

METHODS: 64 subjects with CLBP (age: 35.2±1.5 years, 34 males and 30 females, body weight: 66.5±3.7kg) were recruited as C group (experimental group), while 29 health subjects (age: 39.2±1.8 years, 16 males and 13 females, body weight: 64.8±3.2kg) were recruited as Y group (control group). Recorded the degree of pain (VAS, Visual Analogue Scale/Score) questionnaire, and used the isokinetic muscle testing System (Contrex System Top) to test the hip isokinetic muscle strength. Analysis the differences between C group and Y group, and the differences between the CLBP ones with different degree of pain (according to the VAS).

RESULTS: 1) There were no differences of hip flexor, extensor or adductor between C group and Y Group ($P > 0.05$); 2) Hip flexor/ extensor ratio (isokinetic strength) of C group were significant higher than Y group bilaterally, about 2.2 times higher ($p < 0.01$); This interesting result indicated that although the flexor or extensor as an independent index shows no difference between CLBP individuals and healthy individuals, but when it comes to consider the flexor and extensor as a functional group of body posture and movement, the CLBP individuals show a decrease of extensor compares with the flexor, and this also indicate the coordination of these two muscle groups maybe decrease in the CLBP ones ; 3) Hip abductor isokinetic muscle strength of Y group was significantly higher than C group, about 26% higher ($p < 0.05$), which means muscle strength of hip abductor of the CLBP individuals decreased; 4) In C group, according VAS score, the strength of flexor, extensor and abductor of mild ones (VAS 0-3) were significantly higher than moderate ones (VAS 4-7) ($P < 0.05$), the differences were 37%, 38% and 31% respectively.

CONCLUSIONS: The significant reduce of muscle strength of hip abductor is related to CLBP; CLBP individuals show a decrease of extensor compares with the flexor, and this indicate the coordination of these two muscle groups maybe decrease in the CLBP ones; And the more pain of CLBP, these muscle strength decrease more.

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High Incidence Of Lumbar Intervertebral Disk And A Possible Risk Factor For Collegiate Weightlifters

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(No relevant relationships reported)

Weightlifters experiences high mechanical stresses in their lumbar region. The intervertebral disks act as shock absorbers between each of the vertebrae in the spinal column. The disks of weightlifters may be injured by repetitive overload during weightlifting maneuvers. Previous studies have shown that excessive trunk rotation is a major risk factor for lumbar intervertebral disk degeneration (LIDD) in athletes. Although trunk rotation is not included in most weightlifting maneuvers, we hypothesized that there would be a high incidence of LIDD in collegiate weightlifters.

PURPOSE: The purpose of this study was to examine the prevalence of LIDD in collegiate weightlifters. We also investigated possible risk factors for LIDD, except for excessive trunk rotation.

METHODS: Forty Japanese collegiate weightlifters (25 men and 15 women; age, 19.6±1.1years; starting age, 15.1±0.9years; height, 164.7±8.0cm; weight, 71.9±14.kg). LIDD were evaluated using T2-weighted magnetic resonance images. Pfirrmann's classification was used to define LIDD and classify the subjects into either the LIDD group or the non-LIDD group. We also investigated physical characteristics such as body composition (height, weight, muscle mass, fat mass), joint range of motion (thoracic, lumbar, and hip), and lumbosacral alignment (lumbar angle, sacral angle, and lumbosacral angle). Student's t-test and logistic regression were used for statistical analyses.

RESULTS: The prevalence of LIDD among weightlifters was 55.0% (22/40). Weight (77.3±16.40 vs. 65.7±10.24, $p=0.02$), fat mass (18.5±8.07 vs. 12.5±4.15, $p=0.07$), and body mass index (27.7±4.78 vs. 24.71±2.10, $p=0.02$) in the LIDD group were significantly higher than those in the non-LIDD group. Hip flexion angle (left: 121.5±10.10 vs. 126.9±6.15, $p=0.05$; right: 121.9±8.00 vs. 127.9±7.06, $p=0.04$) and lumbar angle (18.3±6.04 vs. 24.2±4.65, $p=0.01$) were lower in the LIDD group compared to the non-LIDD group. By using logistic regression analysis including sex differences, lumbar angle was found to be a significant independent variable for LIDD (odds ratio, 1.34; 95% confidence interval 1.08-1.67, $p=0.01$).

CONCLUSION: A high incidence of LIDD was observed in Japanese collegiate weightlifters. Lumbar angle is a possible risk factor.

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Relationship Between Rotator Cuff Strength & Functional Scores After Bankart Repair

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(No relevant relationships reported)

PURPOSE: The anterior instability is representing approximately 95% of all shoulder instabilities that mainly caused by an abduction, extension, and external rotation of the shoulder movement. However capsular laxity and unstable glenohumeral joint which make the most frequently dislocated joint in shoulder have closely related with rotator cuff weakness. This study examines the association between strength and functional indices in patients with Bankart repair. The purpose of the study is the relationship between internal rotator and external rotator muscle strength, shoulder functional indices (ROWE and ASES scores) post one year of the Bankart repair.

METHODS: This was a cross sectional study comprising of 40 patients, all males (24.5±13.5 yrs, ht 169.3±8.5 kg, and wt 67.8±11.4 kg) with Bankart lesion who may be treated arthroscopically. Isokinetic internal rotator (IR) and external rotator (ER) strength were evaluated with a CSMI dynamometer, with the subject seated and the shoulder abducted 45 in the scapular plane. Tests were performed at 60 /sec concentric mode for both sides. Shoulder strength was analyzed by comparison between involved side strength deficit and uninvolved side (side-to-side differences). Preoperatively and postoperatively, all the ROWE and ASES (American Shoulder and Elbow Surgeons) score was recorded that included subscores for ROM, muscle strength, pain, motion, and function by the same exercise physiologist.

RESULTS: The patients were divided into 4 groups for comparison in muscle strength deficit- Q1 (less than 20% difference in muscle strength deficit), Q2 (21-35% deficit), Q3 (36-50% deficit), and Q4 (more than 50% difference in muscle strength deficit). In our study, ROWE and ASES score ($r = -.305$; $r = -.382$) were significantly correlative difference in Q1 (less than 20% deficit) group with IR and ER muscle strength.

CONCLUSIONS: This study suggests that muscle strength of the shoulder after Bankart repair will affect the functional ability more than any other factor. The muscle strength deficits in shoulder joint have significant negative consequences for the long term functional outcome after Bankart lesion. Therefore, it is deemed necessary to measure the muscle strength of the rotator cuff and continue rehabilitation exercise needed for recovery of muscle strength.

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Kinesio Tape Fails to Affect Characteristics of Skeletal Muscle Recruitment

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(No relevant relationships reported)

Kinesio Tape (KT) is a popular therapeutic intervention in sports, aimed at optimizing athletic performance and preventing musculoskeletal injury. The manufacturers of KT claim it can alter characteristics of skeletal muscle recruitment, facilitating or inhibiting contraction depending on the nature of its application. Evidence of this claim is conflicted.

PURPOSE: To assess the effectiveness of KT in changing recruitment properties of the rectus femoris.

METHODS: Twenty college-aged, recreationally-active men and women with no history of injury were enrolled (11 men, 9 women). A Cybex Humac Norm dynamometer measured force output in the dominant leg in 3 taping conditions: 1) No tape applied (control), 2) KT applied to enhance muscle recruitment (facilitation), and 3) KT applied to impair muscle recruitment (inhibition). Subjects were tested on 3 separate days with 48 hours of rest between each; they performed no other exercise prior to and throughout the testing protocol. Subjects performed all 3 trials (control, facilitation, and inhibition) during each testing session, with randomization of the testing order. A certified KT practitioner applied the tape to each subject; subjects were blinded to the orientation of the tape (facilitation vs. inhibition). Mixed-design ANOVA tested differences in taping conditions (and taping conditions by gender) on force output. The between-subjects factor was gender; the within-subjects factor was taping condition. Differences in the within-subjects factor were tested with the Bonferroni post hoc correction.

RESULTS: There were no differences between taping conditions ($F=0.190$; $P=0.829$) nor effects of treatment group by gender ($F=1.634$; $P=0.226$). Post hoc tests using the Bonferroni correction revealed no differences between any two treatment groups ($p=1.000$ for each comparison).

CONCLUSIONS: The application of KT did not elicit changes in muscle recruitment patterns. KT neither facilitates skeletal muscle contraction nor inhibits it based on its application.