

Editorial**EDITORIAL: MSK Ultrasound and Introduction of IJSPT Ultrasound Bites Feature**

Robert C Manske, PT, DPT, SCS, ATC, CSCS<sup>1 a</sup>, Phil Page, PT, PhD, ATC, CSCS, FACSM<sup>2</sup>, Michael Voight, PT, DHSc, SCS, OCS, ATC, CSCS, FAPTA<sup>3</sup>, Chris Wolfe, PT, DPT, OCS, Cert MDT<sup>3</sup>

<sup>1</sup> Doctor of Physical Therapy Program, Wichita State University, <sup>2</sup> Doctor of Physical Therapy Program, Franciscan University, <sup>3</sup> School of Physical Therapy, Belmont University

Keywords: msk ultrasound, rehabilitation ultrasound imaging, point of care ultrasound imaging

<https://doi.org/10.26603/001c.68139>

---

**International Journal of Sports Physical Therapy**

Vol. 18, Issue 1, 2023

---

Point of care ultrasound (POCUS), musculoskeletal ultrasound (MSK-US), and rehabilitation ultrasound imaging (RUSI) are similar procedures that use a non-ionizing imaging and is becoming more inexpensive, portable, safe, and able to be used quickly.<sup>1-4</sup> These modalities are commonly used in various medical disciplines to assess musculoskeletal tissues (bones, muscles, tendons, ligaments, nerves) as well as structures such as the heart, lungs, and bladder just to name a few. MSK-US primarily focuses on the structural integrity or characteristics of the neuromuscular system. This would include viewing soft tissues for assessment of normalcy or abnormality. For example, viewing the supraspinatus for signs of swelling or a rotator cuff tear, or assessing the median nerve to measure swelling or size differences in those with carpal tunnel syndrome are commonly performed using MSK-US. RUSI is similar but includes the evaluation of muscle and soft tissue during exercise or movement dynamically including its use for biofeedback.<sup>5,6</sup> An example of RUSI include real-time observation of spinal muscle (lumbar multifidus and transverse abdominus) activation patterns during exercise to facilitate improved neuromotor control.<sup>6</sup>

The use of MSK-US in clinical practice has nearly quadrupled since the early 2000's, mainly due to its use with non-radiologists.<sup>3,7,8</sup> Its surge in popularity parallels research suggesting that MSK-US is accurate and cost effective, with patients reporting greater satisfaction with MSK-US compared to magnetic resonance imaging (MRI).<sup>9-11</sup>

**INTRODUCING ULTRASOUND BITES**

Ultrasound is becoming more widely recognized in rehabilitation as a valuable tool to objectively assess musculoskeletal structures and guide rehabilitation.<sup>6,12</sup> The appropriate use of imaging is essential in all healthcare professions for accurate patient diagnosis and management as well as optimizing the use of healthcare resources.<sup>13</sup> It should also be stressed that mistakes made by inadequately trained operators could jeopardize a patients' wellbeing by delaying treatment for life threatening conditions.<sup>14</sup> Because of this, the *International Journal of Sports Physical Therapy* (IJSPT) thought it important to educate readership with common tips to view various musculoskeletal structures. Starting with the long head of biceps tendon in our last issue,<sup>15</sup> subsequent issues of IJSPT will include a section entitled "MSK Ultrasound Bites: Tips and Tricks". Each month, a new structure that can be assessed with MSK-US will be thoroughly described, including normal and pathological structure findings with clear and concise guidelines describing probe placement and findings. As can be seen in a corresponding study in this issue, many therapists are utilizing MSK-US clinically.<sup>16</sup> In addition, our clinical commentary this month provides an overview and introduction to the clinical use of MSK-US for rehabilitation, diagnosis, interventions and research. We believe that its use will continue to evolve as physical therapists become more adept at using this skill to propagate care beyond the traditional examination.<sup>16</sup>



This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CCBY-NC-4.0). View this license's legal deed at <https://creativecommons.org/licenses/by-nc/4.0> and legal code at <https://creativecommons.org/licenses/by-nc/4.0/legalcode> for more information.

## REFERENCES

1. Backhaus M, Burmester G, Gerber T, et al. Guidelines for musculoskeletal ultrasound in rheumatology. *Ann Rheum Dis.* 2001;60(7):641-649. doi:[10.1136/ard.60.7.641](https://doi.org/10.1136/ard.60.7.641)
2. Jacobson JA. Musculoskeletal ultrasound and MRI: Which do I choose? *Semin Musculoskelet Radiol.* 2005;9(02):135-149. doi:[10.1055/s-2005-872339](https://doi.org/10.1055/s-2005-872339)
3. Klauser AS, Tagliafico A, Allen GM, et al. Clinical indications for musculoskeletal ultrasound: A Delphi-Based consensus paper of the European Society of Musculoskeletal Radiology. *Eur Radiol.* 2012;22(5):1140-1148. doi:[10.1007/s00330-011-2356-3](https://doi.org/10.1007/s00330-011-2356-3)
4. Nazarian LN. The top 10 reasons musculoskeletal sonography is an important complementary or alternative technique to MRI. *Am J Roentgenol.* 2008;190(6):1621-1626. doi:[10.2214/ajr.07.3385](https://doi.org/10.2214/ajr.07.3385)
5. Koppenhaver SL, Hebert JJ, Parent EC, Fritz JM. Rehabilitative ultrasound imaging is a valid measure of trunk muscle size and activation during most isometric sub-maximal contractions: A systematic review. *Aust J Physiother.* 2009;55(3):153-169. doi:[10.1016/s0004-9514\(09\)70076-5](https://doi.org/10.1016/s0004-9514(09)70076-5)
6. Whittaker JL, Teyhen DS, Elliott JM, et al. Rehabilitative ultrasound imaging: understanding the technology and its applications. *J Orthop Sports Phys Ther.* 2007;37(8):434-449. doi:[10.2519/jospt.2007.2350](https://doi.org/10.2519/jospt.2007.2350)
7. Kanasa-Thanas RM, Nazarian LN, Parker L, Rao V, Levin DC. Comparative trends in utilization of MRI and ultrasound to evaluate nonspine joint disease 2003-2015. *J Am Coll Radiol.* 2018;15(3 pt A):402-407. doi:[10.1016/j.jacr.2017.10.015](https://doi.org/10.1016/j.jacr.2017.10.015)
8. Sharpe RE, Nazarian LN, Parker L, Rao VM, Levin DC. Dramatically increased musculoskeletal ultrasound utilization from 2000-2009, especially by podiatrists in private offices. *J Am Coll Radiol.* 2012;9(2):141-146. doi:[10.1016/j.jacr.2011.09.008](https://doi.org/10.1016/j.jacr.2011.09.008)
9. Roy JS, Braën C, Leblond J, et al. Diagnostic accuracy of ultrasonography, MRI and MR arthrography in the characterisation of rotator cuff disorders: a systematic review and meta-analysis. *Br J Sports Med.* 2015;49(20):1316-1328. doi:[10.1136/bjssports-2014-094148](https://doi.org/10.1136/bjssports-2014-094148)
10. Parker L, Nazarian LN, Carrino JA, et al. Musculoskeletal imaging: Medicare use, costs, and potential for cost substitution. *J Am Coll Radiol.* 2008;5(3):182-188. doi:[10.1016/j.jacr.2007.07.016](https://doi.org/10.1016/j.jacr.2007.07.016)
11. Middleton WD, Payne WT, Teefey SA, Hildebolt CF, Rubin DA, Yamaguchi K. Sonography and MRI of the shoulder: comparison of patient satisfaction. *Am J Roentgenol.* 2004;183(5):1449-1452. doi:[10.2214/ajr.183.5.1831449](https://doi.org/10.2214/ajr.183.5.1831449)
12. Pillen S, van Alfen N. Skeletal muscle ultrasound. *Neurological Res.* 2011;33(10):1016-1024. doi:[10.1179/1743132811y.0000000010](https://doi.org/10.1179/1743132811y.0000000010)
13. Henderson REA, Walker BF, Young KJ. The accuracy of diagnostic ultrasound imaging for musculoskeletal soft tissue pathology of the extremities: a comprehensive review of the literature. *Chiropr Man Ther.* 2015;23(1):31. doi:[10.1186/s12998-015-0076-5](https://doi.org/10.1186/s12998-015-0076-5)
14. Edwards H. Let's all jump on the ultrasound bandwagon. *Ultrasound.* 2010;18(1):4-7. doi:[10.1258/ult.2009.009003](https://doi.org/10.1258/ult.2009.009003)
15. Manske RC, Voight M, Wolfe C, Page P. Long Head of the Biceps Tendon (LHBT). *Int J Sports Phys Ther.* 2022;17(7). doi:[10.26603/001c.55786](https://doi.org/10.26603/001c.55786)
16. Manske RC, Podoll KR, Markowski A, Watkins M, Hayward LM, Maitland ME. Physical therapist use of diagnostic ultrasound imaging in clinical practice: A review of case reports. *Int J Sports Phys Ther.* Published online 2023.