

MSK Imaging research is beautiful, but MSK imaging research with clinical impact is better.

By Alberto Tagliafico, ESSR Research Committee Chairperson

According to the Frascati manual (manual of the Organization for Economic Co-operation and Development) housing internationally recognised methodology for collecting and using research and experimental development statistics, Research is a creative and systematic work undertaken to increase the knowledge, including knowledge of humans, culture and society, and the use of this stock of knowledge to devise new applications. This definition could be a little complex to be translated into medical environments, although it contains several clues on how a serious research should be. However, before putting efforts in a serious, difficult and very complex project, I was fascinated by the definition of Research appeared on the ESSR website several years ago and attributed to an Hungarian scientist named Albert Szent-Gyorgyi (1893-1986). The definition of Research was: "Research is to see what everybody else has seen, and to think what nobody else has thought." In my personal opinion, this phrase reflects what MSK research could be and how it could even impact on patients. When we try to take care of our patients we have to remember that diagnostic pathways should be assessed not only for technical and diagnostic performance but also for their impact on medical and social outcome. This concept was already clear to John R. Thornbury in 1994, suggesting that radiologists should have a strong commitment not only in technology assessment but also in outcome research. In the Editorial of the European Society of Musculoskeletal Radiology (ESSR) Research Committee published on *European Radiology* (1), we advised that there are some areas where MSK Radiology could impact on patients prognosis, for example sarcopenia, a condition characterized by progressive loss of skeletal muscle mass, leading to increased morbidity and mortality in patients undergoing surgery or having cancer. In this setting, radiological research could find a reliable, non-invasive method to detect sarcopenia. With some adjustments, it has been recently discovered, that MSK radiologists could even detect sarcopenia in patients undergoing only breast MRI for breast cancer. Everyone can see the pectoralis muscle on a breast MRI examination, but few had the idea to use it to estimate muscle mass on breast MRI (2). This is just one example of seeing what everybody else has seen thinking what nobody else has thought. Ideally, it would be possible to foresee some determinants of breast cancer prognosis and morbidity directly on breast MRI thanks to MSK Research. I'm really fascinated by the huge possibilities offered by MSK Research, but we have to remember that diagnostic test results are often the basis for

clinical care decisions and only few recommendations for diagnostic tests are classified as level of evidence category A (3) and several guidelines including medical imaging are not always made by Radiologists. For these reasons I believe that ESSR efforts in Imaging Research are worthy of encouragement and every member could have a role in sharing ideas, offering support and participate in several ways to clinical research with potential to improve patient care. Finally, I report here some take home messages (1) for ESSR members which could represent a reason to consider Research in their professional activities.

- Research in medical imaging has the potential to improve human health.
- High-level studies have the potential to place radiology at the pinnacle of quality in evidence-based practice.
- The ESSR Research Committee intends to encourage research with potential to influence treatment, patient outcome, and social impact.

1. Tagliafico AS, Wilson D, Sconfienza LM; European Society of Musculoskeletal Radiology (ESSR) Research Committee. Encouraging MSK imaging research towards clinical impact is a necessity: opinion paper of the European Society of Musculoskeletal Radiology (ESSR). *Eur Radiol.* 2019 Jul;29(7):3410-3413. doi: 10.1007/s00330-019-06218-4. Epub 2019 May 6

2. Rossi F, Valdora F, Barabino E, Calabrese M, Tagliafico AS. Muscle mass estimation on breast magnetic resonance imaging in breast cancer patients: comparison between psoas muscle area on computer tomography and pectoralis muscle area on MRI. *Eur Radiol.* 2019 Feb;29(2):494-500. doi: 10.1007/s00330-018-5663-0. Epub 2018 Aug 7.

3. Dewey M, Bossert M, Dodd JD, Thun S, Kressel HY. Clinical Imaging Research: Higher Evidence, Global Collaboration, Improved Reporting, and Data Sharing Are the Grand Challenges. *Radiology.* 2019 Jun;291(3):547-552. doi: 10.1148/radiol.2019181796. Epub 2019 Apr 2.