DIFFERENCES IN GLENOHUMERAL RANGE OF MOTION IN PRE-PUBESCENT SWIMMERS COMPARED TO CONTROLS OVER A TWELVE-WEEK SEASON

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Alterations to glenohumeral joint range of motion resulting from repetitive overhead movements have been associated with shoulder pathology in college and elite level swimmers. Research on overhead adolescent competitive athletes reveals alterations in external rotation (ER) and internal rotation (IR) range of motion (ROM) when compared to non-athletes, however, limited data exist examining shoulder ROM of pre-pubescent swimmers. The purpose of this study was to compare shoulder ER and IR of pre-pubescent competitive swimmers to non-swimmers over twelve weeks. Sixty-three healthy participants, ages 8-10, (40 swimmers; 23 non-swimmers) from local United States swim teams and elementary schools volunteered for this study. All participants filled out the Pubertal Development Scale to ensure pre-pubescent status. Pre-testing occurred at the beginning of the swimmer’s season and was repeated 12 weeks later. ER and IR measurements were assessed bilaterally, actively and passively, using a universal goniometer. The humerus and scapula were stabilized with a 90° wedge. Three repetitions within each trial were averaged for statistical analysis. A 2 (time) x 2 (motion) x 2 (group) MANOVA followed by appropriate univariate and post hoc tests were performed. Results revealed that passive ROM was significantly greater than active ROM (p ≤ .01) in both the swimmers and non-swimmers for left arm ER, left arm IR, and right arm IR. Additionally, swimmers right arm passive IR significantly decreased pre- to post-season (pre-season = 74.08 ± 14.04; post-season = 60.82 ± 18.05). Swimmers right arm active IR significantly decreased pre- to post-season (pre-season = 59.30 ± 15.75; post-season = 50.28 ± 18.25). A main effect was found for swimmers left arm IR. Left IR decreased from pre- to post-season (pre-season = 140.06 ± 16.46; post-season = 119.13 ± 17.49). No significant findings were noted over time for the control group. The results of this study suggest that ROM alterations occur before puberty in competitive swimmers compared to non-swimmers. For this reason, shoulder prevention programs in this age groups are warranted.