

# Is There an Association Between Study Materials and Scores on the American Board of Orthopaedic Surgeons Part 1 Examination?

Chad A. Krueger, MD,\* and James Aden, PhD†

\*San Antonio Military Medical Center, Fort Sam Houston, Texas; and †Department of Statistics and Biostatistics, United States Army Institute of Surgical Research, Fort Sam Houston, Texas

**BACKGROUND:** Previous studies have shown that certain orthopaedic in-training examination scores can be used to identify which residents may be at risk for failing the American Board of Orthopaedic Surgeons (ABOS) Part 1 examination. However, no studies have examined how study resources may affect residents' ABOS Part 1 scores. The goal of this study is to determine which review sources or review courses, if any, are associated with improved ABOS Part 1 scores.

**METHODS:** A survey was sent to 221 of the 865 examinees who took the ABOS Part 1 examination in 2012. The questions inquired the respondents how well they performed on previous orthopaedic in-training examinations and ABOS Part 1, along with the study sources they most commonly used, review courses they attended, and resources they would recommend if they were to retake ABOS Part 1 examination.

**RESULTS:** Overall, 118 of the 221 (53%) survey recipients completed the survey. Six (5%) of the respondents failed ABOS Part 1 examination. Orthobullets and the American Academy of Orthopaedic Surgeons self-assessment examinations were recommended as the primary study source significantly more ( $p < 0.01$ ) than most other resources, but there was no significant association between study source and passing ABOS Part 1 or scoring in a certain percentile on ABOS Part 1. Similarly, there were no associations between attending a review course and either

passing or scoring in a certain percentile for ABOS Part 1. Half of the respondents who failed ABOS Part 1 attended multiple review courses.

**CONCLUSIONS:** There does not appear to be an association between improved ABOS Part 1 scores and orthopaedic study materials or review courses. Further research into the value of certain educational modalities should be conducted to determine the best ways to educate orthopedic residents and determine the value of some of these commonly used orthopedic review modalities. (J Surg 71:375-384. Published by Elsevier Inc. on behalf of the Association of Program Directors in Surgery)

**KEY WORDS:** orthopaedic in-training examination, American Board of Orthopaedic Surgeons, study resources, orthopaedic review

**COMPETENCIES:** Medical Knowledge, Practice-Based Learning and Improvement, Systems-Based Practice

## INTRODUCTION

Much like the many studies that have recently been completed regarding the orthopaedic in-training examination (OITE),<sup>1-11</sup> many articles have recently examined the associations between certain performance measures and American Board of Orthopaedic Surgeons (ABOS) Part 1 examination scores.<sup>12-18</sup> The ABOS Part 1 examination is the first part of the board-certification process for orthopedic surgeons and is designed to evaluate a candidate's knowledge of general orthopedics and problem-solving abilities.<sup>19</sup> It is necessary for orthopedic residents to pass this exam to become board eligible, and the American College of Graduate Medical Education has mandated that each residency program maintain a pass rate of 75% for first-time ABOS Part 1 examinees.<sup>16,18</sup> Considering its importance and that the failure rate for ABOS Part 1 is much higher for those

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Correspondence: Inquiries to Chad A Krueger, MD, Brooke Army Medical Center, 3851 Roger Brooke Drive, Fort Sam Houston, TX 78234; fax: (210) 916-7323; e-mail: chad.krueger@amedd.army.mil

residents who failed the examination on their first attempt,<sup>12</sup> it is easy to understand why there is significant interest in selecting residents who are felt to be able to pass this examination<sup>20</sup> and determining which residents are most likely at risk for failing it.<sup>18</sup>

However, previous studies looking at various factors associated with resident performance on ABOS Part 1 pass rates do not appear to offer information on what study resources have been used by residents who pass ABOS Part 1 or what review material those residents would recommend to future examinees. Although the reasoning behind why some residents score better than others on standardized examinations is likely multifactorial,<sup>14,16,18</sup> knowing what, if any, associations exist between resident performance and study material may assist program directors in providing study guidance to their residents for ABOS Part 1. It is not uncommon for residents and residency programs alike to spend thousands of dollars on studying resources or review courses in hopes of being better prepared to pass the ABOS Part 1. However, to the author's knowledge, there have been no previous studies showing that specific studying resources or review courses actually improve a resident's ability to pass the examination. This study was conceived in hopes of determining what associations, if any, exist between ABOS Part 1 performance and study materials used and review courses attended.

## METHODS

### ABOS Part 1 Examination

The ABOS Part 1 examination is administered by the ABOS and is the capstone examination for orthopedic training. This examination is the first of the 2 examinations that an orthopedic trainee must pass to become board certified by the ABOS. Between 2001 and 2012, 77% to 89% of all examinees passed ABOS Part 1 on their first attempt.<sup>21</sup> Without passing Part 1, the candidate is ineligible to sit for Part 2. Most residents sit to take ABOS Part 1 immediately after the completion of their orthopedic residencies. Although there is no limit on the number of times an applicant can sit for Part 1, data suggest that those participants who fail once are at a much higher risk of failing again on repeat examination.<sup>12</sup> The American College of Graduate Medical Education Orthopaedic Surgery Residency Review Committee requires that all accredited programs maintain a first-time pass rate of at least 75% for all residents for this examination.

### Examination Preparation

There is no formalized curriculum to prepare for ABOS Part 1. Many residents attend review courses, complete practice questions from previous OITEs or practice examinations, and read review books. In general, most residents

seem to use a combination of all 3 methods as they prepare for the examination. Commonly attended review courses are as follows: Miller's review course, Maine orthopaedic review course, and American Academy of Orthopaedic Surgeons (AAOS) orthopaedic board preparation and review course. Other study materials that are also commonly used include the following: Orthobullets ([www.orthobullets.com](http://www.orthobullets.com)), AAOS comprehensive orthopaedic review (ed, Lieberman JR), AAOS self-assessment examinations, AAOS orthopaedic knowledge update 10 (ed, Flynn JM), AAOS orthopaedic (ed, Sarwark J), previous years' OITE questions, and Miller's review of orthopaedics (ed, Miller MD).

### Survey of Examinees

The only organization that has ABOS Part 1 results and contact information for all of the examinees is the ABOS, and such material is their propriety information. As such, a survey was sent via e-mail to 221 of the 865 examinees (26%) of the 2012 ABOS Part 1 examination who participated in the 2012 online Miller/Orthobullets virtual review curriculum. This was a free, online review curriculum developed for ABOS Part 1 review. An e-mail was sent to all of the participants in this curriculum offering them inclusion in this study. Although aimed at senior-level orthopedic residents, attending surgeons who had previously taken ABOS Part 1 and failed or international graduates who were studying to take ABOS Part 1 could also participate in the Miller/Orthobullets review. Respondents were asked to complete a survey regarding their study habits and examination performance as completely as possible. As can be seen by analyzing the survey ([Appendix A](#)), the questions were meant to delineate how well the respondent performed on previous OITEs and ABOS Part 1, along with the study sources most commonly used, review courses attended, and resources recommended for the ABOS Part 1 examination if they were to repeat the examination. The survey was hosted on [surveymonkey.com](http://surveymonkey.com), and response data were downloaded directly from the website.

### Statistical Analysis

Fisher exact test was used to determine which responses were associated with passing and scoring in higher percentiles for the ABOS Part 1 examination. For question 8, there were 10 study methods listed as tools to determine which variables were ranked the highest as study tools for the examination. There were 3 ways in which study methods were compared with each other. First, it was determined whether or not the study was ranked first, as the primary study method. Second, it was determined if the study tool was ranked first, second, or third (it was at least used somewhat for studying) compared with not ranked at all (the respondent did not use that particular resource for studying). Third, each study method was compared after

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