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### AUTONOMIC BEHAVIOR IN POST-THERAPY RECOVERY BASED ON NON-IMMERSIVE VIRTUAL REALITY ASSOCIATED WITH BLOOD FLOW RESTRICTION IN ELDERLY WOMEN

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**Background:** therapy based on non-immersive virtual reality (VRT) comprises a technique of interaction between the user and the interface system that allows the creation of an environment in which functional and motivational activities can be performed, while training with restricted blood flow (RBF) is an intervention modality that has been used in individuals who do not have good tolerance to high intensities of exercise. Among the various training modalities for the elderly population, both therapies have easy applicability and low financial cost. However, there are no studies on the combination of such interventions in relation to the autonomic outcome in elderly women.

**Objectives:** To evaluate the behavior of cardiac autonomic modulation after VRT with or without RBF in elderly women.

**Methods:** This is a cross-over clinical trial composed of 17 elderly women with a mean age of  $66.82 \pm 4.11$  years who underwent three conditions: VRT-RBF, VRT only and control. The VRT was performed using a Nintendo Wii<sup>®</sup> videogame with the games Hulla Hoop, Free Run and Free Step with a total duration of 21 minutes approximately. For VRT-RBF, occlusion occurred in the proximal thigh and was set at 40% of the absolute occlusion pressure. The control group received an educational session of the same duration as the other conditions. For all groups, initially at rest (20 minutes), during the conditions, and in the recovery period (60 minutes analyzed every 10 minutes), RR intervals were collected for analysis of linear indices of heart rate variability (HRV) in the time domain (RR interval, SDNN, and rMSSD). Descriptive statistics were used and analysis of variance for repeated measures with two factors and significance level of  $p < 0.05$  was used for comparisons.

**Results:** There was no effect between conditions and interaction conditions vs. moments for all analyzed indices ( $p > 0.05$ ). There was an effect of moment for the RR intervals in the VRT-RBF condition in which the values showed a significant reduction from the baseline moment (95%CI 666-765) until 30 minutes [10' (95%CI 599-725;  $p < 0.05$ ), 20' (95%CI 618-719;  $p < 0.05$ ) and 30' (95%CI 637-741;  $p < 0.05$ )] of the recovery period.

**Conclusion:** VRT with or without RBF did not promote autonomic imbalance in the recovery period.

**Implications:** VRT-RBF can be an exercise alternative for the elderly population, due to its low financial cost and easy applicability that can promote the reduction of the deleterious effects of aging and sedentarism, providing an activity through playful games and favoring motivation and adherence in rehabilitation programs.

**Keywords:** Virtual Reality Exposure Therapy, Vascular Occlusion, Autonomic Nervous System

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### EFFECTS OF MYOFASCIAL RELEASE TECHNIQUES IN WOMEN WITH FIBROMYALGIA: CASE SERIES

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**Background:** Fibromyalgia is a syndrome that leads to chronic, diffuse pain and the presence of pressure sensitive points. In addition to pain, people with fibromyalgia have unrefreshing sleep and chronic fatigue, leading to poor quality of life. Added to this, people with fibromyalgia are not very responsive to pharmacological treatment, therefore, physiotherapy, especially with manual therapy techniques, has become an excellent therapeutic option for the treatment of fibromyalgia.

**Objectives:** To evaluate the influence of myofascial release techniques on pain symptoms, physical capacity, quality of life and sleep in women diagnosed with fibromyalgia.

**Methods:** This is a clinical, prospective case series study. Ten women, aged  $54.5 \pm 10.2$  years, diagnosed with fibromyalgia for at least six months, attending the extension project "Collective physical therapy care for people with fibromyalgia" at our institution were studied. Before and after the intervention period, participants underwent pain assessment with a visual analogue scale (VAS), which was also applied before and after a single session, quality of life with the Fibromyalgia Impact Questionnaire (FIQ) and sleep with the Pittsburgh Sleep Quality Index (PSQI). As well as assessment of physical capacity with the sit and stand test (TSL), handgrip and time up and go (TUG). The intervention protocol consisted of manual and instrumental myofascial release techniques, applied in the back region and painful points. Participants received eight sessions, lasting 30 minutes, twice a week, over four weeks.

**Results:** A significant reduction in pain was observed, both acutely, after one session (VAS from  $4.1 \pm 1.7$  to  $1.3 \pm 1.1$ ;  $p = 0.002$ ), as well as chronically, after the intervention period (VAS from  $6.2 \pm 2.9$  to  $2.3 \pm 1.5$ ;  $p = 0.006$ ). A significant improvement in quality of life (FIQ from  $59.3 \pm 7.8$  to  $33.6 \pm 9.1$ ;  $p = 0.0002$ ) and sleep (PSQI from  $11.1 \pm 5$  to  $8.9 \pm 3.4$ ;  $p = 0.03$ ). There was a reduction in the time spent to perform five repetitions in the TSL from  $17.3 \pm 5.8$  to  $13.5 \pm 3.9$  seconds ( $p = 0.003$ ), as well as an increase in the number of repetitions over 30 seconds of the TSL from  $8.2 \pm 3.3$  for  $11.1 \pm 2.6$  repetitions ( $p = 0.002$ ). Despite documenting a reduction in TUG performance time from  $11.4 \pm 8.3$  to  $8.6 \pm 1.3$  seconds ( $p = 0.08$ ) and an increase in handgrip strength from  $37.2 \pm 17.3$  to  $45.8 \pm 12.9$  Kg ( $p = 0.07$ ), these changes were not statistically significant.

**Conclusion:** Myofascial release was able to reduce pain in women with fibromyalgia. The reduction in pain was accompanied by an improvement in quality of life, sleep, and physical capacity. We suggest that new studies with a more representative sample, with a control group or a group with other interventions, such as classic massage and physical training, are important for the continuity of this line of investigation.

**Implications:** Myofascial release is an effective technique for physical therapists who treat women with this syndrome, demonstrating a positive effect on several aspects of this syndrome.

**Keywords:** Fibromyalgia, Pain, Quality of life

**Conflict of interest:** The authors declare no conflict of interest.

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