

Clinician's Commentary on Strike et al.

Ultrasonography has been used in the medical context for more than 70 years as a valuable tool for health assessment and monitoring (Díaz-Gómez et al., 2021). In particular, Point-of-Care Ultrasonography (POCUS) enables bedside assessments, allowing for immediate interpretation through a radiation-free approach (Adler et al., 2022). POCUS was mostly used in emergency and intensive care settings, but recent technological advancements have made it affordable, portable, and lightweight to use in various healthcare contexts. Initially described for musculoskeletal rehabilitation in 2007 (Whittaker et al., 2007), the use of ultrasound in physiotherapy has significantly evolved to include a broader range of applications, such as respiratory, cardiac, and pelvic care (Whittaker et al., 2019). This technology plays a crucial role in guiding physiotherapy interventions by providing clarity on indications, assisting in objective establishment, and facilitating outcome measurement, overall serving as a decision-making tool in field (Hendriks et al., 2000).

Despite its numerous advantages, POCUS is not without limitations, with the most significant being its dependency on the operator's skills. This emphasizes the need for training and standardization to ensure valid and reliable results. The scoping review conducted by Strike and colleagues (2022) reveals a concerning reality:

- most pre-licensure physiotherapy programs lack adequate theoretical and practical education on POCUS;
- the available curricula and pedagogical approaches for programs that offer training are limited;
- some physiotherapists report using ultrasound without any training.

POCUS utilization without adequate training leads to physiotherapists feeling inadequate in using ultrasound at an entry level. This not only undermines the credibility of the physiotherapy profession but also poses risks to patient safety.

While Strike and colleagues (2022) confirmed that there is currently no accepted standard of training for the use of POCUS by physiotherapists in any area of practice, recent literature has paved the way by defining essential competencies for some physiotherapy domains (Strike

et al., 2022). Leech and colleagues (2015) propose structured training pathways with predefined competency skills in physiotherapists' thoracic ultrasound education, suggesting that at least 100 chest ultrasound procedures, 3-7 months of mentored practice, may ensure competence in Lung Ultrasound Score (LUS) imaging. Nonetheless, it should be noted that the competencies mentioned were established by national regulatory bodies and may not fully align with the diverse practices of every physiotherapist. Therefore, it is crucial for national and international regulatory bodies to collaborate and develop comprehensive competencies and regulations specifically tailored to the use of POCUS by physiotherapists.

Another important aspect highlighted by Strike and colleagues (2022) is the lack of a consensual definition of POCUS, which hampers collaboration between stakeholders in the field and research agendas. POCUS in physiotherapy practice has been described by the UK Chartered Society of Physiotherapy as "*the use of ultrasound imaging technology to assist the registered physiotherapist in the screening, diagnosis, intervention and/or treatment of any condition within the practitioner's area of physiotherapy expertise and competence. POCUS must be used within the overarching framework of providing physiotherapy management of the condition which addresses any element of human movement, performance and function in the widest sense, and at any point within the pathway of care for that condition*" (Point of Care Ultrasound in Physiotherapy Practice, n.d.). This definition elegantly encompasses the physiotherapy POCUS scope of practice and may serve as background to a future consensual international definition. Future studies should further validate and refine this definition through empirical research, examine its applicability across different healthcare systems, and explore its impact on patient outcomes and quality of care. Additionally, comparative studies could be conducted to evaluate the consistency and alignment of existing definitions and guidelines across various regions and professional organizations.

In addition to defining POCUS and providing educational recommendations, it is crucial to establish its scope of use by physiotherapists. The focus of physiotherapy

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diagnosis is on the human movement system, performance, and function impairment (Heerkens et al., 1994). Within this framework, POCUS can be valuable in identifying, for instance, pleuropulmonary signs and measuring quantitative parameters of muscle architecture, such as thickness, thickening fraction, cross-sectional area, pennation angle, fascicle length, and objective echo-intensity and muscle echotexture (Heckmatt et al., 1980; Moreta et al., 2020; Perkisas et al., 2021). To advance the understanding and establish consensus on the scope of use for POCUS by physiotherapists, recommended studies include Delphi studies with expert panels, observational studies in real-world clinical settings, educational studies on effective training programs, and comparative studies assessing clinical outcomes and cost-effectiveness.

The scoping review conducted by Strike and colleagues (2022) is a valuable resource for regulatory and licensing bodies in physiotherapy education. However, there are two main limitations regarding its identification of current educational approaches to POCUS in physiotherapy. Firstly, the review solely focuses on curricula documented in peer-reviewed articles, potentially overlooking educational courses available on university and institutional websites. Therefore, reviewing the curricula of both local and global physiotherapy pre- and post-licensure programs would be beneficial to gain a comprehensive understanding of the current reality. Secondly, the review includes data up until 2019, which predates a period of heightened interest and utilization of POCUS in the context of the COVID-19 pandemic. This is evident from the substantial increase in the number of journal articles indexed to PubMed on POCUS after 2019 ($n=1631$ results) compared to the period before the pandemic ($n=617$ results). As recommended by Strike and colleagues (2022), a systematic review is currently needed to determine the reliability and validity of POCUS when conducted by physiotherapists. This review should also consider the post-pandemic context, to assess the impact of the growing POCUS research and clinical use as an assessment and monitoring tool.

Overall, Strike and colleagues' work is a valuable contribution that emphasizes the importance of developing physiotherapy-specific and transdisciplinary training programs for physiotherapists working with POCUS. It is crucial for these programs to document and share their curricula and pedagogical approaches to contribute effectively to the body of knowledge and consensus in the field. This will aid in the establishment of area-specific, condition pathway of care, and a global scope of practice for POCUS in physiotherapy.

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