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Effects of strengthening, stretching and comprehensive exercise program on the strength and range of motion of the shoulder girdle muscles in upper crossed syndrome

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Aim: The purpose of the study was to investigate the effects of strengthening, stretching and comprehensive exercise program on range of motion and isometric strength of shoulder muscles in patients with upper crossed syndrome.

Methods: In the present study, thirty female students with excessive FH (>46), FSH (>52) and Kyphosis (>42) angle were chosen as samples using purposive sampling method. The average of age, weight, height and body mass index of the samples were 22/13±1/77 years, 61/36±1/95 kg, 162/10±2/80cm, and 23/35±0/9 kg/m^2 respectively. The subjects were randomly divided into three groups of 10 experimental groups. The first experimental group performed strength training, second group stretch training and third group comprehensive training for 6 weeks. In this study, photogrammetric method technique was used to measure the angle of the forward head and forward shoulder. A flexible ruler was used to measure the angle of kyphosis (r=0.93). Leighton gravity flexometer and manual dynamometer have been used for measuring glenohumeral rotary range of motion (ROM) and isometric strength of scapulothoracic muscles, respectively. Data were analyzed using paired T-test and SPSS (21) ($p \leq 0.05$).

Results: There were significant or increase in the range of rotary motion, isometric strength of rotator muscles, and isometric strength of lower trapezius, upper trapezius and serreatus anterior muscles in shoulder of three types of exercise (strength, stretch, comprehensive training) was found after 6 weeks training ($p \leq 0.05$). Also, there was a significant increase in isometric strength middle trapezius and rhomboid muscles in strength training after 6 weeks ($p \leq 0.05$).

Conclusion: The results showed that the stretching and strengthening exercises are effective in increasing ROM and strength of the shoulder girdle muscle in patients with upper crossed syndrome and led to improve forward head and forward shoulder and kyphosis in this people.

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