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Extracorporeal shockwave therapy (ESWT) for neck pain and shoulder-scapular dyskinesis: An objective evaluation study

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Introduction
Extracorporeal Shockwave Therapy (ESWT) is widely used for musculoskeletal pain management, with ultrasound guidance improving precision and outcomes. Motion analysis is an effective tool for assessing treatment impact. Neck pain treatments often target the site of pain, but addressing associated shoulder and scapular dysfunction may enhance outcomes.Aim: To objectively evaluate the role of shoulder and scapular movement in neck pain and assess the efficacy of ESWT for treatment.

Material & Methods
Sixty patients with neck pain were randomized into three groups (n=20 each):ESWT applied to the shoulderESWT applied to the scapulaESWT applied to both the shoulder and scapulaESWT was applied using the SoftWave TRT device with 800 pulses over areas of fascial tensegrity loss in muscles attaching to the scapula through aponeurotic expansions, conjoint tendons, and infraspinatus fascia bands, identified via diagnostic ultrasound. The procedure was precisely guided by ultrasound to target movement-restricting areas, including trigger points in rotators, fascia, and tendons.A standardized diagnostic protocol included motion analysis (Showmotion system) and Visual Analog Scale (VAS) for pain assessment.

Results
The third group (ESWT on both the shoulder and scapula) demonstrated the most favorable improvement. Motion analysis revealed significant gains in shoulder mobility and stability, particularly in flexion/extension and abduction/adduction movements. Normality scores improved across multiple zones, with enhanced repeatability and increased range of motion. Group 3 movement patterns achieved near-normal values (e.g., flexion/extension score: 99.07, abduction/adduction score: 99.28), while groups 1 and 2 movements showed substantial improvement compared to baseline. Pain reduction was significant across all groups, with the most pronounced decrease in the combined treatment group.

Discussion
Conclusion: ESWT should be applied to both the shoulder and scapula in patients with neck pain, as shoulder-scapular dysfunction plays a crucial role. Objective motion analysis and VAS confirm the efficacy of ESWT in improving both movement and pain outcomes.

References:
1. Kalika L, Bubnov R, Benito JG, Domenech DH. Precision and functional application of ultrasound-guided extracorporeal shock wave therapy in neuromusculoskeletal pathologies: A multicenter retrospective study. 26th ISMST World Congress, June 6-9th 2024, Amsterdam: 33.

2. Kalika L, Bubnov R. Targeted ultrasound-guided shockwave therapy of low back pain using focused, defocused, and radial shockwave. Neuromodulation 2022; 25(7): S339. https://doi.org/10.1016/j.neurom.2022.08.408
3. Bubnov R, Kalika L. Comparative study of dry needling under ultrasound guidance and extracorporeal shock wave therapy for myofascial pain and spasticity management. Movement Disorders 2019; 34: S557.