muscular strength and range of motion but also affects daily life activities and quality of life. This study is conducted to investigate whether there is a relationship between flexibility, muscle strength, shoulder range of motion and quality of life with perception of depression.

Methods: 19 women were recruited in the present study. The exclusion criteria included any psychiatric, neurological or musculoskeletal disorders except neck and upper back pain. At the begining, the volunteers were subjected to the assessment protocol which included demographic data (age, weight in kilograms and height in meters). Manuel muscle test was applied bilatteraly to the rhomboid muscle, trapez muscle, pectoral muscles, upper back erector spinae muscles by the same clinician. Range of motions of upper back and neck were assessed by using standard goniometer. In both, assessment measurements were done 3 times and medium values used. The Scapular symmetry and shoulder protraction was evaluated with measurement of acromion-wall distance, occiput-wall distance, T3-Spina Scapulae, T7- Inferior Angle of Scapulae. Patiens's quality of life measured with SF-36 and depression with Beck Depression Inventory. After the data were collected analyzed with SPSS 21. Pearson's correlation analysses test was used to investigate of correlations between the parameters were measured. The level of significance was set at $p < 0.05$.

Results: The mean values of age and body mass index of the subjects were 32.16±8.09 years and 23.23±3.20 kg/m2, respectively. There was moderate correlation between right shoulder flexion and Social Function (SF) which is a subscale of SF-36 (r:0.500, p:0.029), left shoulder flexion and Social Function (SF) (r:0.600, p:0.007). There was moderate correlation between left shoulder flexion and Role Physical (RP) (r:0.523, p:0.022), Role Emotional (RE) (r:0.609, p:0.006) and Mental Component Summary (r:0.573, p:0.01), respectively. While there was significant correlation between left shoulder abduction and SF-36 General Health (GH) (r:0.614, p:0.05) and Social Function (SF) (r:0.584, p: 0.009), there was moderate correlation between right and left shoulder rotation and SF-36 Role Physical (RP) (r:0.456, p:0.049). There was moderately negative correlation between neck rightand left rotation and Beck Depression Inventory (r:-0.622, p:0.004) and significant correlation with SF-36 General Health (GH) (r:0.495, p: 0.031). The moderate and strong correlation between muscle strength and subscales of SF-36 with their correlation coefficient and p values were given in the table. The measurements that were conducted to determine the position and flexibility, there was moderately negative correlation between Acromion Wall Distance, SF-36 Role Physical (RP) (r:-0.616, p:0.005), Role Emotional (RE) (r:-0.622, p:0.004) and Mental Component Summary (r:-0.603, p:0.006). There was no correlation between other parameters of the study (p>0.005).

Conclusions: According to the results of the present study, there was moderate towards strong correlation between anthropometric measurements, muscle strength and health related quality of life among women with postural kyphosis. The effects of the non-dominance extremity values on their quality of life of the subjects was one of the remarkable results of the present study. Subsequent to maintaining postural integrity by increasing muscular strength and range of motion, may bring about increase in health related quality of life among women suffering from postural kyphosis.

Muscle Strength	M. Rhomboideus		M. Trapezius		M. Pectoralis		M. Erector Spinae
	R	L	R	L	R	L	
Physical Function	-	-	-	r:0.466 p:0.044	-	-	r:0.461 p:0.047
General Health	r:0.650 p:0.003	r:0.650 p:0.003	r:0.647 p:0.003	**r:0.711 p:0.001**	r:0.468 p:0.044	r:0.468 p:0.044	**r:0.706 p:0.001**
Social Function	r:0.515 p:0.024	r:0.515 p:0.024	r:0.492 p:0.032	r:0.631 p:0.004	r:0.518 p:0.023	r:0.518 p:0.023	**r:0.724 p:0.000**
Vitality	r:0.463 p:0.046	r:0.463 p:0.046	-	r:0.409 p:0.004	-	-	r:0.507 p:0.027
Physical Component Summary	r:0.519 p:0.023	r:0.519 p:0.023	-	r:0.582 p:0.009	-	-	r:0.580 p:0.009

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RELIABILITY AND GENDER DIFFERENCES OF A CLINICAL DEVICE USED TO ASSESS SUPERIOR AND INFERIOR PATELLAR MOBILITY

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Purpose: Patellar mobility measurements are used clinically to describe a patient's status, document progress, and determine the appropriate elements of a treatment program. Because these patellar mobility measurements may affect treatment selection and termination, the patellar mobility measurements should provide reliable and accurate information. Recently Ota, et al described a new, custom-designed patellofemoral arthrometer (PFA) for measuring lateral patellar movement. The authors reported excellent intratester reliability (ICCs = 0.96 and 0.97) and intertester reliability (ICC = 0.92) for 2 testers measuring 10 asymptomatic individuals. We modified the clinical device to measure superior and inferior patellar mobility. The purpose of the study 1 was to assess the intratester and intertester reliability of measuring the superior and inferior patellar mobility. The study 2 was intended to assess reference values and gender differences of superior and inferior patellar mobility.

Methods: Subjects were recruited from the student population at the department of Rehabilitation and Care of Seijoh University. All participants were informed as to the nature of the study and informed consent was obtained as approved by the ethics committee of Seijoh University. For study 1, twenty-nine pain-free individuals, participated. For study 2, a total of 205 pain-free individuals volunteered for this study. To assess the level of superior and inferior patellar mobility, we used a modified PFA (Matsumoto P&O Co., Ltd.) equipped with a digital caliper (Fig. 1). Patellar mobility was assessed using the PFA with the patient in bed in a supine position (0 hip rotation). Before each test, the level of pushing force (~80 N) was confirmed using a handheld dynamometer. Patellar length was determined by measuring the distance from the patella apex to the patella base. To measure inferior patellar mobility, the patellar apex was palpated and located with a laser using the adjustable laser module arm, and the digital calliper was set at zero to determine this point as the initial position. The inferior displacement of the patella was then determined by manually pushing the patella inferior (~80 N), at which point that side of the patella was again located by sliding the laser module arm on the calliper and reading the measurement. As with the inferior patellar mobility measurement, the amount of superior patellar displacement was calculated as the difference between the initial measurement with the quadriceps relaxed and the final position with the quadriceps contracted. In all cases, measurements were made three times, with the final analysis performed using the mean of those three. The intra- and intertester reliability of both superior and inferior patellar displacement obtained with the PFA were assessed using ICC (2,3). For Study 2, a patellar mobility index (PMI) was calculated by normalizing patellar mobility as a function of patella length using the following formula: (patellar mobility ÷ patellar length) × 100.

Results: For study 1, the ICCs for intratester and intertester reliability of superior and inferior patellar displacement measurements varied from 0.87 to 0.99. For study 2, we describe superior patellar displacement (SPD) and inferior patellar displacement (IPD), patellar length, SPMI and IPMI revised in patellar length in table 1. We found gender differences in IPD. However, the IPMI that we revised in patellar length did not have a significant difference. Furthermore, superior and inferior patellar displacement did not have the laterality in male and female.

Conclusions: Our results suggest that reasonable estimations of superior and inferior patellar displacement can be obtained using the PFA. Differences between the revised superior and inferior patella mobility in patellar length did not have a significant difference. These measurements give reference information about normal superior and inferior patellar mobility for male and female adults.

Table 1. Descriptive data for patellar mobility.

Patellar Mobility	Male	Female	P Value (95% Cl)
SPD (mm)	14.3 ± 4.0	13.7 ± 3.5	.29 (0.41, 1.64)
IPD (mm)	16.5 ± 3.3	15.4 ± 3.7	.02 (0.17, 2.11)
PL (mm)	54.5 ± 5.2	48.6 ± 4.2	.01 (4.58, 7.20)
SPMI (%)	26.6 ± 8.0	30.6 ± 6.9	.82 (-3.97, 0.29)
IPMI (%)	28.4 ± 7.4	31.9 ± 8.3	.13 (-3.38, 0.83)

SPD, superior patellar displacement; PL, patellar length; SPMI, superior patellar mobility index [(SPD ÷ PL) × 100]; IPD, inferior patellar displacement; IPMI, downward patellar mobility index [(IPD ÷ PL) ×100. Values are mean ± Standard deviation.

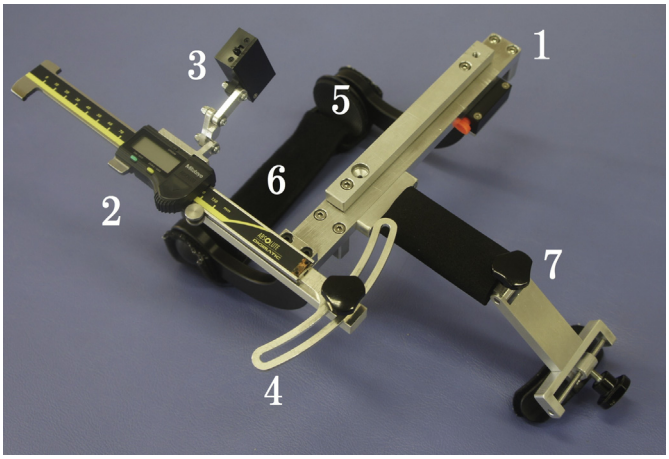

Fig. 1. Components of patellofemoral arthrometer: (1) base, (2) digital caliper, (3) adjustable laser module arm, (4) plane adjuster, (5) clamping mechanism, (6) thigh strap, and (7) fixed arm.

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DO ADDITIONAL PROPRIOCEPTION EXERCISES TO STABILIZATION EXERCISES HAVE MORE BENEFICIAL EFFECTS ON PAIN, MUSCLE STRENGTH AND FUNCTIONALITY IN CHRONIC LOW BACK PAIN?

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Purpose: This study has been carried out to investigate the efficacy of proprioception exercises in addition to stabilization exercises on pain intensity level, muscle strength and functionality in patients with chronic low back pain.
Methods: 16 female and 14 male, a total of 30 patients with chronic low back pain have been recruited in this study. They have been divided into two similar groups as Group 1 (n_1 =15) and Group 2 (n_2=15). Their mean age was 33.4±13.6 years for Group 1 and 31.3±11.3 years for Group 2. Previous surgery, acute disc diseases, rheumatic diseases, metabolic diseases, spinal stenosis, enfections, vertebral fractures and malignancy were the exclusion criteria. Patients in Group 1 (Stabilization Group) have been treated with stabilization exercises while patients in Group 2 (Stabilization+proprioception) have got proprioception exercises in addition to stabilization exercises in their rehabilitation program. Visual Analogue Scale has been used to measure pain intensity level and Oswestry Functional Scale for assessing functional level of the back. Their back and abdominal muscle strength had been analysed with Biodex System Pro 3 Isokinetic System. Treatment period for the both groups was 6 weeks with 3 sessions per week.
Results: There was significant pain relief in resting and activity for the both groups after the treatment, but the differences between the groups were not significant. Both groups had obvious improvements in peak torque and average peak torque values of trunk flexors and extansors after the rehabilitation. Peak torque/ body weight both for flexors and extansor have increased in Group 1. Group 2 has showed significant improvement in peak torque / body weight value for the flexors, but not for the extansors. There were no significant differences in various flexor and extensor muscle strength values between the groups. Group 1 and Group 2 have showed singificant improvements in their functional level after the treatment. The functional score was 3.9±2.9 points for the Group 1 (before: 7.7±2.7 points) and, 3±1.3 points for the Group 2 (before: 8.9±3.1 points) after the rehabilitation. However, The groups did not differ significantly for it (p> 0.05).
Conclusions: The effects of stabilization exercises and stabilization+ proprioception exercises have been found similar. Each of them have beneficial effect in rehabilitation of chronic low back pain. Although both exercises can be used to relieve pain, to increase muscle strength and to enhance back functions for the patients with chronic low back pain, the future studies will be needed to clarify the additional effects of proprioception.

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IMMEDIATE EFFECTS OF DIFFERENT ELASTIC TAPING TECHNIQUES ON PAIN, ISOKINETIC MUSCLE STRENGTH, PROPRIOCEPTION AND FUNCTIONAL PERFORMANCE IN PATIENTS WITH KNEE OSTEOARTHRITIS: PLACEBO CONTROLLED, DOUBLE-BLINDED CROSS STUDY

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Purpose: Purpose of this study was to determine the immediate effects of two different elastic taping techniques on pain, proprioception, isokinetic muscle strength and functional performance in individuals with knee osteoarthritis.
Methods: Twenty-four female patients ages between 42-64 years were diagnosed with bilateral knee osteoarthritis included in this study. The protocol consisted of assessing same patients in four conditions which were without taping, placebo taping, Kinesiotaping and Dynamic Taping with 3 days interval. Pain intensity was evaluated by using visual analog scale (VAS) before taping, twentieth minute after taping and after stair ascending and descending. Quadriceps isokinetic muscle strength was tested with Biodex System 3 dynamometer at velocities of 90°/s, 120°/s and 180°/s. Patients' knee proprioception was assessed at 30°, 45° and 65° and functional performance of patients was evaluated with 50m walking, stair ascending and descending, timed up and go and 5 repeated sit down-stand up tests. All measurements were taken with 3 days interval in the same turn and at the same time of the day by a physiotherapist who was blinded to the applications.
Results: No difference was found at peak torque and total work of three angular velocities (90, 120 and 180°/s) (p>0.05). Results of pain intensity, functional performance and knee proprioception were similar for every each conditions (p>0.05).
Conclusions: Kinesiotaping and Dynamic Taping had no negative immediate effects on pain, muscle strength, proprioception and functional performance in knee osteoarthritis.

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OBJECTIVE AND SUBJECTIVE CLINICAL OUTCOMES FOLLOWING ANKLE FRACTURE: DIFFERENCES BETWEEN FRACTURE CLASSIFICATION AND CONTROLS

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Purpose: Ankle fractures are one of the most common injuries of the lower limb. There is, however limited information regarding differences in gait patterns and clinical symptoms between fracture severity classifications. The purpose of the current study was to examine objective and subjective differences between three severity groups of ankle fractures patients compared to healthy controls.
Methods: This was a case-controlled prospective study. 92 patients with an ankle fracture injury of which 41 patients were eligible to participate in the study. 24 healthy people served as controls. All patients underwent a computerized gait test, completed self-assessment questionnaires (The Foot and Ankle Outcome Score (FAOS) and the SF-36), evaluated with the American Foot and Ankle Score (AOFAS)