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**MENOPAUSAL HOT FLASHES:
A Self Regulation Pilot Study*¹**

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From: <http://www.myhotstop.com>

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“At the onset of a hot flash or another stressful event, like traffic, I take a moment to exhale. I then breathe low and slow, letting go of the tension in my body and feel a sense of control over my reaction. I then could feel my hot flash melt away”

--Subject

BACKGROUND

Menopause (diagnostic code: ICD-9: 627.2) is a natural part of women’s aging that occurs as a result of termination of ovarian follicular function. This cessation may be caused biologically, chemically (chemotherapy) or surgically (oophorectomy). The average age of menopause in the U.S. is 51 years and can range between 44 and 55 years. The hormonal change may interrupt the norepinephrine and dopamine neurotransmitters balance, which leads to vasomotor instability (Ostrzenski, 1999).

75-80% of Women in the U.S. experience Hot Flashes (vasomotor flush) in varying degrees (Shanafelt, et al. 2002). During a Hot Flash skin temperature rises, causing the face and upper body to become hot, flushed, and sweaty. Clinical manifestations may include: Hot Flashes (HF), night sweats, heart palpitations and other symptoms. HF at night often causes a disruption of sleep. HF apparently originate in the hypothalamus, and are associated with an overall decline in estrogen (Speroff et al. 1999).

Although the most common treatment for menopausal symptoms has been hormone replacement therapy (HRT), recent research data from controlled studies by the Woman’s Health Initiative (WHI) do not support the benefits claimed by drug companies over the years for using HRT. After tracking 161,000+ women, over 15yrs in randomized trials the research outcomes reported: “..there is no net benefit, even for those at high risk of fracture...” (Cauley et al., 2003). “HRT did not protect cardiovascular health...may increase the risk of Ovarian Cancer...provides additional support for caution in the use of continuous combined hormones...” (Anderson et al., 2003). “...risk for probable dementia in post menopausal women 65 yrs and older...supports the risks outweigh the benefits...” (Shumaker et al., 2003). The FDA has requested an update for HRT labeling to reflect increased risk of Dementia. **Given that the pharmacological interventions increase health risks, there is critical need to develop and implement self-regulation strategies that do NO harm and reduce the discomfort associated with the natural maturation process of menopause.**

Decrease in hot flashes has been demonstrated through behavioral paced breathing interventions researched by Freedman and Woodward (Freedman, 1989; Freedman & Woodward, 1992; Freedman et al., 1995). They demonstrated that hot flash frequency and intensity decreased by 50% following a two-week paced breathing interventions as compared to an EEG training control group. **This study replicates and investigates self-regulation strategies to reduce frequency and intensity of hot flashes and to offer women a non-invasive, non-harmful alternative for the self-management of menopausal symptoms.**

METHODOLOGY

Participants

Six menopausal women (3 Training Group and 3 Delayed Training Group), average age 53.3 years volunteered for the pilot investigation. The average onset of menopause was 43.7 years.

Equipment and Sensor Placement

Physiological Monitoring was recorded using Pro-Comp+, Biograph 2.1 (Thought Technology, Ltd., Canada).

- Respiration was monitored using a chest strain gauge placed under the axilla and above the breasts, and an abdominal strain gauge placed around the waist.
- Blood volume pulse (BVP) was monitored with a photoplethysmograph placed on the volar pad of the non-dominant Thumb using Medirip.
- Heart rate variability (HRV) was derived from the BVP.
- Skin conductance was recorded with two silver/silver chloride electrodes placed 3 cm apart, 1/3 superior of the xiphoid process between the breasts.
- Temperature was recorded with a thermistor placed on the index finger of the non-dominant hand.

Procedures

The first assessment session consisted of subjects filling out demographic information and hot flash discomfort questionnaires followed by recording a physiological profile. This profile consisted of one minute eyes open, one minute eyes closed, one minute math stressor, one minute relax, one minute imagine a hot flash and one minute relax/slow breathing. Following the assessment session, subjects kept daily logs of their menopausal symptoms and home practices.

The Training Group began training sessions 2-6, which consisted of teaching subjects effortless diaphragmatic breathing as described by Peper, Gibney and Holt (2002) and Peper (1990). Subjects were assigned daily homework, which consisted of frequently breathing slowly and effortlessly during the day and at the onset of stress or hot flashes. The Delayed Training Group kept logs for six weeks before beginning training sessions 2-6 (see table 1).

	Training Group	Delayed Training Group
Week 1	Intake, Profile, Logs	Intake, Profile, Logs
Week 2	Keep Logs	Keep Logs
Week 3	Profile, Taught Breathing	Keep Logs
Week 4	Training	Keep Logs
Week 5	Training	Keep Logs
Week 6	Training	Keep Logs
Week 7	Training	Keep Logs
Week 8	Post Scales, Profile	Profile, Taught Breathing
Week 9		Training
Week 10		Training
Week 11		Training
Week 12		Training
Week 13		Post Scales, Profile
Week 20	Follow up	
Week 25		Follow-up

Table 1: Outline of Training Sessions

RESULTS

At the completion of the training sessions, subjects reported a 60% reduction in frequency of hot flashes, 49% reduction in intensity and 40% reduction in discomfort (Fig. 1). The average number of HF decreased more in the Training Group over the Delayed Training Group (Fig. 2). The effect of self-regulation on the HF experience showed significant improvement overall (Fig. 3).

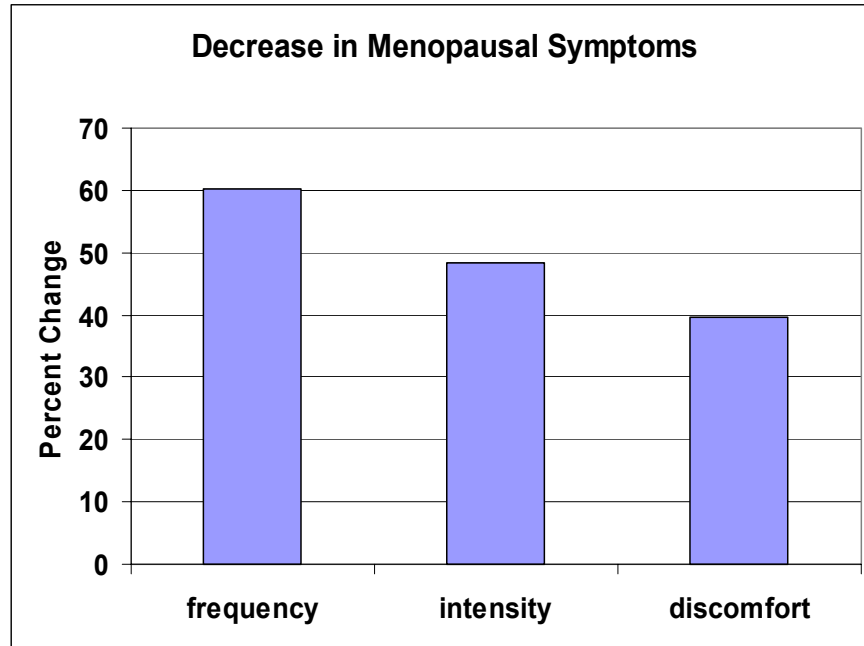


Figure 1. Post training symptom changes as recorded by subjects from their hot flash logs

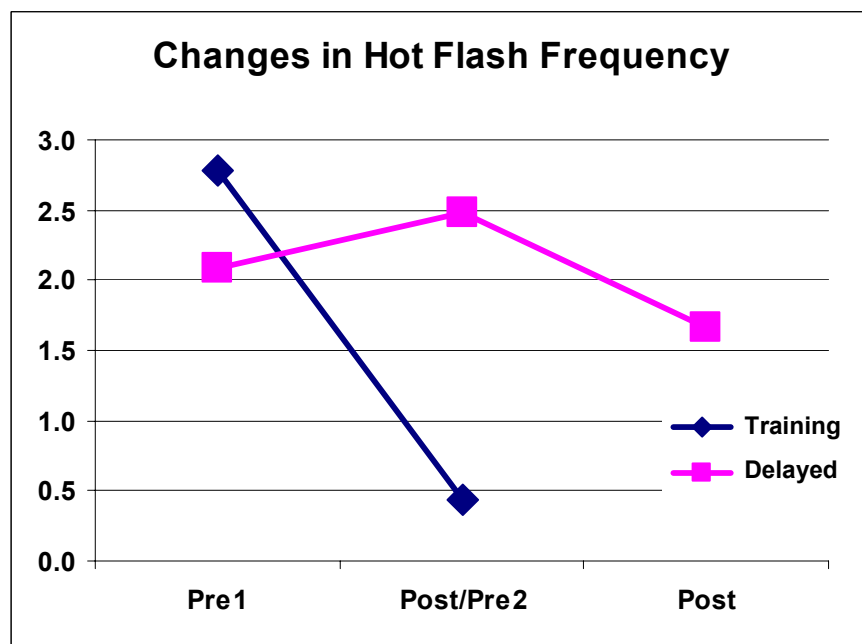


Figure 2. Hot flash frequency comparison between Training Group and Delayed Training Group

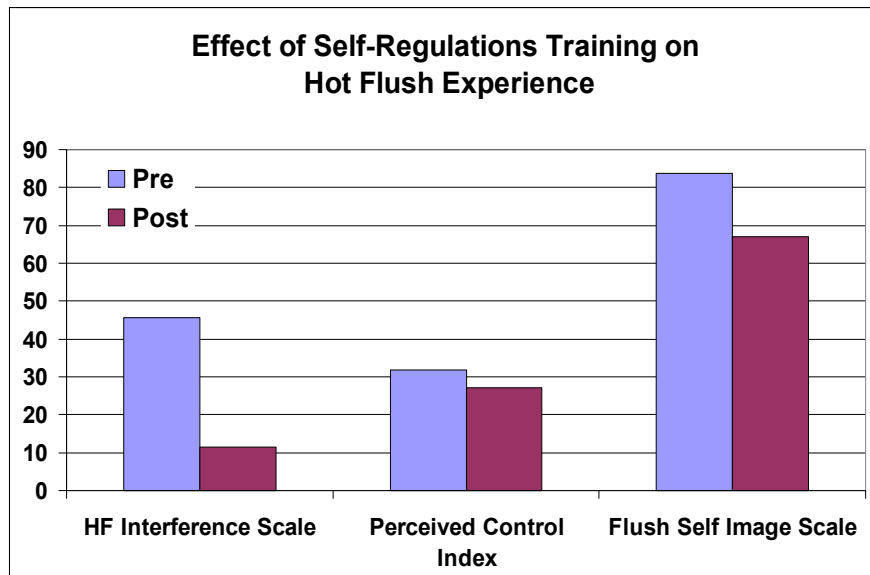


Figure 3. Improvement in Hot Flush (Flush) experience following training

At the beginning of the study, respiratory patterns were rapid and shallow (Fig. 4). Breathing rates decreased during the training with an improvement in respiratory sinus arrhythmia (Fig. 5). The subjects struggled with changing their breathing patterns, but all showed improvement. The subjective reports indicated that they were able to generalize the skills to everyday stressors or hot flashes.

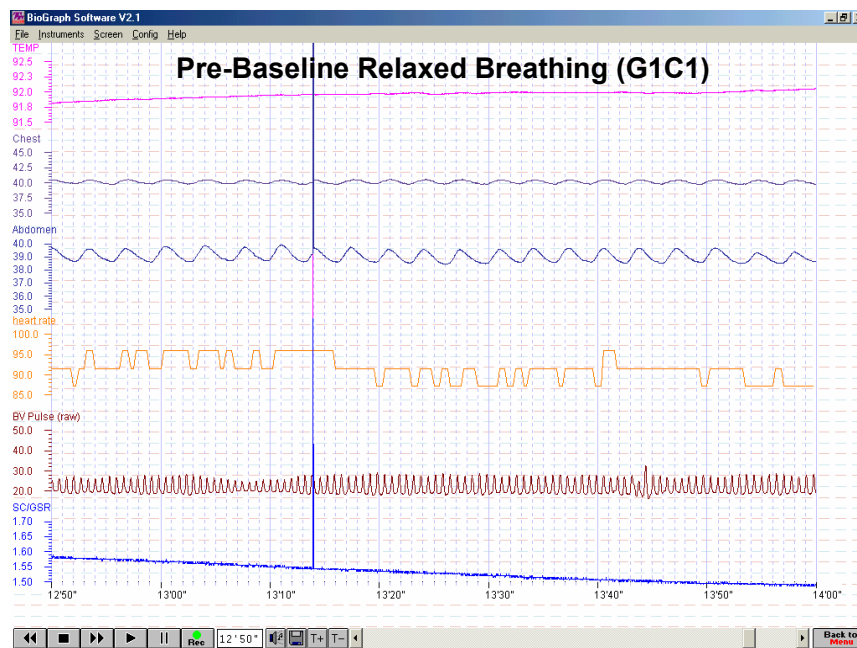


Figure 4. Representative pre-baseline measurements of relaxed breathing

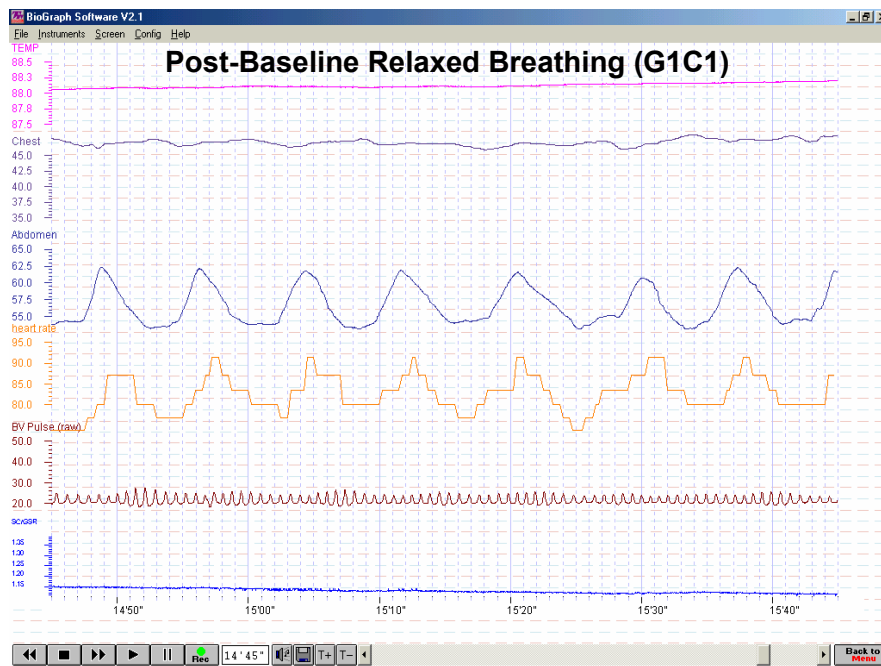


Figure 5. Representative post-baseline training measurements of relaxed breathing

DISCUSSION

The decrease in symptoms replicates and confirms the previous research finding of Freedman et al. The small sample size does not allow for a complete statistical analysis; however, there were improvements in all areas. **The major challenge facing the women in the study was changing breathing patterns. This may be related to many years of rapid, shallow breathing.** More training sessions may be needed to augment success. Many subjects reported additional benefits beyond reducing menopausal symptoms, such as feeling better, improved health, an a sense of empowerment and increased self-control. For example, one subject reported a reduction in blood pressure.

“Usually my blood pressure (BP) is 160/90. When I sat down to check my BP; I shut my eyes and tried a few slow, deep breaths before I pushed the button. What a surprise! 143/72!!!

--Subject

In summary, menopause is a natural maturation process. Instead of labeling it as a disease, it should be embraced as an opportunity for reaffirming self-regulation (change hot flashes into power surges). We strongly recommend that, rather than risking iatrogenic illness by taking HRTs, each menopausal woman should learn self-regulation strategies to reduce discomfort and hot flashes by more than 50%.

* Thanks to Robert Freedman, Sondra Altman, MD and Mary Finegan, MD for their sharing of reference material.

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