Functional Strength Ratio in Athletes with and Without Glenohumeral Internal Rotation Deficit (GIRD)

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Objectives: Eccentric external rotator (ER) and concentric internal rotator (IR) strength is expressed as a functional strength ratio (ER:IR) for shoulder. The difference in functional strength ratio has been well documented in athletes, but no one compared the functional ratio in athletes with glenohumeral internal rotation deficit (GIRD). The aim of this study was to investigate the effects of GIRD on functional ER:IR strength ratio of the adolescent athletes.
Methods: Fifty-three adolescent athletes (12-18 years) from basketball and volleyball teams participated in the study. All the athletes were filled a questionnaire to obtain demographic information and information about their sporting activity. To determine the GIRD, the range of glenohumeral internal rotation motion was measured with the use of a digital inclinometer. An isokinetic dynamometer was used for the assessment of eccentric and concentric muscle strength of the dominant and non-dominant shoulders. Student-t test was used to assess the difference on ER:IR strength ratio between groups.
Results: After the clinical examination of all shoulders the athletes were divided into 2 different groups, which were shoulders with glenohumeral internal rotation deficit (Group 1, n=34) and shoulders without GIRD (Group 2, n=22). There was a significant difference among groups on functional ER: IR strength ratio (t=-2.172, p=0.034). The ratio was lower in shoulders with GIRD.
Conclusion: GIRD has an adverse effect on functional shoulder ratio, which is one of the causes of shoulder injuries in adolescent athletes. Therefore, GIRD should be treated to prevent future injuries.

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