Investigation of Cervical Fleksor and Extensor Muscle Activation During Isometric Neck Extension Applied by Therraband

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Objectives: Therrabands are commonly used for resistive exercises, streching and stabilization exercises and also isometric exercises. However, principles of practice of therrabands are mostly focused on exercise variety. Likewise it is only given point to exercise variety during therrabands' usage at cervical region. Nevertheless, for effective usage of therrabands and for proper assessment of effectiveness response, it is necessary to know the amount of resistance being given or muscle activation response against the resistance given. The aim of this study was to compare activations of cervical flexor and extensor muscles during isometric extension exercise against the resistance of therraband in healthy individuals.
Methods: 14 healthy subjects (8 female,6 male)aged between 19-32 have been included in the study. Subjects with neck problems, systemic diseases, history of trauma or operation were excluded. Neck isometric exercises with therraband was 2 sets with 2 minutes' intervals and EMG records have been taken during exercises. After preparation of the skin, surface electrodes placed on the motor points of sternocleidomastoideus(SCM) and erector spinae(ES) muscles. After taking the average of 3 measures, the first 10 seconds of muscular activations were recorded. The average of integrated EMG(iEMG) values of each records was used for statistical data. Independent T test and Mann Whitney U test were used for the analysis of findings.
Results: There was no significant difference between the right ES and left ES's mean iEMG during isometric neck extension against therraband (p=0.06). Although there was no difference between right SCM and right ES muscles action potentials(t=-0.895; p=0.379), there was a significant difference between left SCM and left ES muscles' action potentials (z= -2.435; p=0.01). When all the right and left SCM and ES muscle activations were compared, a significant difference was detected in favour of ES muscles (t= -2.133; p= 0.03).
Conclusion: The results show that the neck extensors may be affected by the arm muscles during isometric exercise with therraband and the arm muscle activation can interfere EMG activity of neck muscles because of holding therraband. Higher SCM muscle activation in the right side might be related to dominancy. Consequently, this study has shown that the other muscle groups can be affected from self isometric neck exercises with therraband; thus therraband exercise done by a mechanism are more convenient for the neck isometrics.

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