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Assessment of Bilateral Glenohumeral Posterior Capsule Tightness in Recreational Golfers

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Comparison of Glenohumeral Posterior Capsule Tightness between Golfers and Non-Golfers
ABSTRACT: The primary movement of the golf swing is habitually unidirectional. Consistently the leading side, (left side of a right handed golfer) and the trail side, (right side of a right handed golfer) are asked to perform remarkably different tasks with an overall shoulder injury prevalence of between 8-16%.
PURPOSE: The current study examined glenohumeral posterior capsule mobility of the leading shoulder compared to the trail shoulder in recreational golfers and non-golfers.
METHODS: Participants were twenty-two recreational golfers (15 males, 7 females) mean age 38.8 years(SD= 18.85) with at least two years of prior experience golfing and thirteen non-golfers (7 males, 6 females) with a mean age of 33.1 years (SD=12.35). All participants had bilateral glenohumeral posterior capsule mobility measured as medial epicondyle distance from exam table in inches via side lying horizontal adduction of the non weight bearing upper extremity with scapula manually stabilized.
RESULTS: Golfers exhibited a statistically significant (P<.001) asymmetry of glenohumeral posterior capsule mobility in their leading shoulder compared to the trail shoulder. The non-golfing participants demonstrated no statistically significant difference in right to left glenohumeral posterior capsule mobility exhibiting relatively equal measurements bilaterally.
CONCLUSIONS: The sample of golfers demonstrated an asymmetry in glenohumeral posterior capsule mobility in leading to trail shoulders that was not seen in the non-golfing population. Clinical consideration should be given to this asymmetry in training and care of the golfing athlete especially as it relates to limitations in shoulder mobility and motion.

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Adjusted Muscle Strength Evaluation Using Directional and Continuous Jump Motion Test by 3D Motion Analysis

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PURPOSE: To study adjusted muscle strength evaluation methods using directional and continuous jump motion tests (vertical,forward, backward), this study compares basketball players with general students and examines differences between the groups and directional differences.
METHODS: Subjects were two groups ; General Students (14 male students) and Basketball Students (10 male students). Vertical, forward and backward jumps were each measured twice for maximum exertion (100%) and adjusted exertion (50%). The first vertical jump with full strength and then immediately after landing, adjusted exertion in each direction (50% exertion) (vertical, forward, backward) were measured using 3D motion analysis (Kinect2 (Microsoft)). Difference in average value in single jump measurement (50%) and continuous measurement (50%) using absolute values (cm) was verified and two factor ANOVA was conducted for differences between the groups (basketball vs. general) using relative values (%) and for differences among each direction (vertical, forward, backward). For the multiple comparison test, the Bonferroni method was used. The level of significance was set at 5%.
RESULTS: In single jump and continuous measurements, the general student group showed close to 50% exertion in the order of forward, vertical, and backward jumps. The basketball group showed 50% exertion in the order of forward, backward, and vertical jumps. The order of superiority tended to be different between the two groups. Additionally, compared to the single jump measurement, continuous measurement showed that both the general student and basketball groups demonstrated close to 50% exertion and particularly in the continuous measurement, differences between the two groups tended to become more noticeable in the backward jump.
CONCLUSIONS: For two groups, there are different directions in which adjusted exertion are likely to occur. By continuous jump measurement with initial movement maximum exertion, it is possible to evaluate accurate adjustment abilities and competitive qualities.

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Comparison Of RPE Rating Scales For Session RPE

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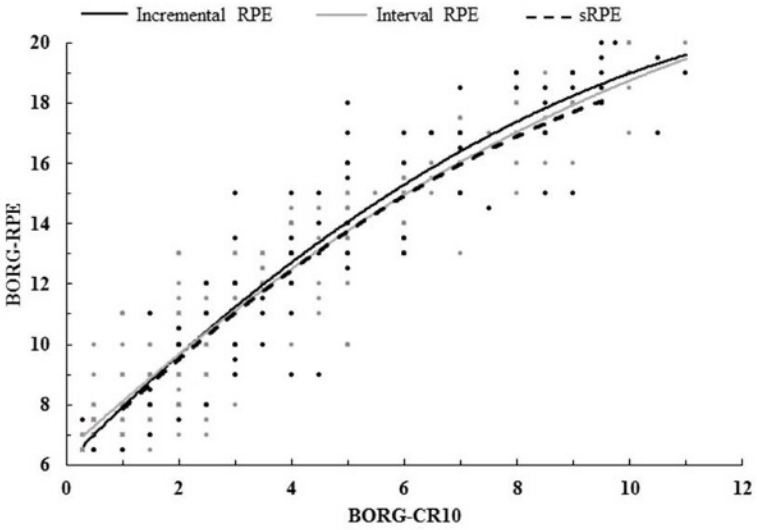
PURPOSE: The Session RPE (sRPE) is an accepted method of monitoring training in athletes in many different sports. It is based on the Category-Ratio (0-10) RPE scale (BORG-CR10) developed by Borg. There is no evidence how substitution of the Borg 6-20 RPE scale (BORG-RPE) might influence the sRPE.
METHODS: Systematically training, recreational level athletes from different sport disciplines performed six, randomly ordered, 30-minute interval training sessions, at intensities based on peak power output (PPO), designed to be easy (50%PPO), moderate (75%PPO) or hard (85%PPO). sRPE was obtained 30-min post-exercise using the BORG-CR10 or BORG-RPE and compared for matched conditions.
RESULTS: The average percent of heart rate reserve (%HRR) was well-correlated with sRPE from both BORG-CR10 (r = 0.76) and BORG-RPE (r =0.69). The sRPE from BORG-CR10 and BORG-RPE were very strongly correlated (r = .90) at matched times.
CONCLUSIONS: Although producing different absolute numbers, sRPE derived from either BORG-CR10 or BORG-RPE provide substitutable estimates of perceived exercise training intensity.



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Reliability and Validity of Hip Rotation Strength Tests: Systematic Error Due to Tester Hand Dominance

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PURPOSE: Manual muscle testing using hand held dynamometry (HHD) is commonly utilized and for a more objective measure. Deficits in hip rotation strength have been linked to lower extremity pathology, but measurement reliability is unknown. The purpose of this study was to assess the reliability and validity of hip internal (IR) and external (ER) rotation strength in three positions.
METHODS: Right and Left Hip IR and ER strength was measured using HHD in 20 patients, (30 ± 12 years, 9 women, 11 men), using 3 tests (seated, supine, side-lying), at two different time points (Test 1, Test 2), by two different testers (A and B). Strength was reported as torque (Nm/kg). Intratester and intertester relative reliability were assessed using intraclass correlation coefficients (ICC). Absolute reliability was assessed using 95% limits of agreement (LOA).
RESULTS: Torque was highest for the seated tests, followed by the supine (13% lower than seated), and side-lying (25% lower than seated). There was a systematic difference between left and right legs for the seated and side-lying tests: the left side was stronger than right side for IR (Seated: 7% p=0.044, Side-lying: 9% p=0.04); right side 7% stronger than left side side-lying ER (p=0.008). Inter- and intratester ICCs are reported in Table 1.
CONCLUSIONS: Hip ER and IR strength testing had poor intra- and intertester reliability. The right/left difference in seated and side-lying tests, suggest indicate tester hand dominance may be a confounding factor. These data highlight the need for more reliable hip rotation strength testing.

Table 1.

Intertester ICC								
Supine			**Seated**			**Side-Lying**		
Test 1		**Test 2**	**Test 1**		**Test 2**	**Test 1**		**Test 2**
IR R	0.67	0.47	**IR R**	0.88	0.67	**IR R**	0.50	0.53
IR L	0.48	0.30	**IR L**	0.71	0.41	**IR L**	0.70	0.69
ER R	0.63	0.75	**ER R**	0.84	0.79	**ER R**	0.15	0.57
ER L	0.35	0.60	**ER L**	0.77	0.74	**ER L**	0.56	0.32
Intratester ICC								
Supine			**Seated**			**Side-Lying**		
A		**B**	**A**		**B**	**A**		**B**
IR R	0.83	0.39	**IR R**	0.84	0.54	**IR R**	0.71	0.43
IR L	0.66	0.37	**IR L**	0.61	0.58	**IR L**	0.75	0.69
ER R	0.75	0.79	**ER R**	0.89	0.70	**ER R**	0.42	0.44
ER L	0.70	0.51	**ER L**	0.92	0.51	**ER L**	0.88	0.33