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Effects Of Cooled Compression Exercise Technology On Health, Sleep, And Quality Of Life In Veterans.

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Abstract:

Veterans are disproportionately affected by physical and emotional functional disorders compared to their civilian counterparts, a discrepancy that is deepened by delay to care within the Veterans Health Administration. Research has supported use of compression exercise in physically limited populations and demonstrated physiological responses at lower intensities (10-20% one repetition maximum vs 70% for hypertrophy in resistance exercise). Combination of low-pressure compression exercise and cooling has shown elevated growth hormone and testosterone and depressed nighttime cortisol, indicating this may be beneficial for addressing emotional and sleep dysfunctions.

PURPOSE: To determine the safety and efficacy of an accessible cooled compression exercise system on markers of physical and emotional function in veterans.

METHODS: 14 veterans completed 24 sessions in 12 weeks. Baseline and endpoint questionnaires validated for clinical significance were administered to determine sleep quality (Pittsburg Sleep Quality Index), quality of life (RAND Short Form 36), and respiratory dysfunction related to stress and anxiety (Nijmegen Questionnaire).

RESULTS: Two-tailed T-tests were performed on the data. Sleep quality improved in 71% of subjects (9.15 ± 6.87 vs 5.57 ± 3.74 , $p = 0.0232$), 57% improved quality of life (73.45 ± 17.17 vs 84.46 ± 9.27 , $p = 0.0316$), and 71% decreased adverse respiratory symptoms (11.29 ± 8.38 vs 7.86 ± 6.26 , $p = 0.0594$) compared to baseline. Increases were seen in all 8 sub-scores of quality of life, with statistically significant improvements in social functioning (75 ± 28.17 vs 94.64 ± 11.62 , $p = 0.0058$), energy and fatigue (48.93 ± 25.21 vs 65.63 ± 19.26 , $p = 0.0426$), emotional wellbeing (66 ± 24.29 vs 85.14 ± 14.16 , $p = 0.0054$, and general health (72.14 ± 15.78 vs 79.64 ± 12.78 , $p = 0.0497$). For sleep quality, those subjects with baseline scores defined as clinically disturbed sleep ($n=8$, 58%) all (100%) experienced sleep improvements (9.14 ± 6.87 vs 5.57 ± 3.74 , $p = 0.00301$), with 25% resolving below clinical delineation.

CONCLUSION: These findings suggest that the combination of cooling and compression exercise may be an effective intervention method to address symptoms in veterans and other individuals living with insomnia, post-traumatic stress, chronic fatigue, and depression.

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P. Marques: None.

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EMOTIONAL WELLBEING

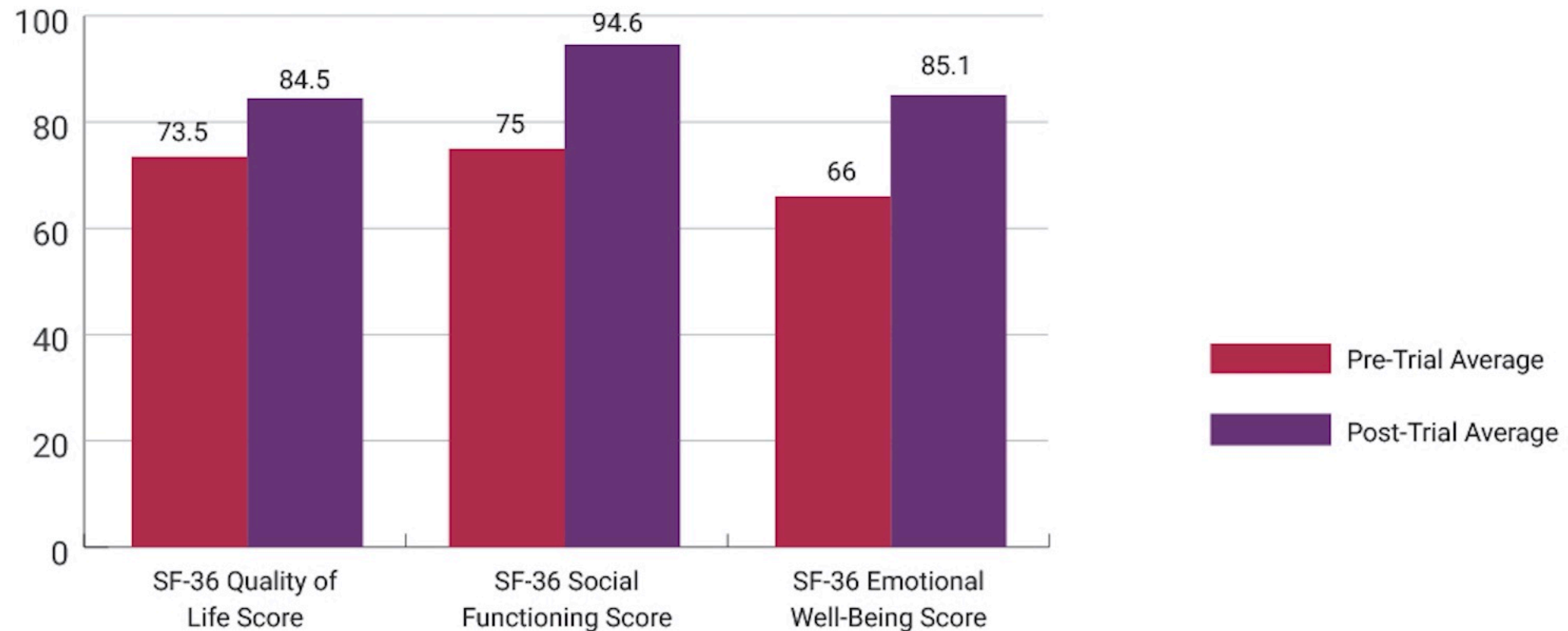
WARRIOR EVOLVED VETERAN WELLNESS STUDY

MARQUES P, HIGGINS G, WERNECKE C, SANCHEZ K

A pilot trial was conducted to determine the potential effects of the Vasper exercise system on markers of physical and emotional function in a sample of 14 US armed forces veterans from the Warrior Evolved Veteran Rehabilitation Facility in Colorado Springs. Participants completed 24 Vasper sessions over a 6-week trial period. Emotional wellbeing was measured through the SF-36 quality life questionnaire, which was administered before and after the trial period. Results show that 57% of participants reported an increase in general quality of life, 57% reported an increase in social functioning, and 71% reported an increase in emotional wellbeing.

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Changes in Markers of Emotional Wellbeing



SLEEP QUALITY

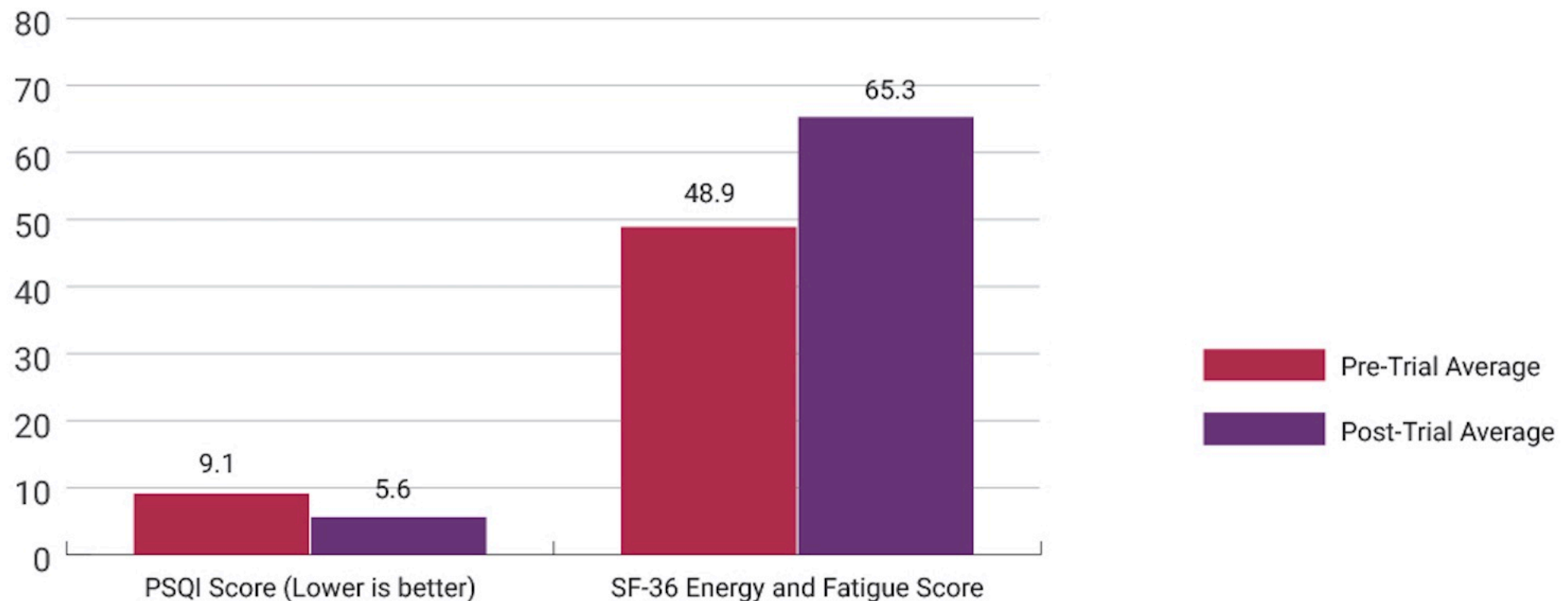
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Sleep Quality and Energy Level Changes



Effects of Cooled Compression Exercise Technology on Health, Sleep and Quality of Life in Veterans

Chloe Wernecke, Grove Higgins, Pat Marques

Abstract— Veterans are disproportionately affected by physical and emotional functional disorders compared to their civilian counterparts, a discrepancy that is deepened by delay to care within the Veterans Health Administration. The most common self-reported health concerns of veterans, post-traumatic stress, sleep disturbances, back/neck/shoulder problems, and depression, can be mitigated with lifestyle intervention such as exercise programs until primary care can be received. However, the intensity and consistency of exercise required to produce physiologic effect is a significant barrier to many veterans, and the same comorbidities that contribute to physical and mental limitations can also be the obstacle in gaining these benefits in conventional exercise programs.

Research has supported use of compression exercise in physically limited populations and demonstrated physiological responses at lower intensities (10-20% one repetition maximum vs 70% for hypertrophy in resistance exercise). Combination of low-pressure compression exercise and cooling (Vasper™ system) has shown elevated growth hormone and testosterone and depressed nighttime cortisol, indicating that this technology may be specifically beneficial for this population.

The purpose of this study was to determine the safety and efficacy of an accessible cooled compression exercise system on markers of physical and emotional function in veterans.

14 veterans completed 24 cooled compressive exercise sessions in 12 weeks. Baseline and endpoint questionnaires validated for clinical significance were administered to determine sleep quality (Pittsburg Sleep Quality Index), quality of life (RAND Short Form 36), and respiratory dysfunction related to stress and anxiety (Nijmegen Questionnaire).

Two-tailed T-tests were performed on the data. Sleep quality improved in 71% of subjects (9.15 ± 6.87 vs 5.57 ± 3.74 , $p = 0.0232$), 57% improved quality of life (73.45 ± 17.17 vs 84.46 ± 9.27 , $p = 0.0316$), and 71% decreased adverse respiratory symptoms (11.29 ± 8.38 vs 7.86 ± 6.26 , $p = 0.0594$) compared to baseline. Increases were seen in all 8 sub-scores of quality of life, with statistically significant improvements in 4 categories: social functioning (75 ± 28.17 vs 94.64 ± 11.62 , $p = 0.0058$), energy and fatigue (48.93 ± 25.21 vs 65.63 ± 19.26 , $p = 0.0426$), emotional wellbeing (66 ± 24.29 vs 85.14 ± 14.16 , $p = 0.0054$), and general health (72.14 ± 15.78 vs 79.64 ± 12.78 , $p = 0.0497$). For sleep quality, those subjects with baseline scores defined as clinically disturbed sleep ($n=8$, 58%) all (100%) experienced sleep improvements (9.14 ± 6.87 vs 5.57 ± 3.74 , $p = 0.00301$), with 25% resolving below clinical delineation.

These findings suggest that the use of a novel cooled compressed exercise technology may be an effective intervention to address symptoms in veterans and other individuals living with physical and emotional functional disorders. The most significant results were in markers of emotional wellbeing and sleep, and notably, across all three questionnaires, the benefit effect was most pronounced in subjects who started with lower baseline scores. These results suggest that this intervention has specific potential for those who are clinically most severe and highlight the potential of Vasper™ as an interim intervention during current delays for primary evaluations. Further research is needed to support the results of this pilot and directions of investigation should include quantitative sleep assessment and testing of hormones.

Keywords—Blood flow restriction, quality of life, sleep, veterans.

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