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Letter to the Editor: Hierarchy of Evidence

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To the Editor: I would like to commend the authors of the 5 core articles of this special issue, “Perspectives on High-Value Endoscopic Spine Surgeries,” of the *International Journal of Spine Surgery* for their extensive work on the application of Rasch analysis, focusing on surgeon skill and clinical judgment to achieve optimal outcomes in endoscopic spine surgery.

Regarding the hierarchy of evidence, there are more than 100 variations in the scientific literature, primarily based on the original framework by David Sackett.^{1,2} These variations often involve minimal changes and are centered on the potential risk of bias inherent in different study designs. Expert opinion, while included, is considered weak evidence and thus placed at the base of the pyramid.

Efforts to enhance the use of evidence hierarchies have focused on assessing bias in research. Notable examples include the Cochrane risk of bias tool and the GRADE system (Grading of Recommendations, Assessment, Development, and Evaluation). GRADE categorizes randomized controlled trials (RCTs) as high-quality evidence and observational studies as low-quality. It then applies quality indicators to systematically evaluate the studies, creating a system with categories for downgrading and upgrading the quality of evidence.³ This method results in a hierarchy with 4 levels of evidence: high, moderate, low, and very low. Consequently, a well-conducted observational study can be placed in a higher evidence category, while a poorly conducted RCT can be downgraded, enhancing the strength of recommendations based on observational studies and reducing the perceived supremacy of RCTs in surgical research.

The authors of the article series in this special issue employed the polytomous Rasch analysis as an alternate method to mitigate the dominance of RCTs in surgical research and to make surgeons’ input more relevant in the evidence-based medicine discussion, which often hampers the implementation of many useful innovations. While the Rasch analysis includes bias analysis tools, proposing a new organization of the hierarchy based on this would have little impact and simply add

to the numerous existing suggestions. Instead, using the established pyramid as a starting point in the discussion of expert experience when deciding on the best surgical plan of care for a given patient, in my opinion, would be more effective.

In this context, the authors’ work on Rasch analysis is pivotal in leveraging the position of expert opinion within the hierarchy of evidence. By integrating Rasch analysis, expert opinions can be more objectively assessed and utilized within the existing framework of evidence hierarchies. The ability to rapidly obtain expert opinion information that is statistically analyzed in a systematic manner has the significant advantage of keeping up with the rapid innovation cycle typical of spine surgery, where many innovations never get tested with the scrutiny of RCTs. The Rasch analysis approach is an effective methodology to quickly identify the most promising innovations and to allocate research resources to those judged by surgeons to have higher merits.

I believe that this special issue will provide valuable insights into the application of Rasch analysis in evaluating surgeon skill and clinical judgment, ultimately leading to improved outcomes in endoscopic spine surgery.

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