (which in some cases may be even more challenging than receiving touch from the teacher). With space and breath, this can be a powerful tool to help students experience all the benefits of nonjudgmental awareness of internal body sensations.

It is also a good idea to incorporate this method into class where touch is being offered. When students learn to place a hand to their own body, and connect with and breathe into and through their own internal sensations, they can recognize that they have a portable and easily accessible coping tool that can help them, anytime and anywhere.

## Conclusion: Touch in Trauma-Informed Yoga

As yoga teachers to survivor populations, I believe we have a duty to offer the most healing experience that we can to our students. After many years of training teachers and working with women around the globe, I've come to believe strongly that this ideally includes providing the option of nurturing touch. Yet, safe and supportive touch is rarely offered as a component in trauma-informed yoga classes and trainings.

Scientific evidence provides a glimpse into the many positive implications of touch; experience offers additional insight. When yoga teachers understand the role that touch plays in social, emotional, and even physical health, as well as how trauma can alter the experience of touch, they can create environments in which touch can play a vital role in supporting student agency, empowerment, and healing. The field, however, is fraught with contradictory beliefs concerning the use of touch, which render teachers anxious and unsure. My hope is that touch-focused trauma-informed trainings and classes will become more widely accepted and available in the field, as safe and supportive touch is healing for all humans on the planet.

## References

- Allen, M., Dietz, M., Blair, K. S., van Beek, M., Rees, G., Vestergaard-Poulsen, P., Lutz, A., & Roepstorff, A. (2012, October 31). Cognitive-affective neural plasticity following active-controlled mindfulness intervention. *The Journal of Neuroscience* 32(44): 15,601–10. <https://doi.org/10.1523/JNEUROSCI.2957-12.2012>.
- Ardiel, E. L., MSc, & Rankin, C. H., PhD. (2010, March). The importance of touch in development. *Pediatric Child Health* 15(3): 153–56.
- Arditte, K. A., Morabito, D. M., Shaw, A. M., & Timpano, K. R. (2016, May). Interpersonal risk for suicide in social anxiety: The roles of shame and depression. *Psychiatry Research* 239: 139–44.
- Asadollahi, M., Jabraeili, M., Mahallei, M., Jafarabadi, M. A., & Ebrahimi, S. (2016, September). Effects of gentle human touch and field massage on urine cortisol level in premature infants: A randomized, controlled clinical trial. *Journal of Caring Sciences* 5(3): 187–94.
- Bifulco, A., Kwon, J., Jacobs, C., Moran, P. M., Bunn, A., & Beer, N. (2006). Adult attachment style as a mediator between childhood neglect/abuse and adult depression and anxiety. *Social Psychiatry and Psychiatric Epidemiology* 41(10): 796–805.
- Carter, C. S., Lederhendler, I. I., & Kirkpatrick, B. (Eds.). (1999). *The integrative neurobiology of affiliation*. Cambridge, MA: A Bradford Book.
- Craig, A. D. (2011). The significance of the insula for the evolution of human awareness of feelings from the body. *Annals of the New York Academy of Sciences* 1225(1): 72–82.
- Farb, N. A. S., Anderson, A. K., & Segal, Z. V. (2012, February). The mindful brain and emotion regulation in mood disorders. *Canadian Journal of Psychiatry. Revue Canadienne De Psychiatrie* 57(2): 70–77.
- Field, T. (2010). Touch for socioemotional and physical well-being: A review. *Elsevier: Developmental Review* 30: 367–83.
- Foa, E. B., Steketee, G., & Rothbaum, B. O. (1989). Behavioral/cognitive conceptualizations of post-traumatic stress disorder. *Behavior Therapy* 20(2): 155–76. [https://doi.org/10.1016/S0005-7894\(89\)80067-X](https://doi.org/10.1016/S0005-7894(89)80067-X).
- Grupe, D. W., & Nitschke, J. B. (2013). Uncertainty and anticipation in anxiety: An integrated neurobiological and psychological perspective. *Nature Reviews Neuroscience* (14): 488–501. <https://doi.org/10.1038/nrn3524>.
- Gu, X., Hof, P. R., Friston, K. J., & Fan, J. (2013). Anterior insular cortex and emotional awareness. *The Journal of Comparative Neurology* (521): 3371–88.
- Heinrichs, M., von Dawans, B., & Domes, G. (2009, October). Oxytocin, vasopressin, and human social behavior. *Hormones & Social Behavior* 30(4): 548–57. <https://doi.org/10.1016/j.yfrne.2009.05.005>.
- Hertenstein, M. J., Holmes, R., McCullough, M., & Keltner, D. (2009, August). The communication of emotion via touch. *American Psychological Association* 9(4): 566–73.
- Hofmann, S. G., Grossman, P., & Hinton, D. E. (2011, November). Loving-kindness and compassion meditation: Potential for psychological interventions. *Clinical Psychology Review* 31(7): 1126–32. <https://doi.org/10.1016/j.cpr.2011.07.003>.

Jakubiak, B. K., & Feeney, B. C. (2016). Affectionate touch to promote relational, psychological, and physical well-being in adulthood: A theoretical model and review of the research. *Personality and Social Psychology Review* 1–25.

Kerr, F., Wiechula, R., Feo, R., Schultz, T., & Kitson, A. (2016). The neurophysiology of human touch and eye gaze and its effects on therapeutic relationships and healing: A scoping review protocol. Adelaide, South Australia, Australia: Joanna Briggs Institute, University of Adelaide.

Kiamanesh, P., Dieserud, G., Dyregrov, K., & Haavind, H. (2015). Maladaptive perfectionism: Understanding the psychological vulnerability to suicide in terms of developmental history. *Omega (Westport)* 71(2): 126–45.

Kosfeld, M., Heinrichs, M., Zak, P. J., Fischbacher, U., & Fehr, E. (2005, June). Oxytocin increases trust in humans. *Nature* 435(2): 673–76.

Kraus, M. W., Huang, C., & Keltner, D. (2010, October). Tactile communication, cooperation, and performance: An ethological study of the NBA. *American Psychological Association* 10(5): 745–49.

Lieberman, M. D. (2014). *Social: Why our brains are wired to connect*. New York: Broadway Books.

McEwen, B. S. (2010). Stress, sex and neural adaptation to changing environment: Mechanisms of neuronal remodeling. *Annals of the New York Academy of Sciences* 1204 (Supl.): E38–59.

Meyer-Lindenberg, A. (2008) Impact of prosocial neuropeptides on human brain function. *Progress in Brain Research* 170: 463–70. [https://doi.org/10.1016/S0079-6123\(08\)00436-6](https://doi.org/10.1016/S0079-6123(08)00436-6).

Papathanassoglou, E. D. E., PhD, MSc, RN, & Mpouzika, M. D. A., PhD, MSc, RN. (2012). Interpersonal touch: Physiological effects in critical care. *Biological Research for Nursing* 14(4): 431–43.

Perry, B. D., MD, PhD. (2007). Stress, trauma and post-traumatic stress disorders in children. *The ChildTrauma Academy*. [https://childtrauma.org/wp-content/uploads/2013/11/PTSD\\_Caregivers.pdf](https://childtrauma.org/wp-content/uploads/2013/11/PTSD_Caregivers.pdf).

Porges, S. W., PhD. (2009, April). The polyvagal theory: New insights into adaptive reactions of the autonomic

nervous system. *Cleveland Clinical Journal of Medicine* 76(2): 1–8.

Schore, A. N. (2002). Dysregulation of the right brain: A fundamental mechanism of traumatic attachment and the psychopathogenesis of posttraumatic stress disorder. *Australian and New Zealand Journal of Psychiatry* (36): 9–30.

Stimpston, C. D., Tetreault, N. A., Allman, J. M., Jacobs, B., Butti, C., Hof, P. R., & Sherwood, C. C. (2011). Biochemical specificity of von economo neurons in hominoids. *American Journal of Human Biology* 23(1): 22–28.

Thompson, R. W., Arnkoff, D. B., & Glass, C. R. (2011, September 8). Conceptualizing mindfulness and acceptance as components of psychological resilience to trauma. *Trauma, Violence & Abuse* 12(4): 220–35.

Zink, C. F., & Meyer-Lindenberg, A. (2012, March). Human neuroimaging of oxytocin and vasopressin in social cognition. *Oxytocin, Vasopressin and Social Behavior* 61(3): 400–409. <https://doi.org/10.1016/j.yhbeh.2012.01.016>.

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*Sue Jones created yogaHOPE to facilitate access to yoga and mindfulness education specifically for women experiencing debilitating life transitions such as establishing independence from domestic violence, finding self-sufficiency from homelessness, and recovering from drug addiction or sexual assault and trauma. yogaHOPE's powerfully effective TIMBo (trauma-informed mind-body) program offers a deliverable, research-based curriculum based on the ways in which mind-body practices allow for long-term traumatic stress recovery. The TIMBo program being offered throughout many service organizations in the U.S. as well as through peer support models in Haiti, Kenya and Iran.*

