Yoga: Potential Benefits for Persons Who Stutter

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Abstract
Yoga has been demonstrated to modulate autonomic nervous system activity, decreasing anxiety and stress, and improving quality of life. This preliminary study sought to examine the use of yogic techniques on persons who stutter given the interaction between physiological arousal/anxiety and stuttering that current multifactorial models of stuttering propose. Four participants (M = 52 yr, SD = 10; 2 female, 2 male), recruited from local stuttering support groups in the greater Philadelphia community volunteered to participate. Stuttering severity, anxiety, and experiences regarding stuttering and communication were measured at baseline, post intervention, and at 4 months follow-up. The participants attended group yoga sessions and engaged in home practice. Descriptive results revealed that participants showed improvements across outcome measures, with the most improvement related to anxiety. Participants also reported improvements in their perceptions about communication as per qualitative analysis of responses to the open-ended questionnaires. The results suggest the potential benefits of yoga for persons who stutter and warrants further study using an experimental design.

Keywords
stuttering, yoga, anxiety

Introduction
Current theories of stuttering are multifactorial models that propose an interaction between modulating factors (physiological arousal) and speech motor control issues, leading to stuttering events and chronic stuttering; highly reactive

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individuals are more likely to respond to disruptions in speech with greater anxiety and or tension (Packman & Attanasio, 2010; Walden et al., 2012). Experimental studies have demonstrated that persons who stutter (PWS) exhibit heightened sympathetic arousal (Bowers, Saltuklaroglu, & Kalinowski, 2012; Doruk et al., 2008). These results suggest that the anticipation of the possibility of stuttering is enough to heighten arousal levels. The relationship between stuttering and anxiety and stress has also been investigated. Negative experiences related to speaking situations can lead to feelings of awkwardness and shame (Ginsberg, 2000). Over time, these feelings can lead to anxiety and avoidance of communication situations (Bloodstein & Ratner, 2008). There have been numerous empirical studies conducted examining the relationship between stuttering and anxiety, with results suggesting that stuttering is associated with higher than average levels of anxiety (Craig & Tran, 2014; Ezrati-Vinacour & Levin, 2004; Tran, Blumgart, & Craig, 2011).

The practice of yoga induces parasympathetic nervous system activation (PNS: neurotransmitters responsible for relaxation response, decreasing blood pressure and heart rate; and activation of limbic regions of the brain) and suppresses sympathetic nervous system activation (SNS), which is responsible for the stress response including the release of cortisol and epinephrine (Lazar et al., 2000; Pramanik et al., 2009; Riley, 2004; Takahashi et al., 2005). Yoga comprises asanas (poses), pranayama (breathing exercises), and meditation (Sherman, 2012) and can, over time, cause PNS activation to become dominant, even during stressful situations (Ross & Thomas, 2010). Several studies have documented reductions in anxiety and stress following yoga interventions (Beck & Verticchio, 2014; Smith, Hancock, Blake-Mortimer, & Eckert, 2006; Telles, Vaishali, & Balkrishna, 2009). The few studies that have been conducted on PWS incorporating facets of yoga (meditation and/or pranayama) have demonstrated reduced anxiety and more confidence and control related to speaking (De Veer, Brouwers, Evers, & Tomic, 2009; McIntyre, Silverman, & Trotter, 1974). The purpose of this preliminary study was to investigate the use of yoga-based techniques on PWS to examine potential effects on overt stuttering behaviors (dysfluencies), feelings of anxiety related to stuttering, and perceptions of communication in PWS, to provide a basis for further research.

**Method**

**Participants**

Four participants volunteered to be part of this study. Participants ranged in age from 39 to 63 years ($M = 52$, $SD = 10$; two men) were English-speaking, Caucasian, and evenly divided between gender. Participants were recruited through local stuttering support groups in the greater Philadelphia community. All participants had received intermittent speech therapy in the past. Participants
reported stuttering since childhood and exhibited commonly recognized types of dysfluencies (silent blocks, repetitions) and secondary behaviors (poor eye contact, facial grimaces, leg/arm movements) with mild-moderate stuttering severity.

**Measures**

The SSI-4 was used in this study to provide a standardized measure of stuttering severity across three areas: frequency, duration, and secondary (physical) behaviors (Riley, 2009). Frequency and duration are converted to task (2–9) and scale (2–18) scores, where higher scores mean greater frequency of stuttering or longer duration of stuttering events respectively. Physical behaviors are rated from on a scale from 0 (none)-5 (severe). A total score is obtained by summing the scores from the three areas, which can be converted to a percentile and severity rating. Total scores can range from 10 to 46 for adults with severity equivalents of very mild to very severe.

The OASES is a 100-item, self-report questionnaire used to evaluate participants’ perceptions of their overt stuttering behaviors, reactions to stuttering, difficulties in specific speaking situations, and quality of life (Yaruss & Quesal, 2008). It yields impact ratings for four sections and an overall score with a Likert scale of 1 (*mild*) to 5 (*severe*).

The Burns Anxiety Inventory is a 33-item questionnaire that was used to measure symptoms of anxiety: anxious feelings, anxious thoughts and physical symptoms (Burns, 1997). Symptoms are rated on a 4-point scale ranging from 1 (*not at all*) to 3 (*a lot*). Total scores range from 0 (no anxiety) to 50 (severe anxiety), with a cut off score for mild anxiety of 20.

A six-question, open-ended questionnaire was created for this study targeting the effects of the yoga intervention on participants’ quality of life, speech, and anxiety. All measures were administered at baseline, one week, and 4 months following the yoga intervention.

**Procedure**

The participants attended weekly 1-hour group instruction by a certified yoga teacher. There were a total of seven group sessions. Specific yoga poses and breathing exercises were selected that target the throat region (possible source of extrinsic muscular tension in PWS) and have been shown to induce relaxation by modulating the autonomic nervous system (i.e. enhancing activation of the parasympathetic nervous system and deactivation of the sympathetic response) (Jerath, Edry, Barnes, & Jerath, 2006). Participants were instructed to engage in at least 10 minutes of daily practice on their own time (for a total of at least 8 hours over the course of the intervention). Participants recorded their self-practice sessions (during and following the group sessions: date, start time, end time, total, and signature) on a daily practice log sheet provided. Written
instructions were provided to each participant by the yoga teacher along with a DVD (pre-recorded with the teacher demonstrating all postures and techniques) to support practice of the techniques demonstrated in class.

**Results**

Due to the small sample size and exploratory nature of this pilot study, inferential statistical testing was not appropriate. The results of this study are descriptive and meant to examine general trends that would warrant further research using a larger, more controlled study. There was a positive trend across the measures, i.e., improvements in self-reported anxiety, quality of life, and reduction in stuttering severity from baseline. The percentage change from baseline for the SSI-4 scores from pre- to post-intervention was 27% ($M=24.75, SD=4.03$ to $M=17.75, SD=5.68$), 17% 4 weeks post-treatment ($M=20.67, SD=2.89$).

For the OASES, percentage change from baseline was 5% at end of treatment ($M=2.70, SD=0.22$ to $M=2.32, SD=0.17$) and 19% at 4-month follow-up ($M=2.15, SD=0.59$). The largest percent change from baseline occurred for the Burns Anxiety Inventory: 58% post-treatment ($M=22.50, SD=9.40$ to $M=8.50, SD=4.79$) and 71% at the 4-month follow-up ($M=7.33, SD=7.02$).

Each of the responses to the questions from the questionnaires were read thoroughly to look for patterns and placed into categories according to the ideas expressed. After all of the responses were coded in this way, the data were reviewed and compressed further. Analysis of the coded responses to the open-ended questions revealed two major trends: increased self-awareness and decreased anxiety. Post-intervention, Participant 1 reported that “the breathing techniques help me to have control over my speech”. At four months follow-up, she continued to feel in control, “I feel I’m gaining more control and maybe more confidence.” Participant 1 also reported using the techniques in communicative situations: “Sometimes I take a few minutes to use the breathing techniques at work and I gain control over myself. It takes away from the tightness in my chest. Maybe I realize that I’m not helpless in my speech.” Following the intervention, Participant 3 reported feeling more focused: “While speaking I don’t scan ahead on words that I might get stuck on as much.” At four-month follow-up, he reported still feeling in control about experiences related to communication: “If I ask for things from a stranger, it is still difficult. The way that I feel afterwards has improved. I feel less frustrated and don’t worry about it as much.” Participants also expressed feeling less anxious about communication. Participant 2 reported that “I come into yoga with my mind racing and by the end my mind was clear. When I am doing the breathing exercises I am calm and peaceful.” Participant 3 also expressed changes in anxiety following the treatment sessions: “I have less anxiety and worry less about my speech.” Four months later, Participant 3 continued to report feeling less anxious about speaking: “When I am about to speak, the breathing helps the way I feel before I’m about to speak.”
Discussion

There are physiological, emotional, and anxiety factors that are often intertwined when it comes to stuttering (Ginsberg, 2000). Due to the many issues that this complex disorder incorporates, it is suggested that treatment programs target all areas of a person’s stuttering difficulty (i.e. psychological and social), not just the overt symptoms (Iverach et al., 2011; Manning & Beck, 2013). Yoga has been demonstrated to promote calm, self-awareness, and control (Evans, Tsao, Sternleib, & Zeltzer, 2009; Smith et al., 2006). The positive effects extend beyond the yoga sessions to increased confidence, reduced tension, and stress in day-to-day life (Kjellgren et al., 2007; Telles et al., 2012). The results of this preliminary study suggest the potential positive effects that yoga-based techniques may have on the lives of adults who stutter; however, the relationship between stuttering and yoga is not simple or necessarily even direct, and the sample and design are not sufficient to evaluate this (lack of control group, small sample size, use of subjective measures). Currently, there is little research examining the efficacy of yoga techniques and variables associated with stuttering. Hopefully, the results of this preliminary study will lead to further research in this area, to provide a solid evidence base for use of yoga techniques as a sound complementary approach for PWS, to reduce the stress and anxiety that can accompany this disorder and for use in conjunction with traditional treatment techniques.

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References


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