

## RESEARCH ON BREATHING PRACTICES

### INNOVATIVE EVIDENCE BASED APPROACHES FOR PTS TREATMENT

Given that current treatments for post-traumatic stress (PTS) are not always effective, there is a critical need for alternate approaches to address the anxiety, trauma, rage, sleeplessness, and other side effects of war. Increasing numbers of VA hospitals and veteran centers are turning to mind-body practices such as breathing, yoga and meditation to support our veterans in healing. Preliminary research results are promising, and many veterans report these practices to be extremely helpful.

### SUMMARY OF RESEARCH FINDINGS ON BREATHING TECHNIQUES

Because respiration is the *only* function of the autonomic nervous system that is both voluntary (i.e. holding one's breath) and involuntary (i.e. breathing during sleep), it provides a unique portal for influencing sympathetic-parasympathetic balance, and promoting a physiological state of relaxation. (Raghuraj & Telles, 2008, Brown & Gerbarg, 2009).

In addition, research has shown that breathing and emotions are tightly linked (Boiten et al. 1994). For example, anxiety is accompanied with short rapid breaths, while feelings of depression are accompanied by short, shallow inhalations and long exhalations. Fortunately the breath-emotion interaction is bi-directional. Emotions have been documented to change breathing patterns and breathing patterns have been documented to change emotions. Controlled patterns of breathing thus can serve as powerful tools to impact and shift emotional states (Phillippot, Chapelle & Blairy 2002).

Research on breathing techniques has demonstrated significant reductions in:

- Depression (Murthy et al.,1998; Pilkington et al., 2005)
- Anxiety (Clark & Hirschman 1990).
- Impulsivity (Ghahremani, Oh, Dean, et.al, 2013)
- Sleep disorders (Meti, Raju et. al.1996)
- Pain thresholds (Zautra et al., 2010)
- Alcohol and tobacco use, (Kochupillai, Kumar, Singh, et. al. 2005)

- Withdrawal symptoms in tobacco users (McClernon et al., 2004).

As well as significant increases in:

- Emotion regulation (Gootjes, Franken & Van Strien 2011)
- Optimism and wellbeing (Raghuraj, Ramakrishnan, Nagendra, & Telles, 1998)
- Quality of life (Kjellgren, Bood, Axelsson, Norlander, & Saatcioglu, 2007)
- Cognitive function (Jella & Shannahoff-Khalsa, 1993)

### ABOUT SUDARSHAN KRIYA YOGA (SKY)

The Power Breath Workshop is a mind-body resilience-building program for returning veterans. SKY, the cornerstone of the Power Breath Workshop, has been shown to significantly reduce PTS, depression (Vedamurthachar, Janakiramaiah, et. al, 2006), anxiety (Katzman, Vermani, et. al. 2012) and stress (Kjellgren, Bood, Axelsson, et.al., 2007) and to significantly increase emotion regulation (Gootjes, Franken, & Van Strien, 2011), optimism, well-being (Kjellgren, Bood, Axelsson, et.al., 2007), quality of life (Brown and Gerbarg, 2005); and mental focus (Bhatia, Kumar, et.al., 2003)



### SKY AND PTS

Recently published studies suggest that SKY significantly reduces symptoms of PTS, depression and anxiety in victims of both combat (Carter, Gerbarg, Brown, et. al, 2013) and mass disasters (Descilo, Vedamurtachar, Gerbarg, et. al. 2009), and that results persist after completion of treatment. Importantly, these results have been observed in both recently returned Iraq and Afghanistan veterans as well as veterans with chronic, treatment resistant PTS, depression and anxiety (Seppala under review; Carter, Gerbarg, et. al, 2013).