

Laughter Yoga: Benefits of Mixing Laughter and Yoga

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In most medical practices, there is the complaint that it is too difficult to set a time aside for yoga and a good laugh. Those that do, obtain definite benefit. Yoga, for instance, has been shown to improve depression [1]. Yoga and humor both increase oxytocin, the cuddle hormone, which is now being tied to diverse benefits such as enhancing immune responses as well as improving cognition deficits in schizophrenia [2,3]. Now there is even evidence that there is a link between our gut microbes and oxytocin, with each enhancing each other [4]. Living a non-stressful life helps to promote beneficial gut microbes which then can stimulate the oxytocin to generate a state of positive homeostasis on the body which in turn gives a "nurturing" feedback to maintain the beneficial bacteria [5]. The gut to oxytocin relationship was proven to be via the vagus nerve in elegant experiments in mice using *Lactobacillus reuteri*. Oxytocin and the gut microbes need to act in unison in order to see the maximum benefit, here in wound healing [4]. The cycle is interrupted when we are under stress or eating unhealthily. The implication is that we need to see that our beneficial bacteria receive beneficial probiotics so that they are able to send positive oxytocin stimulating signals via the vagus nerve. In order to offset the negative influences of stress on the gut bacteria, we need to cultivate oxytocin promoting interventions that can result in a positive oxytocin feedback to these bacteria. Humor and yoga can both do so, especially when they meet as in laughter yoga.

First, a clarification of how humor can be expressed. Humor can be spontaneous or shared. The expressions of humor run the gamut from verbal reactions of pleasure, smiling and finally to laughter. A smile is either non-Duchene or Duchene. A simple, non-Duchene smile is when the muscles tense at both ends of the mouth (zygomatic major muscle) as well as the rest of the mouth muscles [6]. At the moment that the corners of the eyes squint (tensing the orbicularis oculi muscle), we have a Duchene smile [7]. Here we see the famous crow's feet that Botox can eliminate, resulting in the inability to express a true Duchene smile and seeming very stiff and almost fake. True laughter involves the Duchene smile and reflects that true emotions are being expressed [8,9]. This Duchene laughter is the one associated with the emotional benefits of laughter [10].

Stretch, Breathe, Laugh, although not the usual exercise routine, laughter yoga has proven to be worthy of prescribing due to its salubrious results. Laughter itself increases endorphins and decreases pain thresholds [11]. Laughter yoga is a 20 minute extension of what an occasional laugh can do. Such constant laughter increases blood flow through the body, lessens the amounts of stress hormones released by creating a non-stressful environment and aids depressive symptoms. In a population of elderly depressed women, laughter yoga was as beneficial as exercise, both being much more effective than controls [12]. One severely bipolar patient was able to have a remission when she became a laugh yoga instructor [13]. www.laughteryoga.org is a good source for more information.

As more evidence demonstrates the significance of laughter in the psychiatric practice, the almost axiomatic motto *Laughter is the best medicine* becomes a beneficial treatment option for patients. Laughter yoga is a combination of a relaxation technique, flexibility and aerobic exercise, an internal massage as well as a social interaction. All stimulate the production of oxytocin.

Laughter yoga (*Hasyayoga*) originated thanks to Madan Kataria, an Indian physician. Dr. Kataria popularized laughter therapy and laughter clubs through a book called *Laugh for no reason* [14]. He argues that, as long as laughter is done purposely, fake laughter and real laughter promote the same benefits because the body cannot differentiate between the two. However, while at first the laughter is an effort, after a while the laughter becomes a Duchene laugh, at which point the laugh becomes spontaneous and even contagious [15]. Dr. Kataria explains in *Laugh for no reason* that the aim of laughter yoga is to rekindle the childlike playfulness that will ultimately provide its benefits through unconditional Duchene laughter. This joyous unconditional type of laughter in a positive social setting where everyone else is also Duchene laughing is the kind of laughter that produces physiological and biochemical changes that include the stimulation of oxytocin, thus promoting wellbeing. Laughter yoga's rule of thumb is: Fake it, until you feel it.

It is important to stress that the benefits of laughing yoga stem not only from the emotional bonding that occurs when sharing a laugh, but also from the actual laughing itself. Laughing can be seen as another of the yoga breathing techniques, this one oxygenating the body and inducing a surge of endorphins as mentioned before [14]. Social vocalizations can result in the production of oxytocin so the actual noise of the laughter is another way to stimulate the vagus nerve to enhance oxytocin production [16]. There are many other types of laughter exercises like greeting laughter, argument laughter, driving laughter and gradient laughter. The last is a mixture of successive steps: Smile, snicker, and burst into laughter.

Another extremely simple exercise that can be performed if there is no time for formal laugh yoga is the Oxytocin Breath developed by Ellie Drake through Brave Heart Women. After assuming a comfortable position with your hands on the belly, you inhale quickly through your nose using diaphragmatic breathing which means having your belly fill up and protrude as you breathe in. The inspiration should be quick as inspirations stimulate the adrenergic, agitating, system. Then you exhale slowly, pulling your belly in, as this stimulates the parasympathetic, calming system. This way the breathing can control your emotions [17]. As you exhale, you make a laughing sound "aahaahaaahaa" and end with a smile. The more pleasure that you feel at the end, the more effective are the results. Sometimes as little as three repetitions are enough to calm oneself down.

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Received August 22, 2015; **Accepted** October 20, 2015; **Published** October 27, 2015

Citation: Woodbury-Fariña MA, Schwabe MMR (2015) Laughter Yoga: Benefits of Mixing Laughter and Yoga. J Yoga Phys Ther 5: 209. doi:[10.4172/2157-7595.1000209](https://doi.org/10.4172/2157-7595.1000209)

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These and other self-help techniques help to change the locus of control (LOC). This is a concept that defines having an external LOC means that that one thinks that one cannot control one's fate as there are external forces that are perceived to be in control, a very unhealthy state [18]. Having an internal LOC means that one does have the feeling that one can control one's life and this is associated with healthy coping skills and increased cognitive control [19]. In a 6 hour course that taught nurses to be funny, the students had an increase in internal LOC and a decrease in external LOC [20]. Lower hippocampal volumes are seen in those with low self-esteem and external LOC [21]. This means that the hippocampus has less modulatory control over the Hypothalamic-Pituitary-Adrenal axis (our stress system) which will result in an increase in the stress hormone cortisol that will in turn have deleterious effects on the hippocampus. Oxytocin is found in the hippocampus and is involved in hippocampal neurogenesis, thus having the potential to protect the hippocampus from cortisol [22]. Thus oxytocin can be enhanced by the increased sense of personal mastery that yoga and the other interventions can confer.

Getting humor and yoga incorporated in medical practices has been difficult. The main reason has been the time element as we feel most doctors have an external LOC because the time pressure to see so many patients is so intense that they feel unable to control their lives. The most successful way to have these interventions introduced is through the support staff. With simple handouts, the resistance should be less. One of the authors has been very interested in the subject of humor and is going to try to incorporate these ideas in the mental and physical health Medicaid population in Puerto Rico that he will be accessing in the next year. He hopes to be able to make a difference [23].

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Citation: Woodbury-Fariña MA, Schwabe MMR (2015) Laughter Yoga: Benefits of Mixing Laughter and Yoga. J Yoga Phys Ther 5: 209. doi:10.4172/2157-7595.1000209

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