



A Three-subject Practice Study on Disordered Breathing Related to Compression Chest Binding, Which May Cause Anxiety

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Introduction

People on the Trans Masculine Identity Spectrum (TMIS) who bind their chest to appear more congruent with their chosen gender identity may experience anxiety due to decreased breathing efficiency. Research supports anxiety as a possible result of restricted breathing (Courtney, Cohen & van Dixhoorn, 2011; Kunik, Roundy, Veazey, Souchek & et al., 2005; MacHose & Peper, 1991). It is, therefore, possible that generalized anxiety can be a subsequent symptom of frequent compression chest binding. A state of hypocapnia, measured by end-tidal carbon dioxide (EtCO₂), can cause physiological symptoms of anxiety (Courtney et al., 2011). This study examined the effects of compression chest binding on hypocapnia, measured in EtCO₂ via capnometry. The primary investigator took measures at rest and after exercise, while not binding, then binding. The primary investigator also administered other supporting psychophysiological measures, including the Spielberger State-Trait Anxiety Inventory (STAI) (Spielberger, Gorsuch & Luchene, 1970), and a preliminary Nijmegen Questionnaire (Chaitow, Gilbert & Bradley, 2014), for recognizing disordered breathing. Clinical observations of adolescents who were chest bound and reported increased anxiety in anticipation of physical education classes informed the primary hypothesis that compression chest binding restricts the breathing mechanism, causing hypocapnia, forcing a trend towards increased state anxiety.

A: Pre-binding

1. STAI
 2. Baseline Measures (10-mins)
 3. Exercise (5-mins)
 4. Repeat Measures (10-mins)
 5. STAI
- REPEAT x3

B: Binding (wore for one day prior)

1. STAI
 2. Baseline Measures (10-mins)
 3. Exercise (5-mins)
 4. Repeat Measures (10-mins)
 5. STAI
- REPEAT x3

C: Post Binding

1. STAI
 2. Baseline Measures (10-mins)
 3. Exercise (5-mins)
 4. Repeat Measures (10-mins)
 5. STAI
- REPEAT x3
END

Conclusion

The unexpected and more interesting aspect of this study was the qualitative response from the participants regarding their binding experience, which ranged from pleasant, tolerable, to intolerable. The emotional, physical, and logistical responses to the binding process, was real and validated the potential experience of the TMIS population according to Peitzmeier, Gardner, Weinand, Corbet & Acevedo (2017).

Existing studies report a decrease in anxiety related to gender dysphoria with binding (Jarret, Corbet, Gardner, Weinand & Peitzmeier, 2018), but still report physical discomfort, and lack of mobility while engaging in this practice (Peitzmeier et al., 2017). These exact same outcomes occurred, in a simple three-person study of persons who do not identify as transmasculine and bound their chests for the first time.

A larger study would be pertinent to trend any changes in End-Tidal CO₂ as a result of binding. However, the qualitative aspects of this study are important to the future quality of healthcare and interventions for the TMIS community, who cannot afford surgeries, which alleviate the need to bind.

Materials

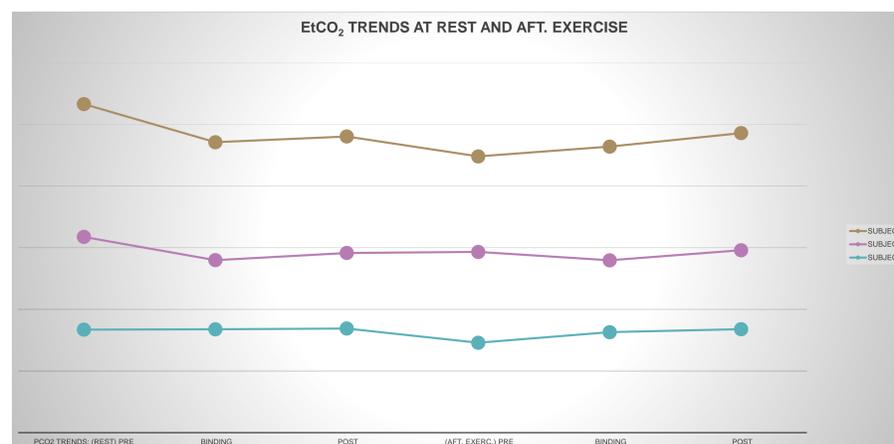
- Commercial grade compression chest binders
- BetterPhysiology CapnoTrainer recorded End-Tidal CO₂ in mmHg
- J&J GP8 6-Channel Biofeedback System connected to the Physiocom Design Software Suite recorded: Breaths per Minute (BPM), Blood Pulse Volume (BPV), Heart Rate (HR), Skin Conductance (SC), Peripheral Skin Temperature (Temp), Heart Rate Variability (HRV), and Blood Oxygen Levels (SPO₂).
- Nijmegen Breathing Questionnaire (Chaitow et al., 2014)
- State-Trait Anxiety Inventory (STAI) (Spielberger et al., 1983)

Methodology



Results

- Aside from an overall trend down from pre-binding at rest to post-binding after exercise for subjects two and three, the apparent results were mixed and there was no determined relationship between changes in PCO₂ pre-binding, binding, to post-binding, at rest or after exercise.
- Other biophysiological measurements behaved as one would expect.
- Anxiety levels from the STAI (Spielberger et al., 1983), were hard to trend as any slight changes in state anxiety were inconsistent with the activity, or test anxiety potentially interfered with the outcomes.



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