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From the Editor

The rise of real world evidence and its role for technology

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For decades, clinicians and researchers have used a hierarchy pyramid for the determination of evidence levels. In this pyramid, weaker study designs such as basic science or case series are presented at the bottom, followed by case-control, cohorts, randomized controlled trials (RCTs) and at the top meta-analyses. This has taught us the importance of high quality studies. When performed well, the RCT study design will provide valuable knowledge on the effect of a certain intervention and can still be concerned the gold standard to demonstrate internal validity for original studies. Applicability, external validity, whether an intervention also has a good theoretical fundament, or will finally be adopted and implemented by healthcare practitioners or the target group, however, are different aspects. In that matter, some have also stated that the $n-1$ trial is the most important for applicability in practice [1].

More and more often, studies appear that have been carried out within the context of the patient, making use of so called real world data. While this field of research is in development, designs are less strong, i.e. controlled compared to the RCT, they might provide valuable evidence of how interventions are truly received by patients. In this issue, You and colleagues [2] present the effects of a multidisciplinary rehabilitation program established in the real world, concluding that results found in the RCT indeed reflect those observed in real-world practice.

Furthermore, the role of the RCT is questioned as a good fit for the evaluation of telemedicine services [3]. Ambulant technologies, including activity and heart rate monitors or stress applications, have evolved to reliable and good alternatives to gold (lab) standards and are therefore emerging technologies for research in patients' daily environment. In the current issue Negrini and colleagues have reviewed the current state of these activity monitors for patients with musculoskeletal disorders. They conclude that although, generally, activity monitors may be considered useful, there is still a large heterogeneity between trackers which limits standardization [4].

Next to ambulant technologies, in this issue, authors present emerging technologies such as electromyography to study the effect of manual techniques for ankle dorsiflexion syndrome, for the use of external loads for gluteus medius training and for obtaining the most ergonomic posture during breastfeeding. The last emerging technology discussed here will be the use of ultrasound. While the ethical discussion for the use and misuse of ultrasound for diagnostics in care as usual remains, we can already see that for research purposes, ultrasound becomes an indispensable piece of technology. In the current issue, we will present a study using ultrasound to guide injection therapy for shoulder pain, and study the applicability of ultrasound as an accessible and affordable alternative than CT-scan to model lumbar vertebrae.

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to read. Moreover, the Editor's Choice in this November issue is rewarded to an impactful paper by Du and colleagues, who performed an important evaluation in the fixation treatment of upper arm after surgery of triad injury of the elbow [5]. We congratulate the authors on their important work in this field of research.

Enjoy reading all articles in this new issue!

All the best,

Remko Soer, PhD, MSc, Pt.
Executive Editor
Journal of Back and Musculoskeletal Rehabilitation

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