dorsiflexion and inversion range of motion were close to those described in studies that evaluated adult women. In muscle strength findings, the ballet dancers showed a significant reduction of up to 50% in ankle dorsiflexors, inverters and evertors. However, an increase of 97.96% was observed in the muscle strength of the plantar flexors compared to the values described in the literature.
Conclusion: The ballet dancers showed above-average range of motion values for plantar flexion and eversion movements and muscle strength for plantar flexors muscles. However, in the other evaluations, the results were similar or lower than those reported in the literature for range of motion and muscle strength.
Implications: Describing the changes in the range of motion and muscle strength of the dancers improves the knowledge of the relationship between the performance and the physical characteristics of the participants. Thus, they can understand the functioning of their body structure and map the risk of injuries, improving the execution of the dance.
Keywords: Classical ballet, Range of motion, Muscle strength

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ACUTE EFFECT OF WHOLE-BODY PHOTOBIOMODULATION ON AGILITY TEST IN TRAINED AND HEALTHY INDIVIDUALS: PRELIMINARY STUDY

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Background: Whole-body photobiomodulation (PBM) emitted by LEDs (Light-Emitting Diodes) has been applied for sports performance. However, there are no studies with the use of whole-body PBM in trained and healthy individuals with performance evaluation in an agility test (Illinois Agility Test).
Objectives: To evaluate the effects of whole-body PBM on the performance of trained and healthy individuals through the agility test.
Methods: Randomized, double-blind, crossover and placebo-controlled clinical trial with 10 young (22.60±3.27 years) trained (33.6±7 months of resistance training) and healthy (25. 42±2.13 kg/m^2), randomly allocated into two crossed arms: effective PBM (13.85J/cm^2; 46.17mW/cm^2) and placebo PBM (0J; 0mW), applied according to randomization. Participants received both treatments, with a 7-day washout between each therapy. The effective PBM was applied for 10 minutes, respecting a time of 6 hours and 5 minutes before the assessment of the agility test (2 sessions of irradiation). The agility test was performed according to its validation, which consisted of an area of 4 external cones (9.2 m long and 3.6 m wide) and 4 internal cones (3.1 m apart). Before starting the official test, a familiarization was performed (2 attempts). Thus, the participants were instructed to perform 3 maximum running attempts (180 seconds of rest between them) running from the starting line (1st cone to 2nd cone - 9.2 m), deviating from 4 central cones (twice) and a distance of 9.2 m to the finish line. The evaluations were carried out in three moments [baseline (BL) – 1st day; Effective PBM or placebo, according to randomization at the time of 24h-post BL; and after 7 days of washout]. The evaluations were standardized in the same period of the day and place of the BL. Data were analyzed for normality using the Kolmogorov-Smirnov test. For comparison purposes, the paired t test, mean, standard deviation and 95% confidence interval (CI) were used, considering a significance level of 5%.
Results: On average, there was no significant difference (p=0.963) between effective PBM [0.01±0.73; t(9) = -0.048, 95% CI -0.53 to 0.51] and placebo PBM. The time in seconds was lower in effective PBM [0.37±0.43; t(9) = 2.753, p=0.022, 95% CI 0.06 to 0.69] compared to BL. There was no significant difference for placebo PBM [0.36±0.55; t(9) = 2.095, p=0.066, 95% CI -0.02 to 0.76] compared to BL.
Conclusion: Whole-body PBM was not able to increase agility test performance (Illinois Agility Test) in trained and healthy individuals. However, is a preliminary study, there is a need for a larger sample size (n=40, calculated by paired t-test, two-tailed, considering a mean effect of 0.5, α of 5% and statistical power=80%) to clarify the results.
Implications: Although the findings do not confirm the hypothesis, it is necessary to investigate the use of whole-body photobiomodulation in trained people to improve performance in agility tests, as it is an innovative resource that could benefit the sports and/or clinical environment.
Keywords: Low-level Light Therapy, Running, Physical Functional Performance

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CLINICAL CHARACTERISTICS OF INDIVIDUALS WITH TRAUMATIC PATELLOFEMORAL PAIN: A CROSS-SECTIONAL STUDY

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Background: Patellofemoral pain (PFP) is defined as retro- or peripatellar pain, exacerbated by activities that overload the patellofemoral joint. PFP is one of the most common musculoskeletal disorders of the lower limbs and is associated with several clinical alterations (e.g., reduced subjective function, quality of life and knee muscle strength). The development of PFP is commonly associated with an insidious onset. However, recent evidence demonstrates a high prevalence of PFP after traumas to the knee joint (e.g., injuries and/or surgery). Seven out of 10 individuals report symptoms of PFP after traumas to the knee. Nevertheless, most studies are carried out in individuals with insidious PFP, whereas little is known about which alterations may be present in individuals with PFP of traumatic origin; and even if they are the same as those presented by individuals with insidious PFP.
Objective: To compare clinical features of individuals with traumatic, insidious PFP and asymptomatic individuals with or without a history of knee trauma.
Methods: Thirty-nine subjects with traumatic PFP, 38 subjects with insidious PFP, 40 asymptomatic subjects with no history of trauma, and 18 asymptomatic subjects with a history of trauma aged 18 to 35 years were enrolled (Ethics Committee Number: 5,110,075). Variables of interest included duration of symptoms, worst level of pain

in the last month (VAS), subjective function (AKPS), quality of life (SF-36), and maximum isometric strength of knee extensors and flexors (isokinetic dynamometer) at 60° of knee flexion. A multivariate analysis of covariance (ANCOVA) was used to compare the groups, controlling for the influence of sex on the dependent variables.
Results: The traumatic PFP group had worse pain levels (95%CI=.65; 18.92) and lower levels of subjective function (95%CI=-12.01; -4.17) compared to the insidious PFP group. The groups with traumatic and insidious PFP had lower subjective function compared to the asymptomatic groups with (95%CI=-27.65; -19.62 | -19.84; -11.23) and without trauma (95%CI=-26. 37; -15.52 | -18.49; -7.21), respectively. The traumatic PFP group had lower knee extensor strength compared to the asymptomatic group with trauma (95%CI=-67.26; -3.02) and without trauma (95%CI=-52.76; -3.59) in the knee, while there was a trend towards the insidious PFP group (95%CI=-51.25; .67). There were no differences between groups for duration of symptoms, quality of life, and isometric knee flexor strength.
Conclusion: Individuals with traumatic PFP have a worse perception of their clinical condition (e.g., worse level of pain and subjective function) compared to individuals with insidious PFP, and lower strength of the knee extensors when compared to asymptomatic individuals with and without a history of trauma to the knee. In general, these findings may indicate a cumulative effect of knee trauma and PFP, which could affect the individual's perception of their condition.
Implications: It is possible that individuals with traumatic PFP could benefit from specialized education interventions regarding the perception of their condition, whereas there does not seem to be necessary to give greater emphasis to knee strengthening for this subgroup.
Keywords: Anterior knee pain, Traumatic injury, Weakness

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ISOKINETIC EVALUATION OF MUSCULAR STRENGTH AFTER DIFFERENT ISCHEMIC PRECONDITIONING PRESSURES: A PLACEBO-CONTROLLED RANDOMIZED CLINICAL TRIAL

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Background: Ischemic preconditioning (IPC) is characterized as a procedure consisting of intermittent applications of cycles of non-lethal and short-duration vascular occlusion in a target limb, followed by reperfusion through inflation and deflation of a pressure cuff. Because it is a method of easy administration, usability, non-invasive, and low cost, it currently presents as an attractive ergogenic resource that has been used for performance enhancement. Despite its notoriety in the literature in recent years, there are gaps regarding the most efficient protocol to be used to obtain significant results, especially for increasing muscular strength.
Objectives: to compare the effect of different IPC occlusion pressures on muscular strength through maximum voluntary isometric contraction (MVIC).
Methods: eighty healthy men (22.10±2.86 years) were randomly divided into four groups: IPC using total occlusion pressure (TOP) [IPC-TOP], IPC with 40% more than TOP (IPC-40%), placebo (10 mmHg), and control. The IPC protocol used consisted of four cycles of ischemia and reperfusion of five minutes each, totaling 40 minutes, while the placebo underwent an intervention like IPC but with four cycles of five minutes of placebo occlusion (10mmHg) alternated with four cycles of five minutes of reperfusion (0 mmHg). In the control group, individuals remained at rest for 40 minutes. Initially, TOP evaluation was performed, followed by baseline evaluation of MVIC on an isokinetic dynamometer. Next, participants underwent the previously randomized intervention protocol. Finally, MVIC evaluation was performed again. Descriptive statistical methods and analysis of variance for repeated measures were used with a significance level of 5%.
Results: all analyzed groups showed a significant difference in the final evaluation compared to the baseline ($p<0.05$), where the levels of muscular strength decreased. Regarding the magnitude of the losses, it was observed that the IPC-40% group (Δ = -14.01Nm) presented the lowest reduction, which was statistically significant compared to the control, placebo, and IPC-TOP groups (Δ = -29.46Nm; -32.71Nm and -26.44Nm, respectively).
Conclusion: IPC with 40% more than the TOP was able to attenuate the reduction of muscular strength evaluated by the MVIC.
Implications: the present study brings important results providing an alternative technique that can be used in training and competition routines to minimize the loss of muscular strength.
Keywords: Vascular occlusion, Muscular strength, Functional physical performance

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EFFECTIVENESS OF IMPLEMENTATION STRATEGIES TO REDUCE THE PROPORTION OF LOW-COST CARE FOR LOW-BACK PAIN MANAGEMENT: A SYSTEMATIC REVIEW WITH META-ANALYSIS

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Background: Low back pain (LBP) is the most common occupational disorder in North America. In the period from 2012 to 2016, indirect costs were US$2.2 billion for LBP in Brazil, accounting for approximately 67% of medical expenses. Previously published studies lacked major interventions, requiring further research to improve the