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CORR Insights[®]: An Analysis of References Used for the Orthopaedic In-Training Examination: What are Their Levels of Evidence and Journal Impact Factors?

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Where Are We Now?

For 51 years, orthopaedic residents have been taking the Orthopaedic In-Training Examination (OITE), which is written

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by members of a committee of the American Academy of Orthopaedic Surgeons. As an objective evaluation of a resident's knowledge about orthopaedics, the examination has had an important role in determining residency programs' curricula. For some, it is the main focus of the teaching program. We know that the purpose of the OITE is an educational tool and that it should not be used for promoting or dismissing a resident. We also know that the examination covers the broad spectrum of orthopaedics, including its subspecialties and basic science. Since the majority of published orthopaedic articles have a level of evidence (LOE) of IV and V (case series, and expert opinion, respectively), it is not surprising to learn that Haughom and colleagues reported a mean level of 4.6. But is the use of a

mean LOE a valid measure? Should more questions be based on a higher LOE? Also, is it valid to have one person (or in selected cases three) determine the LOE of an article when none was provided by the original article's authors? Regarding impact factor, a measure of a journal's quality, there are manipulative ways a journal can influence their impact factor. Is there a relationship between LOE and an impact factor? Since knowledge changes as time moves forward, the authors' finding that 28% of reference articles used in the OITE were published more than 10 years before the test raises concerns about the importance and appropriateness of these questions that residents need to answer correctly.

Where Do We Need To Go?

The authors reviewed only 3 years of the OITE. It would be important to include more years in their evaluation, as well as an analysis of the trends of

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the references' LOE. With the increase in Level I, II, and III articles published recently [1], is the OITE following this trend? What is the trend in the subspecialties? Textbooks, review articles, and DVDs are included in the references. The authors could have determined the LOE of the original publication that was the source of the textbooks, review articles, or DVDs. Considering the differences in opinion about LOE articles serving as references for the OITE question, a valid method is needed to determine how an LOE should be determined by an outside party and what level should be given. Use of the impact factor does not provide a critical evaluation of a specific article. It is a measure used by journals, defined as the number of citations to articles in 1 year divided by the total number of articles published in the previous 2 years. Perhaps we might seek to develop and validate a new method of measuring the impact factor of individual articles? Another unknown is whether there is a direct correlation of LOE and impact factor in the spine literature, as the authors' state, or in orthopaedics or any of its

subspecialties? The use of older published articles (older than 10 years) should be addressed. Is the information being asked about important, relevant, or essential?

How Do We Get There?

Because the OITE wields greater influence in guiding the curriculum in orthopaedic residency programs, and the resurgence of interest in developing a curriculum for residents by the Council of Orthopaedic Residency Directors (CORD), I believe it is timely and important for the Academy OITE Committee and a committee of CORD to meet together. The purpose would be to develop a modern curriculum for orthopaedic surgery residency programs that would include all subspecialty areas, basic science, rehabilitation, patient safety, new approaches to health care (team care, patient centeredness, shared decision making), as well as current social, business and economic changes in medicine. Following the establishment of a curriculum, the OITE would

continue to be used as an evaluation tool; asking appropriate questions of all residents. The curriculum would drive the educational program; the OITE would assess the outcomes (ie, what the resident has learned). Specifically regarding the OITE, the referenced articles could be studied to determine (1) the half-life of orthopaedic knowledge, (2) the appropriateness of the questions asked, along with their references, (3) the changing LOE of articles recommended for resident reading, and (4) the individual impact factor (new measurement) of each of the referenced articles. A method of ongoing assessment of each of the required readings as well as the relevance and importance of the questions should be developed.

Reference

1. Hanzlik S, Mahabir RC, Baynosa RC, Khiabani KT. Levels of evidence in research published in The Journal of Bone and Joint Surgery (American Volume) over the last thirty years. *J Bone Joint Surg Am.* 2009;91;425–428.