



Integrating Yoga Practices into School Routines

Christina Pabers

Doctor of Traditional Chinese Medicine

Naam Yoga Teacher and Curriculum Developer

An abundance of research in fields such as medicine, exercise physiology, and neuroscience has demonstrated conclusively that activities like stretching, rhythmic and deep breathing, mindfulness and music have powerful impacts on physical health, mental stability, and emotional self-regulation. Activities like these are aspects of yoga that some public school educators have started using to improve learning and behavior in the classroom. These practices are particularly effective for supporting children and adolescents facing the effects of trauma and Post-Traumatic Stress Disorder (PTSD).

Alarmingly, almost half of all children in the U.S. have experienced one or more forms of serious childhood trauma, and nearly a third of adolescents have experienced childhood adversity to a degree that is likely to impact their health, physically and mentally, as adults (Stevens, 2013). These research findings are essential for educators, parents, and others with young people in their care to understand. Trauma affects the nervous system, hormones, and brain, disrupting students' capacity to learn and to regulate their emotions and behaviors. In other words, children affected by trauma and PTSD have physical and biological reasons for making poor academic progress and having difficulty with self-regulation. They need help in learning how to make adjustments that can enable them to reduce their level of excitement and achieve the state of calm attentiveness required for maintaining focused attention and learning.

It is also important to understand that the estimates noted above (i.e., the proportions of American children and adolescents impacted by trauma) are much too low, in some contexts. Since some communities are more deeply impacted than others by poverty, racism, crime, violence, home instability, food insecurity, and other deeply rooted social problems, the numbers of children affected by trauma will be much higher in these communities. Consequently, some schools will have a much higher percentage of children who need support in learning how to self-regulate and achieve the optimal learning state of calm attentiveness. The need to attend to this reality is nothing short of critical. According to Dr. Christina Bethel, "if more prevention, trauma healing, and resiliency training programs aren't provided for children who have experienced trauma, and if our educational, juvenile justice, mental health, and medical systems are not changed to stop traumatizing already-traumatized children, many of the nation's children are likely to suffer chronic disease and mental illness" (Stevens, 2013, para. 2).

Integrating Yoga Practices into School Routines

Christina Pabers

With this article, I hope to help bring more attention to the problem of childhood trauma and to encourage parents, educators, health practitioners, and other leaders in our region to work together in understanding and addressing it. More specifically, though, I advocate for the implementation of school-appropriate yoga practices as a promising intervention for supporting health and learning needs—not only of traumatized youth, but of all students (Beauchemin, Hutchins, Patterson, 2008; Kauts & Sharma, 2009). School-appropriate yoga practices have not only proven to be an effective intervention for traumatized youth in schools already using it (Emerson, Sharma, Chaudhry, Turner, 2009); they are also inexpensive, relatively easy to learn, and require very little equipment or technology. In a later section I will return to the promising potential of incorporating appropriate yoga practices in schools, after providing more background on childhood trauma, PTSD, and their impact on learning.

Trauma, Post-Traumatic Stress Disorder, and Their Causes

Trauma occurs when an individual experiences an event or a set of circumstances that are physically or emotionally harmful or life threatening, and when the individual perceives this event or set of circumstances as having a lasting, harmful effect on their mental, physical, social, emotional or spiritual well-being. Research has shown that traumatic experiences are associated with both behavioral health and chronic physical health conditions, especially those traumatic events that occur during childhood (Trauma and Violence, 2017).

Post-Traumatic Stress Disorder, or PTSD, is a state that results from experiencing a trauma that causes lasting physiological change to the nervous system, hormones, and brain chemicals (neurotransmitters). PTSD affects the brain's and body's response to stress, often making the afflicted person's daily life responsibilities difficult or even impossible to successfully complete.

The Center for Disease Control studies trauma resulting from adverse childhood events. These include physical, sexual, and verbal abuse; physical and emotional neglect; having a parent who is an addict or diagnosed with a mental illness; witnessing a mother experiencing abuse; losing a parent to abandonment or divorce; and having a family member in jail (Stevens, 2013). The National Child Traumatic Stress Network, funded by the Center for Mental Health and Human Services, examines the traumatic effects of community violence, domestic violence, medical trauma, refugee trauma, school violence, and terrorism. All of these occurrences contribute to the risk of developing PTSD (Hamblen & Barnett, 2016).

The Prevalence of Trauma and PTSD in Minors

Those making decisions on behalf of students should be aware that almost half of all children in the U.S. have experienced one or more types of serious childhood trauma. According to the National Survey of Children's Health (NSCH) and the Center for Disease Control (CDC), using 2011 data, an estimated 34,826,000 U.S. children (i.e., age 18 and under) had experienced one or more types of serious childhood trauma (Stevens, 2013). With 74,200,000 children living in the U.S. in 2011, 47% had experienced significant trauma (Stevens, 2013). Additionally, it is estimated that 5% of adolescents between the ages of 13-18 will meet the psychological criteria for PTSD in their lifetimes (Hamblen & Barnett, 2016). Clearly, schools across the country are serving a high percentage of individuals affected by trauma and PTSD. Given current patterns of school enrollment, in which U.S. children are more

Integrating Yoga Practices into School Routines

Christina Pabers

deeply segregated by socioeconomic status than by race (Morrison, 2016), it would stand to reason that childhood trauma impacts the great majority of youth in our nation's most impoverished schools.

The Effects of Trauma and PTSD on Learning

Learning requires many things, including the ability to attend to a topic for a prolonged period of time, the ability to self-regulate, an adequate level of emotional stability, co-operation with teachers and other students, consistency, and persistence. In short, learning requires self control (Busch, 2018). Unfortunately, adverse childhood conditions place the precious life-preparation years, when skills for self-regulation are most easily developed, at risk. Children who have experienced trauma, who continue to experience trauma, and who may suffer from PTSD are likely to have a difficult time participating effectively and consistently in the learning process.

As stated earlier, research has indicated that traumatic experiences are associated with poor behavioral health and chronic physical health conditions. Substance use, mental health conditions and other behaviors such as self-injury and risky sexual encounters are all linked to traumatic experiences. Those with PTSD can display symptoms of increased irritability and arousal, outbursts of anger, difficulty concentrating, hypervigilance, exaggerated startle response, increased development of conflict with people, alcohol and drug abuse, and being prone to isolation (Friedman, 2016).

As a child's body responds to trauma and stress, it generates changes in the nervous system and produces hormones that help the child to protect him/herself. While these changes might help to ensure survival, they make activities that require a sense of calm, like academic learning, almost impossible. Adrenaline and cortisol are two hormones that are produced in high amounts during stress and trauma. They help the body to have the capacity to fight or flee and may cause the individual to freeze as a final protective measure. Effects of adrenaline and cortisol not only affect digestion, vision, and blood pressure; they also increase stimulation of the legs and arms, making children want very much to move. Adrenaline and cortisol stimulate the parts of the brain charged with ensuring survival and reduce the imagination and the brain's capacity for abstract thought required for learning. Insisting that children perform academically under these physical conditions adds insult to literal injury.

Prolonged exposure to these stress hormones destroys brain cells and damages physical development. When these stresses happen repeatedly, the brain can undergo long-term changes that can affect the child even when they are in a calm state. Under stress, the brain is flushed with stress hormones that, long term, can be toxic to areas of the brain called the cerebellar vermis and hippocampus. Those parts of the brain are in charge of regulating cognitive functioning and converting short-term memory into long-term memory. Long-term exposure to stress hormones can also lead to reduction in brain size, lasting irritability, excitability, and hindrance in parts of the brain responsible for learning and behavior (Rossen & Hull, 2013, p. 25-26; Tsatsoulis & Fountoulakis, 2006, p. 6). This can affect a person's perception of their intelligence for a lifetime, causing them to believe they are inherently unable to learn, when in reality they were biochemically inhibited in their youth by stress.

Addressing Childhood Trauma: A Moral Imperative

In "Childhood Trauma and a Framework for Intervention," Margaret Blaustein (2013) wrote,

Allies for Education 2018, 1, 2

<https://journals.library.csuci.edu/ojs/index.php/afe>

Integrating Yoga Practices into School Routines

Christina Pabers

It is likely that a significant proportion of children in the classroom, nationwide, are experiencing the effects of past or present trauma or PTSD. As a nation of abundance and high moral values, we need to be actively finding ways to support children and adolescents during this important time of intellectual development when the quality of their future depends upon the progress they make in these years (p. 7)

Eliminating the problems that lead to widespread childhood trauma will require large, long-term changes in many realms of society, but school-based steps can be taken almost immediately to support traumatized youth. Yoga and meditation programs offered in public schools are increasingly employed as both a form of exercise and as a modality for helping children cope with stress. It must be noted that the American Psychological Association (APA) and conventional medicine indicate that psychological treatment should be provided for individuals who suffer with PTSD and the effects of trauma, but resources are simply not available to adequately address the numbers of children and parents affected. Schools represent opportunity, in this consideration of the public good as in so many others. Schools are where children and adolescents are. Instead of holding educators and children responsible for “accountability” (to the near-exclusion of other concerns actually having to do with teaching and learning), our educators and schools must be supported as the primary context where traumatized youth can learn the strategies they need to reduce their level of excitement and achieve the state of calm attentiveness required for maintaining focused attention and learning.

From my medical perspective of the above research, I recommend that parents, educators, and others with children in their care work together to implement systems designed for school populations to ameliorate the effects of trauma and PTSD. The following video links show the impact that simple, inexpensive, time-effective strategies for teaching children self-regulation strategies can have on students’ cognitive, social and emotional development.

- [Rita Murphy Elementary School](#), Bismarck, ND
- [Robert W. Coleman Elementary School](#), Baltimore, MD

Yoga as a Solution

School-appropriate yoga practices, performed in the way I am proposing, include a combination of rhythmic aerobic exercise, rhythmic rapid breathing and progressively deeper slow breath, slow and calming movement, and deep slow breath that accompanies movement (Levry, 2015). Researchers of these aspects of the above have found therapeutic value for the nervous system, stress, trauma, cognition, and behavior.

Aerobic exercise has been shown to counteract the negative effects of stress and anxiety. It improves cognition, reduces stress hormone excretion, and reduces anxiety. It has been shown to diminish the immediate and prolonged effects of stress in the moment they are happening. This benefits the physical body and cognitive functioning (Tsatsoulis & Fountoulakis, 2006). Calming movements and activities such as slow, deep breathing and stretching also have their benefits. Through the Washington State Compassionate School Initiative, 600 elementary school students participated in Calming Yoga along with other physical activities. Two years later, “test scores rose dramatically, referrals to special education decreased and discipline referrals dropped precipitously” (Rossen & Hull, 2013, p. 26). Other

Integrating Yoga Practices into School Routines

Christina Pabers

yoga programs have been found to successfully address symptoms of PTSD (West et al., 2004; Macy, Jones, Graham & Roach, 2015).

Research findings point to various methods for building resilience to the negative effects of trauma. Some of these resilience building strategies are supported by school appropriate yoga practices, including: having a consistent routine, providing ways for children to express themselves without talking, ensuring social support, and intentionality in developing a sense of self-effectiveness (Weibler, 2013; Rossen & Hull 2013; Everly & Firestone 2013; Clark et al., 2014). Learning yoga provides independence in practicing a lifelong skill that can be utilized in adulthood and even in elderly years; it can be performed without equipment and can be done alone, to the best of the child's ability, with or without a teacher.

Trauma and Music Therapy

Music and its therapeutic application can cause immediate changes to the brain, emotions, hormones, and nervous system. One study concluded that "biologically, while listening to instrumental music, neurons are fired in the brain structures involved with motivation, reward, and emotion" (Moffic, as cited in Sorensen, 2015, p. 48). Music therapy is being developed clinically as a technique for children who have experienced complex trauma. It is being used for the development of positive social reciprocity (Hussey, Reed, Layman & Pasiali, 2017). In other words, it being used to help develop healthy social interactions in children for whom trauma and PTSD have made this difficult.

Music therapy can be an integral part of yoga and can include music and rhythm through breathing, coordination activities, vocalization and movement (Levry, 2015). Music therapy for stress and PTSD has been a topic of research and is currently being utilized in many settings with successful results (Garrido et al., 2015). U.S. Military programs are using music therapy and yoga extensively to alleviate stress and PTSD (Else, 2014).

Given the current numbers of children affected by trauma and PTSD, their effects on learning, and current, insufficient levels of resources available to address these problems, the implementation of school-appropriate yoga practices can serve as an affordable, effective intervention for supporting traumatized youth and promoting positive, effective learning and self-regulatory behaviors.

About the Author

Christina Pabers, Ph.D., M.A., TCM, L.Ac holds her Ph.D. and Master's Degrees in Chinese Medicine and a Bachelor's Degree in Kinesiology, Exercise Physiology. She is a 25-year practitioner of Naam Yoga and has served as Naam Yoga Curriculum Developer for over ten years. She teaches in and oversees yoga certification courses in Europe, Mexico and the U.S. Her medical clinic in Camarillo, California integrates acupuncture, herbal medicine, nutrition and yogic practices for health and wellbeing. She is a member of Educators Doing Justice, a coalition of P12, college, and community educators in Ventura County.

References

Beauchemin, J., Hutchins, T., & Patterson, F. (2008). Mindfulness Meditation May Lessen Anxiety, Promote Social Skills, and Improve Academic Performance Among Adolescents With Learning

Allies for Education 2018, 1, 2

<https://journals.library.csuci.edu/ojs/index.php/afe>

Integrating Yoga Practices into School Routines

Christina Pabers

Disabilities. *Journal of Evidence-Based Integrative Medicine*, 13(1), 34-45.
<https://doi.org/10.1177/1533210107311624>

Blaustein, Margaret E. (2013). Childhood trauma and a framework for intervention. In E. Rossen and R. Hull (Eds.), *Supporting and educating traumatized students: A guide for school-based professionals* (pp. 3-21). New York, NY: Oxford University Press.

Busch, B. (2018, Feb. 8). Research every teacher should know: Self control and learning. *The Guardian*. Retrieved from <https://www.theguardian.com/teacher-network/2018/feb/08/research-every-teacher-should-know-self-control-and-learning>.

Clark, C., Lewis-Dmello, A., Anders, D., Parsons, A., Nguyen-Feng, V., Henn, L., & Emerson, D. (2014). Trauma-sensitive yoga as an adjunct mental health treatment in group therapy for survivors of domestic violence: A feasibility study, *Complementary Therapeutic Clinical Practice*, 20(3), 152–158.
<https://www.ncbi.nlm.nih.gov/pubmed/25129883>

Else, B. et al., (2014). Music Therapy and Military Populations: A Status Report and Recommendation on Music Therapy Treatment, Program, Research and Practice Policy. Silver Spring, MD: *American Music Therapy Association*. http://www.musictherapy.org/assets/1/7/MusicTherapyMilitaryPops_2014.pdf

Emerson, D., Sharma, R., Chaudhry, S. & Turner, J. (2009). Trauma-Sensitive Yoga: Principles, Practice, and Research. *International Journal of Yoga Therapy*, 19(1), 123-128.

Everly, G. & Firestone, R. (2013). Lessons for developing resilience. In E. Rossen and R. Hull (Eds.), *Supporting and educating traumatized students: A guide for school-based professionals* (pp. 29-25, 287-298). New York, NY: Oxford University Press.

Friedman, M. (2016). *PTSD history and overview*. U.S. Department of Veteran Affairs.
<https://www.ptsd.va.gov/professional/PTSD-overview/ptsd-overview.asp>

Garrido, S., Baker, F., Davidson, J., Moore, G., & Wasserman, S. (2015). Music and trauma: the relationship between music, personality, and coping style. *Front Psychology*, 6, 977.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4498438/>

Hamblen, J., & Barnett, E. (2016). *PTSD in Children and Adolescents*. U.S. Department of Veteran Affairs.
https://www.ptsd.va.gov/professional/treatment/children/ptsd_in_children_and_adolescents_overview_for_professionals.asp.

Hussey, D., Reed, A., Layman, L., & Pasiali, V. (2017). Therapy and Complex Trauma: A Protocol for Developing Social Reciprocity. *Residential Treatment for Children and Youth*, 24(1), 111-129.
https://www.researchgate.net/publication/233017657_Music_Therapy_and_Complex_Trauma_A_Protocol_for_Developing_Social_Reciprocity

Kauts, A., & Sharma, N. (2009). Effect of yoga on academic performance in relation to stress. *International Journal of Yoga*, 2(1), 39–43. <http://doi.org/10.4103/0973-6131.53860>

Levry, J. (2015). *Shakti Naam yoga, the gift of health*. Rootlight International.

Allies for Education 2018, 1, 2
<https://journals.library.csuci.edu/ojs/index.php/afe>

Integrating Yoga Practices into School Routines

Christina Pabers

Macy, R.J., Jones, E., Graham, L.M. & Roach, L. (2015). Yoga for trauma and related mental health problems: A meta-review with clinical and service recommendations. *Trauma, Violence, & Abuse, 19*(1), 35-57. <http://journals.sagepub.com/doi/pdf/10.1177/1524838015620834>

Morrison, N. (2016). It's not race that's the big divide, it's wealth. *Forbes*. Retrieved from <https://www.forbes.com/sites/nickmorrison/2016/05/31/its-not-race-thats-the-big-divide-its-wealth/#19c7e37a7639>.

Rossen, Eric & Hull, Robert (Eds.) (2013). *Supporting and educating traumatized students: A guide for school-based professionals*. New York, NY: Oxford University Press.

Sorensen, M. (2015). The Neurology of Music for Post-Traumatic-Stress Disorder Treatment: A Theoretical Approach for Social Work Implications. Master of Social Work Clinical Research Papers http://sophia.stkate.edu/msw_papers/528

Stevens, J. (2013, May 13). Nearly 35 million US children have experienced one or more types of childhood trauma. ACES Too High. Retrieved from <https://acestoohigh.com/2013/05/13/nearly-35-million-u-s-children-have-experienced-one-or-more-types-of-childhood-trauma/>

Tsatsoulis, A., & Fountoulakis, S. (2006). The protective role of exercise on stress system dysregulation and comorbidities. *Annals of the New York Academy of Sciences, 1083*, 196-213. <https://www.ncbi.nlm.nih.gov/pubmed/17148741>

West, J., Otte, C., Geher, K., Johnson, J., & Mohr, D.C. (2004). Effects of Hatha yoga and African dance on perceived stress, affect, and salivary cortisol. *Annals of Behavioral Medicine, 28*(2), 114-8.

Wiebler, L. (2013). Developmental differences in response to trauma. In E. Rossen and R. Hull (Eds.), *Supporting and educating traumatized students: A guide for school-based professionals* (pp. 37-47). New York, NY: Oxford University Press.