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**Please indicate which classification the abstract should fall into for program scheduling.:**

Shoulder & Elbow

**Institution where the research took place:**

Gleneagles Global Health City, Chennai, India and JOGO Health, Bridgewater, NJ USA

**Title:**

Digital Therapeutics(DTx) EMG Biofeedback Solution for Post-Scapular Fracture

**Abstract:**

**INTRODUCTION:** Digital therapeutics (DTx) is a newly classified FDA modality to treat various conditions using biosensors and software. JOGO is a DTx based Electromyographic biofeedback (EMG BF) system that facilitates neuromuscular retraining by using audio and visual stimuli using a EMG surface electrode based biosensor and a software. Complementing conventional therapy (CT), DTx

drastically improved the functional abilities of a patient with a previously fractured but healed right scapula bone.

**METHODS:** We reviewed the patient's response to DTx after undergoing CT for his previously fractured right scapula. The patient had completed CT for abduction and flexion of the right shoulder which slightly increased motor improvement, but did not improve functional movement. EMG BF integrated DTx was used for protraction of serratus anterior, retraction of rhomboids, and complementary CT exercises for the supraspinatus, deltoids, and infraspinatus. The patient completed the integrated exercises over the duration of 10 weeks in both supine and standing positions.

**RESULTS:** Prior to DTx, patient was restricted by rotator cuffs for below shoulder activities such as brushing, eating, etc. and completely restricted for all above shoulder activities. MRC grading results for right flexor, extensor, abductor, external rotators, and internal rotators initial and 10 weeks post: 2+, 3, 2, 1+, and 3, respectively improved to 3, 3+, 3, 2+, and 3+. The ROM for the patient's right shoulder more than doubled on average per muscle group after 10 weeks, for both lying and standing position. After DTx, patient was able to resume all shoulder functionality.

**DISCUSSION AND CONCLUSION:** DTx utilizes EMG BF in such a way that maximizes clinical outcome through mobile gamification helping patient adherence. These features augment patient compliance due to its user friendly design, further enhanced by its portability and cost-effectiveness. Further studies are in progress to evaluate efficacy in EMG BF integrated rehabilitation.