

**EFFECT OF CUPPING THERAPY ON HAMSTRING
MUSCLES MECHANICAL PROPERTIES****MASTER THESIS****Taja FILIPIČ***Lithuanian Sports University, Kaunas, Lithuania*

Introduction: Cupping is an effective treatment for aches and pains in various parts of the body such as limbs, head, neck, shoulders, and back. It involves quick, vigorous, and rhythmic strokes to stimulate the muscles. As a result, cupping has the potential to improve quality of life (Mehta & Dhapte, 2015). By applying localized negative pressure and pulling the skin into the cup without leaving any scars, dry cupping increases blood flow to the affected area, speeds up the healing process, and improves function and range of motion (Sweety et al., 2022). Although the normal use requires more than one cup, even one cup applied has an impact on the tissues' elasticity (Gozubuyuk et al., 2018). The exact mechanisms behind cupping therapy reducing muscle stiffness are not well understood. While some studies found no change in muscle stiffness before and after therapy, others showed a decrease (McCullough, 2020).

Goal: the goal is to focus on the mechanical properties of hamstrings muscles and to find beneficial effects of cupping therapy on blood flow, vascularization, viscosity, muscle stiffness. We set 3 hypothesis. The first reads (H0): Cupping therapy has no effect on muscle mechanical properties. The second one (H1) is: Blood flow in popliteal vein is greater immediately, but not after 15 minutes, while the vessel transvers cross sectional area remains the same at all times. The last reads (H2): Passive peak torque is lower immediately after and after 15 minutes of combined (static and with active movement) cupping therapy in comparison to baseline tests.

Methods: 5 minute cupping therapy (static and with active movement) on hamstrings was completed on 11 males. The patients were non – professional athletes, with approximately the same amount activities during the research. Blood flow velocity, popliteal vein cross sectional area, stiffness and viscosity were assessed at baseline, immediately after therapy and after 15 minutes. Assessments were made with Doppler Ultrasound and Biodex device. Changes in outcome measures were interpreted using tables and graphs and statistical analysis was done with SPSS software.

Results: cross sectional area increased significantly after cupping therapy, so did blood flow velocity-peak and mean. A decrease was detected in muscle peak torque and torsional stiffness, immediately after cupping but not after 15 minutes. Torque decline also show beneficial effect on viscosity. The changes were most visible right after therapy, then effect started to fade, however none of those changes were significant.

Discussion and conclusions: our study found some short time beneficial effects of cupping therapy on hamstring muscle mechanical properties such as blood flow velocity, but not on vascularization, viscosity and stiffness. Although our changes were minor and we did not find a lot of significant difference among them, further investigations should be done, especially in finding long-term effects.

Keywords: cupping therapy, hamstrings, mechanical properties, stiffness, blood flow.

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