Effects of a 12-week exercise program in patients with chronic ankle instability: A pilot study

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Background

Chronic ankle instability (CAI) is defined as repetitive episodes of the ankle 'giving way' and self-reported functional limitations following at least one significant ankle sprain. After ankle sprain, 10~30% of patients experience CAI. Previous studies reported that exercise training led to significant improvement of functional outcomes in CAI. However, standardized CAI exercise program to improve proprioception and neuromuscular control has not been introduced in Korea. Therefore, the present study was aimed to introduce newly developed 12-week exercise program for CAI, and determine the effects of it.

Methods

Fifteen subjects with previous history of ankle sprain and self-reported subjective feeling of instability at least 3 months were included in this retrospective study. Patients underwent 12-week program consisted of resistance exercise using theraband and five exercises of proprioceptive training. In detail, 12-week course was divided into 4 sections, each of 3-week with increasing level of difficulty. Star excursion balance test (SEBT), numeric rating scale (NRS) score for pain, and counts of "giving way" sense in past one month were measured at pre- and post-exercise program.

Results

The subjects were 33.1± 12.6years old, and 11 of them were female. Mean talar tilt angle was 9.0± 4.4 degree, and anterior talar translation distance was 8.2±2.0 mm on

ankle stress radiographs. In Magnetic resonance image of the ankle, 12 and 10 subjects showed chronic partial tear of anterior talofibular ligament and calcaneofibular ligament, respectively. Subjects with CAI demonstrated deficits in SEBT reach tasks in anterior(87.5 ± 10.0 cm), posteromedial(74.3 ± 15.0 cm), and posterolateral(82.3 ± 14.9 cm) directions. Following exercise program, SEBT reach distances were improved in every directions (anterior: 95.7±14.3 cm, p = 0.070; posteromedial: 84.5±18.3cm, p =0.071; posterolateral: 91.3±14.1 cm, p =0.077). Also, subjects reported lower NRS score after the exercise (pre: 3.5±2.0, post: 1.6±7.4, p=0.021). However, number of “giving way” sense showed no significant change.

Conclusions

This report describes a newly developed 12-week CAI exercise program and functional changes after the exercise. It is confirmed that this 12-week exercise program was effective to reduce the ankle pain, and improve dynamic postural control in patients with CAI.