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The effects of an innovative posture garment technology on the scapular and lumbar muscle activity and scapular alignment

Introduction: Poor posture leads to back and neck pain, loss of office productivity and over 90 Billion annual spent on treatment and prevention. This study evaluates an innovative garment posture technology (PPR) on the scapula alignment and muscle activities.

Aim: To determine the effect of a posture correcting garments technology (PPR) on the scapular alignment and sEMG of scapula and lumbar muscles.

Subjects & Methods: A random sample of 20 individuals, 11 women and 9 men, was tested (n=20) and a homogenous variance between individual measurements was assumed. Each individual was asked to stand in the resting position while his/her scapula alignment was evaluated using the Lennie Test. Age and gender of each participant was recorded, as well as their status as an athlete. Individuals who spent more than 4 days per week in the gym for over 30 minutes were categorized as recreational athletes. IFGFit PPR garment technology integrated in a poly cotton fabric light weight crew shirt was used for testing. Before the application of the shirt, an electromyography was used to record muscle activation data of the middle trapezius and lower erector spinae. Patients were asked to stand comfortably and breathe normally. All EMG measurements used three electrodes, one for the middle muscle, one for the end of the muscle and one reference electrode placed on unaffected muscle groups. EMG measurements were taken in 20 second intervals and transmitted over Bluetooth to be saved on a separate device. After the application of the shirt, an EMG was taken again using the same electrode positions.

Results: After performing a two-sample t-test, it was determined that the effect of the shirt on resting scapular position was statistically significant (p<0.5) using a 95% confidence interval, individuals who obtained a scapular positioning difference of between 6.64 mm and 21.2 mm. In addition, EMG data proved a statistically significant result that the mean frequency and mean voltage were lower in the mid trapezius after the application of the posturepedic shirt. EMG data also proved a statistically significant result that the mean frequency and mean voltage were higher in the erector spinae after the application of the posturepedic shirt.

Conclusion: Application of the IFGFit PPR technology integrated in a light weight crew shirt improves shoulder rounding by retracting the scapula and bringing the resting scapular distance closer to each other. The EMG data further support our hypothesis that by bringing the scapulas closer together, the middle trapezius muscle shows less activity with less activation of sEMG, and the lumbar muscle has more muscle activation to provide better support. The study also revealed that there is no statistical significance of either age or gender on the effectiveness of the shirt however, recreational athletes did show increased scapular retraction compared to non-athletes.

Biography

Stephen Liu has completed the course at University of California, Los Angeles, Geffen School of Medicine. Stephen brings more than 25 years of experience as a physician-executive, entrepreneur, an academic orthopedic surgeon specializing in sports medicine, and a senior clinical advisor to several medical device companies and financial organizations in the U.S. and Asia. He served as a Senior Advisor to Opko Health, Inc. (OPK) and a Strategic Advisor to Ladenburg Thalman (LTS). He also served as a member of the Board of Directors of American International Bank, as Chairman/founder of Interbusiness Bank and as Chairman/founder of First China Capital Partners, all of which were acquired. He is currently executive Chairman/Founder of IFGcure, a VR application focus in mental and physical wellness, and IFGfit, a posture wearable tech company. He is on the board of POC Medical system, a breast cancer diagnostic company.

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