The level of safety in using Quest 2 was assessed using the Simulator Sickness Questionnaire (SSQ) and the usability of the system was assessed using the System Usability Scale (SUS); user experience was evaluated with the Game Experience Questionnaire (GEQ). Finally, the evolution of learning in games was evaluated according to the scores registered in each session.
Results: There were no complications during the consultations, the score related to the appearance of side effects in the SSQ was minimal (9.3), indicating no symptoms that prevented the continuation of the training. The games were approved according to the scores obtained in the GEQ (negative experiences 0.5/4, tiredness 0.25/4, and positive experiences 3.85/4). The usability of the system was considered approved with excellence by the SUS (94.5/100). Total scores between attempts in games steadily increased even after the 30-minute break.
Conclusion: The results obtained suggest the usability and feasibility of Quest 2, in addition to the existence of a therapeutic potential for the four games, being necessary; however, studies with longer training time and with larger samples confirm these preliminary results.
Implications: The results of this study indicate progress in the use of exergames, with Quest 2 having the potential to be another resource in the therapeutic management of PD; this was a pilot study that could serve as a basis to consolidate evidence that will guide physiotherapists in the use of devices for immersive virtual reality in an efficient, safe, comfortable, and innovative way.
Keywords: Parkinson's disease, Feasibility, Virtual reality

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TELEREHABILITATION VERSUS A DIGITAL BOOKLET FOR PATIENTS WITH CHRONIC NON-SPECIFIC NECK PAIN: STUDY PROTOCOL OF A RANDOMIZED CONTROLLED TRIAL

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Background: Neck pain is a common disabling condition that directly affects the performance of daily life activities and participation in professional, social and sports activities, being one of the main causes of functional disability in the world. Telerehabilitation-based treatments have demonstrated their importance due to their ease of use, low cost, and tendency to improve clinical outcomes. However, in the current scientific evidence, there is a lack of studies that exemplify telerehabilitation protocols in individuals with chronic non-specific neck pain.
Objectives: The study was to verify the effect of a telerehabilitation protocol versus an online self-care booklet in individuals with non-specific chronic neck pain.
Methods: This is a blinded, randomized, controlled clinical trial that compares a telerehabilitation program for neck pain with a control group that will receive an online self-care booklet. Seventy patients will be recruited. Assessments and measures will perform before treatment, after 6 weeks and at 3 months after randomization. For this purpose, assessments and follow-ups will be carried out completely remotely, through online platforms (Google Meet, smartphone messages, email) and telephone calls. The primary outcome will be functional disability measured by the Neck Disability Index questionnaire consisting of 10 items. Secondary outcomes will be pain intensity measured using the numeric rating scale, perceived global effect measured using the perceived global exertion scale, patient self-efficacy using the Pain Self Efficacy Questionnaire, quality of life using the SF-12, and kinesiophobia through the Scale of Kinesiophobia. This clinical trial was approved by the Research Ethics Committee (no. 5.458.454) and was registered in the Brazilian Registry of Clinical Trials (no. RBR-10h7khvk).
Results: No results so far.
Conclusion: This study will examine whether the telerehabilitation treatment approach is superior to the self-care booklet in patients with chronic neck pain, functional disability, pain intensity, perceived global effect, patient self-efficacy, quality of life and kinesiophobia.
Implications: The study will impact clinical practice because telerehabilitation is a treatment option that aims to promote improvements in the functional disability and pain intensity of individuals with nonspecific chronic neck pain. This form of treatment appears as an alternative to ease the logistical and organizational conditions promoted by face-to-face care.
Keywords: Telerehabilitation, Neck Pain, Exercise Therapy

Conflict of interest: The authors declare no conflict of interest.
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Ethics committee approval: This clinical trial was approved by the Research Ethics Committee of the Federal University of Pará, Brazil (no. 5.458.454) and was registered in the Brazilian Registry of Clinical Trials (no. RBR-10h7khvk).

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EFFECTIVENESS OF PERCUSSIVE MASSAGE USING A PORTABLE DEVICE ON MUSCLE PAIN IN RECREATIONAL RUNNERS: RANDOMIZED CLINICAL TRIAL PROTOCOL

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Background: The increase in the number of running fans has made it one of the most popular activities in the world in recent years. Running requires repeated contractions, imposing a great mechanical load and tension on the lower limbs. As a result of the increase in shear stress, tissue can be altered, inducing neuromuscular functional impairments, damage to muscle fibers, edema, and muscle pain. Insufficient recovery from exercise-induced muscle damage impairs performance. To minimize the deleterious effects of muscle pain, research seeks to investigate which recovery technique is more effective. Among recovery strategies, local percussive massage using devices has gained notoriety in clinical practice. Some of the benefits of its use are the decrease in pain, gain in strength and

increase in range of motion. Data on the effectiveness of percussive massage are satisfactory but incipient. There is a wide variety with respect to the methods and population used. Systematic studies are needed to investigate the effectiveness of percussive massage using portable devices as a recovery technique in recreational runners.
Objectives: To evaluate the effectiveness of percussive massage on muscle pain in recreational runners using a portable device. Secondary objectives are to investigate muscle fatigue, general perceived effect, and performance after running.
Methods: This is a randomized clinical trial with a follow-up period of 72 hours. Athletes who run at least 6.5 km continuously and aged between 18 and 60 years will be included. Those who presented any medical condition not compatible with the study procedures, severe metabolic or cardiorespiratory disorders, musculoskeletal disorders in the lower limbs in the last 6 months, abrasions on the thigh, cramps during the evaluations and/or any change in sensitivity will be excluded. Immediately after the end of the race, the first evaluation session (pre-intervention) will be held, and participants will be evaluated for the level of muscle soreness (VAS), muscle fatigue (VAS), general perceived effect and performance (single-legged vertical jump). At the end of this process, percussive massage will be performed in the experimental group with a gun on the anterior part of the thigh, with a frequency of 55 Hz, for 10 minutes. In the control group, light and oscillatory pressure will be applied to the skin, simulating joint mobilization in the hip and knee, for 5 minutes each. Assessments of pain, fatigue and perceived general effect will be performed after the race, post-intervention, and 24h, 48h and 72h after the end of the intervention. The performance evaluation will be carried out in the pre-intervention, post-intervention, and 48 hours. The sample size was calculated using the R software. 86 participants will be needed to carry out the study.
Keywords: Muscle pain, Massage, Run

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MEASUREMENT PROPERTIES OF THE EQ-5D-Y-3L AND EQ-5D-Y-5L IN CHILDREN AND ADOLESCENTS WITH DISABLING MUSCULOSKELETAL PAIN

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Background: The EQ-5D-Y-3L and the EQ-5D-Y-5L are friendly-child versions of the EQ-5D instruments that measure health-related quality of life in children and adolescents (kids) aged 8-15 years old. However, both instruments' measurement properties have not yet been tested in Brazilian kids yet.
Objectives: This study aimed to test the EQ-5D-Y-3L and EQ-5D-Y-5L measurement properties in Brazilian kids with disabling musculoskeletal pain.
Methods: This is a measurement proprieties study with two periods of measures was conducted in 181 Brazilian kids with disabling musculoskeletal pain (i.e., who reported pain in the back, neck, arm, or legs that lead to school absenteeism and/or interference with normal and/or recreational activities) from public and private schools in Sao Paulo state. Kids answered the self-reported versions of the EQ-5D-Y-3L and the EQ-5D-Y-5L. We tested test-retest reliability using the Kappa coefficient for the descriptive system and intraclass correlation coefficients (ICC) for EQ-VAS. We tested construct validity (classified as sufficient if at least 75% of the results were in accordance with our pre-specified hypothesis) using the Pediatric Quality of Life Inventory questionnaire version 4.0 (PedsQL) and the Child Health Utility 9D (CHU9D). We also tested the ceiling and floor effects of the instruments using the dimensions' descriptive system and health profile and the feasibility by the missing responses.
Results: Most kids with musculoskeletal pain were female (61%) with a mean age of 12 years old (standard deviation: 3). In the descriptive system, reliability ranged from 0.32 to 0.47 for the EQ-5D-Y-3L and 0.20 to 0.49 for the EQ-5D-Y-5L. There was substantial reliability for the EQ-VAS (ICC: 0.80; 95% CI: 0.71, 0.86). Construct validity was sufficient for the EQ-5D-Y-3L and the EQ-5D-Y-5L compared to the PedsQL, sufficient for the EQ-5D-Y-5L and insufficient for the EQ-5D-Y-3L compared to the CHU9D (89%, 100%, 81%, and 47% in accordance with the hypothesis, respectively). There was as lower ceiling effect of the EQ-5D-Y-5L compared to the EQ-5D-Y-3L for all the dimensions of the descriptive system, except for the 'having pain or discomfort', while the health profile (11111) was 18.2% for the EQ-5D-Y-3L and 16% for the EQ-5D-Y-5L. The missing response rate ranged from 1.3% for the EQ-5D-Y-3L and 4% for the EQ-5D-Y-5L.
Conclusion: The descriptive system of the EQ-5D-Y-3L and the EQ-5D-Y-5L presented inadequate reliability and the EQ-VAS presented substantial reliability, but both instruments presented sufficient construct validity, except the EQ-5D-Y-3L compared to the CHU9D. Furthermore, the EQ-5D-Y-5L had lower ceiling effects compared to the EQ-5D-Y-3L and both instruments had good feasibility.
Implications: This study tested the measurement properties of the EQ-5D-Y-3L and the EQ-5D-Y-5L in Brazilian kids with disabling musculoskeletal pain. The results of this study could help clinicians to measure health-related quality of life in the youth population. Furthermore, the EQ-5D-Y-3L may facilitate the calculation of the quality-adjusted life of years in economic evaluations conducted in Brazil in the future.
Keywords: Health-related quality of life, Musculoskeletal pain, Children and adolescents

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OVERVIEW OF THE ECONOMIC BURDEN OF MUSCULOSKELETAL PAIN IN CHILDREN AND ADOLESCENTS: A SYSTEMATIC REVIEW WITH META-ANALYSIS

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