Effects Of Electrical Exercise on Self-Reported Depression and Quality of Life in those with Spinal Cord Injury

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ABSTRACT

One of the most common psychological disorders that occur as a result of spinal cord injury (SCI) is depression along with reductions in quality of life. Moreover, depression is correlated with quality of life. It is increasingly apparent that exercise offers an accessible and non-pharmacological intervention to ease depressive symptoms and improve quality of life. Unfortunately, access to meaningful exercise options remains challenging to those with mobility impairments such as those seen with SCI. **PURPOSE**: The purpose of this study was to assess the chronic engagement of home-based electrical stimulation exercise (ESE) on self-reported depression and quality of life in those with spinal cord injury. **METHODS**: 9 individuals with ASIA A or B SCI were recruited for this study. Participants were mailed exercise equipment (PowerDot) and remotely instructed on its use. On day one, the subjects completed the Patient Health Questionnaire-8 (PHQ-8) and SCI Quality of Life (SCI-QLI). Starting on day 6, the subjects completed neuromuscular electrical stimulation exercise (NMES) of the quadriceps and the hamstrings for 20 minutes each, totaling 40 minutes The subjects continued to exercise five days per week for four weeks. The SCI-QLI and PHQ-8 were assessed immediately before and after exercise on days 6, 15, and 25. **RESULTS**: There was no main effect of time on self-reported depression ($F_{(6,53)} = 0.20$, $p=0.98$)). A linear regression revealed a significant overall model ($F_{(4,55)} = 7.1$, $p \leq 0.0001$, $R^2 = 0.34$). Subscales of the SCI-QLI reported the following effects: Health ($\beta = 0.067$, CI [-0.15, 0.28], $p = 0.56$), Socioeconomic ($\beta = 0.50$, CI [0.19, 0.80], $p = 0.002$), Psychological ($\beta = -0.55$, CI [-0.83, -0.27], $p = 0.0002$), Family ($\beta = 0.11$, CI [-0.29, 0.14], $p = 0.49$). **CONCLUSION**: Home-based exercise did not significantly reduce depression. The SCI-QLI explains 34% of the variance in self-reported depression. Moreover, the subscales of Socioeconomic and Psychological/Spiritual statistically predict self-reported depression, while Health and Family subscales do not.