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The Journal of Orthopaedic & Sports Physical Therapy is pleased to publish selected abstracts of the Meeting Internacional Científico IBRAMED, which took place in São Paulo, Brazil, October 4-6, 2013. This collection of abstracts provides a brief summary of the research presented at that meeting. These abstracts did not undergo peer review by the editorial board of the Journal. Each abstract represents a short summary of a project, often presenting only preliminary data. These summaries do not permit a full evaluation of the scientific rigor with which the work was conducted, but they provide an idea of the type of clinical questions being researched by individuals participating in that meeting.

FUNCTIONAL PARAMETERS IN THE PREOPERATIVE PHASE OF PATIENTS UNDERGOING TOTAL KNEE ARTHROPLASTY
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INTRODUCTION: Total knee arthroplasty (TKA) is an important procedure for pain reduction and short- and long-term improvement in quality of life for patients with advanced knee osteoarthritis (OA). There is currently no consensus on the best criteria to determine which patients or when a patient should undergo TKA. We suggest that functional data collected presurgery could be helpful in the clinical decision-making process to determine the timing for TKA. The primary objective of this study was to evaluate differences between genders in physical performance parameters, self-perception of pain, and functional impairment in patients scheduled to undergo TKA.

METHODS: This was a retrospective, cross-sectional study where functional data from 122 patients (89 females and 33 males) with end-stage knee OA were obtained through a database. There was no group difference between genders for body mass index, age, and symptom duration. Extracted data included range of motion (ROM), functional mobility as assessed using the 6-minute-walk test (6MWT) with standardization of the minimum ideal according to demographic characteristics, and quadriceps strength as measured using a Lafayette handheld dynamometer. Self-perceived functional ability and pain were measured using a visual analog scale (VAS) after the 6MWT and with the WOMAC and SF-36 questionnaires. Quantitative results were evaluated for normal distribution with a Kolmogorov-Smirnov test. Data with a normal distribution were compared between genders with a Student t test; otherwise, a nonparametric Mann-Whitney test was used. Spearman correlation was used to determine the level of association among variables.

RESULTS: We found a significant difference (P < .05) between genders for the WOMAC, all SF-36 subscale scores, and for pain intensity after the 6MWT, with women having a higher pain level and worse self-reported function. But there was no difference between genders for deficits over the minimum ideal distance on the 6MWT (P = .23) and in quadriceps strength (P = .33). The levels of association between scores on the WOMAC, SF-36, and VAS with scores on the 6MWT, handheld dynamometer, and ROM tests were low to moderate.

CONCLUSION: Our study showed that despite a lack of difference in physical disabilities between genders, women had more pain and self-perceived functional limitation. Preoperative functional evaluation data enable one to quantify the limitations and functional status of patients at end-stage knee OA. The use of subjective and objective assessment tools is necessary, as the level of correlation among the outcome measures was not strong.

THE INFLUENCE OF STATIC PASSIVE STRETCHING IN SEDENTARY WOMEN WITH PATELLOFEMORAL PAIN SYNDROME: A RANDOMIZED CONTROLLED CLINICAL TRIAL
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INTRODUCTION: Patellofemoral pain syndrome (PFPS), which primarily affects young women, is characterized by retropatellar and peripatellar pain associated with activities such as squatting and ascending and descending stairs. The Journal of Orthopaedic & Sports Physical Therapy is pleased to publish selected abstracts of the Meeting Internacional Científico IBRAMED, which took place in São Paulo, Brazil, October 4-6, 2013. This collection of abstracts provides a brief summary of the research presented at that meeting. These abstracts did not undergo peer review by the editorial board of the Journal. Each abstract represents a short summary of a project, often presenting only preliminary data. These summaries do not permit a full evaluation of the scientific rigor with which the work was conducted, but they provide an idea of the type of clinical questions being researched by individuals participating in that meeting.
The addition of static passive stretching to a muscle

INTRODUCTION:

METHODS: This study included 41 sedentary women who were diagnosed with unilateral PFPS. They were randomly assigned to an intervention group (IG) or comparison group (CG). The women in the CG (n = 21; mean ± SD age, 21.9 ± 2.2 years; weight, 60.0 ± 7.3 kg; height, 1.6 ± 0.4 m) performed a stretching program targeting the hip, knee, and ankle musculature for 12 weeks (24 sessions). The women in the IG (n = 20; mean ± SD age, 23.5 ± 3.3 years; weight, 61.5 ± 8.4 kg; height, 1.6 ± 0.6 m) performed the same stretching exercises in addition to performing static passive stretching of the hamstrings, triceps surae, quadriceps, and hip flexors. A visual analog scale (VAS) for pain and the Anterior Knee Pain Scale (AKPS) for function were used as outcome measures at baseline (pretreatment) and after 12 weeks of treatment.

RESULTS: Both groups had a significant amount of pain reduction (P < .0001) after 12 weeks of treatment, with the CG improving from 5.7 ± 1.3 at pretreatment to 0.7 ± 1.2 posttreatment and the IG from 5.6 ± 1.3 at pretreatment to 0.7 ± 0.8 posttreatment. Results on the AKPS also indicated significant improvement (P < .0001) in both groups after 12 weeks, with the IG improving from 70.0 ± 9.7 pretreatment to 91.0 ± 6.7 posttreatment and the IG from 69.3 ± 10.1 pretreatment to 83.9 ± 8.1 posttreatment. However, between-group comparisons indicated that there was no significant difference in pain reduction (P = .72) and improvement in function (P = .06) after 12 weeks.

CONCLUSION: The addition of static passive stretching to a muscle strengthening program did not help to further improve pain and function in sedentary women with PFPS.

ANALYSIS OF AGREEMENT BETWEEN THE ÖREBRO MUSCULOSKELETAL PAIN SCREENING QUESTIONNAIRE AND START BACK SCREENING TOOL FOR CLASSIFICATION OF INDIVIDUALS WITH LOW BACK PAIN

METHODS: A comparative analysis between the short ÖMPSQ and STarT questionnaires was performed, using the translated and adapted versions into Brazilian Portuguese. This study included a total sample of 130 patients recruited from clinics in the city of Taubate and Sao Paulo. After data collection, instruments were scored and the patients were classified into groups of “low” or “high” risk of involvement of psychosocial factors using specific cutoff points for each instrument. For the short ÖMPSQ, we used the cutoff point of 50 points to separate patients at low (0–50 points) and high risk (51–100 points). The STarT tool was scored as follows: high risk (if patients scored 4 or more of 5 on the psychological prognostic indicators), medium risk (if they scored between 4 and 9 on the subgrouping tool but had 3 or fewer of the 5 psychological indicators), or low risk (if they scored between 0 and 3 on the subgrouping tool). In this study, we considered the high- and medium-risk classifications in the STarT as “high risk” for the comparative analysis with the short ÖMPSQ. From the scores of the instruments and the classification given by each specific cutoff point, statistical analysis was performed with a cross-tabulation analysis and calculation of the Cohen kappa coefficient.

RESULTS: The analysis of the agreement between the classification of the 2 instruments was performed by calculating the Cohen kappa coefficient (κ = 0.49), indicating moderate agreement. However, it is noteworthy that 83% of the patients were classified correctly as low or high risk by both instruments. We emphasize that 16 patients were classified in agreement in the low-risk group and 92 in the high-risk group, whereas 6 patients were classified in disagreement in the low-risk group and 16 in the high-risk group.

CONCLUSION: The Brazilian Portuguese version of the short ÖMPSQ and STarT questionnaires showed moderate agreement in classifying patients into low or high risk of chronicity related to psychosocial factors. The 2 questionnaires have higher agreement values to classify the high-risk group compared to the low-risk group.

NEUROMUSCULAR TRAINING COMBINED WITH PHOTOTHERAPY IN PATIENTS WITH KNEE OSTEOARTHRITIS: A SINGLE-BLIND RANDOMIZED CLINICAL TRIAL

METHODS: Twenty patients with unilateral or bilateral knee OA were distributed into a comparison group (performing an exercise protocol) and an LLLT group (performing the same exercise protocol in addition to being treated with LLLT). The exercise protocol was performed twice a week for 8 weeks, and consisted of passive stretching of the hamstrings, quadriceps, and calf muscles (3 repetitions of 30 seconds); straight leg raises for hip flexion, extension, abduction, and adduction (3 sets of 12 repetitions); proprioception training using bipedal and unipedal balance training with a balance board; and sensory motor training with balance and gait exercises. The LLLT group was treated with a cluster of 9 diodes (4 at 670 nm and 5 at 850 nm, with an output power of 500 mW). The fluency used was 4 J/cm². The groups were evaluated pretreatment and posttreatment with the SF-36, Lequesne questionnaire, Tinetti scale, and a visual analog scale (VAS) for pain. Data were analyzed with analyses of variance and Bonferroni post hoc tests.

RESULTS: The results indicated a significant difference from pretreatment to posttreatment between the comparison and the LLLT groups for the Lequesne questionnaire (12.65 ± 4.18 versus 18.12 ± 2.49; P < .001), Tinetti scale (26.20 ± 1.75 versus 23.90 ± 2.28; P < .001), and VAS (4.40 ± 2.47 versus 2.00 ± 1.25; P < .001). There was no significant difference between groups for the SF-36.

CONCLUSION: The results of this study indicate that adding LLLT to an exercise program could improve functional performance, quality of life, balance, coordination, and pain in individuals with knee OA.
INTRODUCTION: Physiological factors are not typically identified during a physiotherapy assessment; however, they are often present in patients with low back pain and may influence prognosis. The questionnaire STarT Back Screening Tool (SBST) was created to identify patients with potentially treatment-modifiable prognosis influenced by physical and psychosocial indicators relevant to the initial decision-making process in primary care, classifying patients into low-, medium-, and high-risk categories. The aim of this study was to cross-culturally adapt the SBST into Brazilian Portuguese and to establish its reliability.

METHODS: The cross-cultural-adaptation process was authorized by the original author of the questionnaire, Dr. Jonathan Hill, from Keele University in the UK. The cross-cultural-adaptation process included the following steps: translation, synthesis, back translation, expert committee revision, pretesting, and submission to a review committee. The pre-final version was tested with 2 different samples of 60 patients with low back pain (both sexes, 18 years or older, from different education levels). Then, 3 interviews were used to assess test–retest and interrater reliability on a different sample of 44 patients. Quadratic weighted kappa was used for statistical analysis, with the Cronbach alpha used for internal consistency.

RESULTS: Consensus was found for the translation and back-translation process. With initial testing of the instrument, only item 6, which more than 20% of patients had some difficulty understanding, was reviewed and then retested with 60 additional patients, with no difficulties being reported. The reliability was considered excellent (test–retest = 0.88 and interrater = 1.00), but internal consistency showed poor correlation between SBST Brazil questions (0.59 for total score and 0.50 for psychosocial subscale score), and measurement error was 1.18.

CONCLUSION: The Brazilian version of the SBST is a reliable tool to screen and identify patients with low back pain influenced by psychosocial factors.

EXERCISES WITH PARTIAL VASCULAR OCCLUSION IN PATIENTS WITH KNEE OSTEARTHROPATHY: A RANDOMIZED CLINICAL TRIAL

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INTRODUCTION: Quadriceps strengthening can be considered one of the major goals in a rehabilitation program for patients with knee injuries. However, many patients have anterior knee discomfort when performing high-load strengthening exercises. Recent studies have shown that the addition of partial vascular occlusion (PVO) to low-load exercises can increase muscle strength by greater activation of type II fibers. We hypothesized that a group receiving low-load exercise combined with PVO would present the same improvements compared to a group performing high-load exercises, but with less anterior knee discomfort during the rehabilitation program. The objective of this study was to evaluate if women with knee osteoarthritis (OA) performing a rehabilitation program consisting of low-load exercises combined with PVO exhibited the same results in changes in quadriceps strength, pain relief, and functional improvement when compared to women receiving a program consisting of high-load exercises without PVO.

METHODS: Thirty-four women (mean age, 61 years) with a diagnosis of knee OA were randomly assigned to a conventional or occlusion group. The women in the conventional group (n = 17) performed a 6-week quadriceps strengthening and stretching program using a load around 70% of the 1-repetition maximum (1RM). The women in the occlusion group (n = 17) performed the same program but only used a load around 30% of the 1RM while PVO was induced. The PVO was achieved using a pressure cuff applied to the upper third of the thigh and inflated to 200 mmHg during the exercises. An 11-point numeric pain rating scale (NPRS), the Lequesne scale, the WOMAC, the timed up-and-go (TUG) test, and muscle strength measurement using a handheld dynamometer were used as outcome measures at baseline (pretreatment) and at the end of the 6 weeks of treatment. Pain, using the NPRS, was also assessed when performing the quadriceps exercises during the exercise sessions.

RESULTS: At baseline, demographic, strength, pain, and functional assessment data were similar between groups. Patients from both the conventional and occlusion groups had a higher level of function (Lequesne, WOMAC, and TUG test), less pain (NPRS), and higher quadriceps strength at the 6-week evaluation when compared to baseline (all, P < 0.05). However, the between-group analysis showed no differences for all outcomes variables at posttreatment (P > 0.05). Patients in the occlusion group experienced less knee discomfort during the treatment sessions than those in the high-load exercise group (P < 0.05).

CONCLUSION: A rehabilitation program that combined PVO with low-load exercise resulted in similar benefits in pain, function, and quadriceps strength as a program using high-load conventional exercise in patients with knee OA. However, the use of PVO combined with low-load exercise resulted in less pain during the training sessions.

KINESIO TAPING EFFECT ON QUADRICEPS STRENGTH AND LOWER-LIMB FUNCTION IN HEALTHY INDIVIDUALS: A RANDOMIZED, CONTROLLED, BLINDED CLINICAL TRIAL

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INTRODUCTION: Performance improvement and methods to promote improvement have been the focus of extensive research. It is suggested that Kinesio Taping (KT) can offer many such benefits, combined with the convenience of long-term (5 days) application. The research on the effect of KT on muscle strength and lower-limb functions shows conflicting results, and has been limited to short-term effect. Therefore, there is a lack of research on the long-term effect of KT. The objective of this study was to analyze the long-term effects of KT on quadriceps muscle strength and lower-limb function in healthy males and females.

METHODS: Sixty healthy subjects were recruited and randomized to 3 groups, with 10 males and 10 females in each group: control group (CG) (mean ± SD age, 24.8 ± 4.6 years; weight, 71.5 ± 16.9 kg; body mass index [BMI], 24.5 ± 4.3 kg/m²), placebo group (PG) (mean ± SD age, 24.6 ± 2.6 years; weight, 68.9 ± 13.1 kg; BMI, 23.4 ± 3.0 kg/m²), and experimental group (EG) (mean ± SD age, 23.1 ± 0.98 years; weight, 65.4 ± 8.42 kg; BMI, 22.9 ± 2.9 kg/m²). The EG received the KT application over the quadriceps of both limbs, the PG received a sham KT application over the quadriceps of both limbs, and the CG didn’t receive any KT application. Quadriceps strength and lower-limb function were evaluated in all groups with a handheld dynamometer and the single–hop test for distance, respectively. All subjects were assessed on 5 occasions: baseline, immediately after KT application, 3 and 5 days after the application, and 72 hours after removal of KT.

RESULTS: Baseline comparison between groups (analysis of variance) showed no significant difference (P > 0.05) for weight, height, age,
strength, and function. The analysis for quadriceps strength (repeat ed-measures analysis of variance) showed no significant difference over time or between groups (P>0.05). The analysis of variance for lower-limb function as assessed with the single-hop test for distance showed an improvement in all 3 groups, suggesting a learning effect (P<0.05); however, there was no significant difference between groups (P>0.05).

CONCLUSION: KT applied for a period of 5 days did not produce changes in quadriceps strength and lower-limb function on healthy subjects.

WHAT IS THE IDEAL DOSE OF LOW-LEVEL LASER THERAPY FOR MUSCLE FATIGUE AND MUSCLE RECOVERY AFTER EXERCISE? A RANDOMIZED, DOUBLE-BLINDED, PLACEBO-CONTROLLED STUDY

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INTRODUCTION: Recent studies of our research group with phototherapy have shown positive results delaying skeletal muscle fatigue and improving the status of biochemical markers related to skeletal muscle recovery when these therapies were applied before exercise. However, several factors still remain unknown, such as optimal doses and treatment parameters, mechanisms, and the effects on long-term skeletal muscle recovery. The objective of this study was to evaluate the long-term effects of low-level laser therapy (LLLT) on postexercise skeletal muscle recovery and to identify the optimal dose.

METHODS: We recruited 28 high-level male soccer athletes, aged 18 to 35 years, from the same sports team. They were randomly assigned to 4 groups (each with 7 volunteers) defined based on the received LLLT dose: 2 J (group A), 6 J (group B), 10 J (group C), or placebo (0 J; group D). We analyzed parameters related to exercise performance (peak torque/maximum voluntary contraction [MVC]) and delayed-onset muscle soreness (DOMS). The volunteers completed a visual analog scale (VAS) for pain and were also evaluated with a pressure algometer. A series of stretching and warm-up exercises were performed before testing MVC. Then, the LLLT was applied using a laser device with a cluster of 5 diodes (810 nm, 200 mW each diode) in 6 different locations on the quadriceps. The eccentric contraction protocol to induce fatigue, using an isokinetic dynamometer, was performed after 3 minutes of laser application. Pain and peak torque data were collected before the exercise protocol, then 1 minute and 1, 24, 48, 72, and 96 hours after the end of the protocol.

RESULTS: There were no between-group differences in DOMS as measured with the algometer and the VAS. Compared to placebo, positive results were obtained (P<0.05) for MVC, both in absolute (Nm) and percentage values, for a dose of 2 J at the 24-, 48-, 72-, and 96-hour time points and for a dose of 10 J for the evaluation performed immediately after the eccentric exercise protocol and after 1 and 24 hours. The group that received 2 J had a significant improvement (P<0.05) in muscle recovery compared to placebo at 24, 48, 72, and 96 hours after exercise. For a dose of 10 J, compared to the placebo group, a significant recovery was noted immediately after the eccentric exercise and at 1 and 24 hours after exercise. In the group of 10 J, the MVC was not lower compared to the values obtained pre–eccentric exercise for any of the time points tested.

CONCLUSION: Positive findings have previously been reported in the literature about the role of phototherapy on performance and muscle recovery. However, it is still necessary to develop more research, with special focus on standardization of methodologies and the exercise protocol, to establish the best dose and application parameters to increase performance and muscle recovery from exercise before this technology can be used in clinical practice.