Magdalena Stania[1], Michał Pawłowski[1], Grzegorz Juras[1], Kajetan Jacek Słomka[1], Piotr Król[1]

[1]Institute of Sport Sciences, Academy of Physical Education in Katowice, Poland

No Effect of Shockwave and Ultrasound Therapy on Jump Performance and Kinesthetic Differentiation Ability in Patients with Achilles Tendinopathy: A Pilot Study

Abstract:
Randomized controlled trials have demonstrated that, according to the subjective assessment of patients with non-insertional Achilles tendinopathy, radial shockwave therapy (RSWT) is significantly more effective than ultrasound therapy in alleviating pain intensity and improving their function and activity (Stania et al., 2023,2024). However, there is still a need for objective methods to evaluate the therapeutic effectiveness of these interventions. Inclusion criteria for the study were: (1) pain located 2 to 6 cm proximal to the Achilles tendon insertion; (2) symptoms lasting longer than 3 months; (3) midportion tendon abnormalities; (4) recreational physical activity. Countermovement jump (CMJ) analysis was conducted on 28 patients who were randomly allocated to one of three groups: RSWT (Group A), ultrasound therapy (Group B), or placebo ultrasound (Group C). All participants performed three maximal CMJs (100% effort) and three submaximal CMJs (50% effort) on a force platform, assessed at baseline, one week, and six weeks post-treatment. The analysis included the following variables: maximum force, velocity, maximum power, countermovement depth, jump height, and the differentiation index for jump height between maximal and submaximal efforts. A two-way ANOVA (3 × 3: time × group) was used for statistical analysis. Post-hoc comparisons were conducted using the Bonferroni test. The group × time interaction was not statistically significant for any of the CMJ variables at either effort level. No significant differences were also found for the differentiation index. RSWT and ultrasound therapy did not improve vertical jump performance in patients with non-insertional Achilles tendinopathy. Additionally, these patients exhibited impaired kinesthetic differentiation ability, which was not influenced by mechanotherapy. This study was prospectively registered in the Australian and New Zealand Clinical Trials Registry (ACTRN12617000860369; registration date: 09.06.2017).

Keywords: Achilles tendinopathy, extracorporeal shock wave therapy, ultrasonic waves, countermovement jump, therapeutics

Biography: Magdalena Stania, PhD, is a physiotherapist and an Associate Professor at the Academy of Physical Education in Katowice, Poland. Her research interests include physical therapy in musculoskeletal disorders, postural control in children and adults, the effects of whole-body vibration training on the human body, and evidence-based medicine. She is the co-author of 38 scientific articles published in peer-reviewed journals with an impact factor. She has also served as a principal investigator in several research projects.

doi.org/10.51219/URForum.2025.Magdalena-Stania ISBN: 978-1-917892-27-8