ULTRASOUND IMAGING AS A DIAGNOSTIC TOOL FOR MUSCLE, TENDON AND FASCIA PATHOLOGIES: AN EMERGING PHYSICAL THERAPY PRACTICE

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Objective: Ultrasonography (US) is a front-runner for diagnostic imaging in musculoskeletal pathologies associated with muscle, tendon and fascia. The objective of this review was to systematically identify and summarize the literature on current trends of diagnostic ultrasonography in physical therapy. In addition, we expect to establish the merit, validity, and reliability of diagnostic ultrasonography.

Method: A literature search was conducted using: PubMed, ProQuest, Science Direct, Thompson, EMBASE, OVID, CINAHL, and MEDLINE databases. Keywords that were used: diagnostic ultrasound, musculoskeletal conditions, rehabilitation, physical therapy.

Findings: The current applications for US involving muscle, includes identifying superficial muscles, such as transversus abdominis and multifidus, to provide biofeedback for muscle re-education and measuring cross-sectional area to predict force generation. For tendons, US provides high-resolution images of inflammation, blood flow, and tendon width that assists in diagnosing pathologies such as Achilles tendonitis. US yields clear visualization of fascial thickness and is used to help determine potential etiology, confirm clinical diagnosis, and gauge the efficacy of intervention in plantar fasciitis.

Research shows that the overall accuracy of US in musculoskeletal medicine is significantly similar to the gold standard of diagnostic imaging- MRI. Compared to MRI, US is safer, more convenient, less expensive, non-invasive, and dynamic. Limiting aspects of US include being restricted to superficial structures and a lack of minimum clinically important difference values (MCID).

Conclusion: Overall, there is a convincing body of evidence supporting the use of US in diagnosis and assessment of muscle, tendon and fascia conditions. Taking into consideration the surplus of clinical applications and advantages over other imaging tools, US is becoming a promising primary instrument for diagnosing and assessing musculoskeletal disorders in physical rehabilitation. The results from this literature review will be used to support the design of clinical trials investigating the effectiveness of manual therapy techniques.