

# Orthopaedic In-training Examination<sup>®</sup> (OITE<sup>®</sup>) Technical Report 2019

---

# Table of Contents

|   |    |
|---|----|
| Executive Summary .....                                 | 2  |
| Test Specifications .....                               | 2  |
| Purpose.....  | 2  |
| Intended Population .....                               | 2  |
| Blueprint.....  | 3  |
| Examination Overview .....                              | 3  |
| Subject Matter Experts.....                             | 3  |
| Item Development.....                                   | 3  |
| Item Formats .....                                      | 4  |
| Administration.....                                     | 4  |
| Use of Scores.....                                      | 5  |
| Construct Irrelevant Variance .....                     | 5  |
| Fairness Review .....                                   | 5  |
| Scoring Process.....                                    | 5  |
| Item analysis and Key Validation .....                  | 5  |
| Classical and IRT Scoring .....                         | 5  |
| Results.....  | 6  |
| ANOVA.....  | 6  |
| Item_Resident Diagrams .....                            | 7  |
| Reliability .....                                       | 10 |
| Summary .....   | 11 |
| Appendix A 2019 OITE Item Writers and Reviewers .....   | 12 |
| Appendix B Letter Accompanying 2019 Score Reports ..... | 22 |

## Executive Summary

The 2019 Orthopaedic In-training Examination® (OITE®) was administered to 5,110 residents across 238 national and international orthopaedic residency programs from November 13, 2019 through January 8, 2020. The OITE is a 275-item, multiple choice, computer-based examination that covers 11 content domains representative of the established principles and conventional procedures and treatment modalities in orthopaedic surgery. The OITE is administered at designated locations by each residency program in a proctored environment. Scoring and reporting is conducted by the American Academy of Orthopaedic Surgeons and results are made available to the residency program directors for dissemination to the residents. Score reports include program and examinee level data as well as summary information relating to program year and cohorts (Accreditation Council for Graduate Medical Education, Osteopathic, Canadian, and International programs).

Results from the 2019 administration show a progression of knowledge as the residents advance in their training. Composite mean scores increase significantly across the PGY program (ANOVA *between groups*,  $p < 0.05$ )

## Test Specifications

### Purpose

The purpose of the Orthopaedic in-Training Examination (OITE) is to provide evidence of the orthopaedic surgeon's scope of knowledge throughout their training in support of educational advancement. Since 1963, the American Academy of Orthopaedic Surgeons (AAOS) has developed the Orthopaedic In-Training Examination (OITE) to assess resident knowledge in eleven primary content domains as defined by the OITE blueprint. The OITE is a comprehensive examination designed to facilitate knowledge assessment in established principles and conventional procedures and treatment modalities in orthopaedic surgery. Orthopaedic residency programs use the OITE performance outcomes at the individual and programmatic levels to support orthopaedic resident education through study, research, discussion, review, and assessment.

### Intended Population

The OITE is made available to all United States Accreditation Council for Graduate Medical Education (ACGME) and American Osteopathic (AOA) accredited orthopaedic residency programs as well as Canadian and International (outside North America) programs by request.

The examination is utilized throughout the 5 post-graduate years (PGY) representative of the ACGME training criteria. However, among other groups (Osteopathic, Canadian, International), the number of PGYs may vary.

## Blueprint

The 2019 OITE content consisted of 11 primary subject matter domains as outlined in the blueprint. The content distribution aligned with historical examinations and is under review annually by the Assessments and Examinations Committee. The AAOS is anticipating the adoption of a new blueprint that will be developed by the American Board of Orthopaedic Surgery. It is anticipated the new blueprint will be in place for 2021 test development and examination administration.

**Table 1** 2019 OITE Content Domains and Distribution

| Domain              | Proportion of Scored Exam |
|---------------------|---------------------------|
| Basic Sciences      | 12%                       |
| Foot and Ankle      | 7%                        |
| Hand and Wrist      | 8%                        |
| Hip and Knee        | 11%                       |
| Oncology            | 8%                        |
| Pediatrics          | 7%                        |
| Practice Management | 1%                        |
| Shoulder and Elbow  | 15%                       |
| Spine               | 12%                       |
| Sports              | 7%                        |
| Trauma              | 12%                       |

## Examination Overview

### Subject Matter Experts

Physician subject matter experts (SME) are appointed to the OITE examination committee by the Committee Appointment Program Committee, then ratified by the Board of Directors. The appointments cover a 3-year term and are subject to reappointment near the end of the three years. SME are routinely surveyed regarding their areas of expertise and every attempt is made to align a physician's area of practice with appropriate content in the OITE. Based upon the content needs, assignments are issued to the SME groups. All SMEs receive training in item development focusing in on the AAOS's style for item writing as well as best practice design recognized by the standards in place for high-stakes and educational testing. Appendix A lists the SME item writers and reviewers for the 2019 OITE.

### Item Development

SMEs author items in the AAOS item bank and authoring tool, ExamDeveloper®. Item writers complete their assignments in the tool and are required to provide detailed

summaries of the topics covered in support of content validity. At least two current, relevant and peer reviewed/recognized sources of references are required for each test item as well as an in-depth discussion explaining the justification for the correct/best answer and explanation addressing the incorrect answer options. The extensive validation of each item provides the foundation for the content validity of the examination and supports the fundamental purpose of the OITE considering the educational aspects of orthopaedic residency training.

Items are reviewed by the examination sub-committees prior to convening as a group to make decisions and recommendations regarding each item. The SME sub-committee members enter comments and suggestions for each item collection they are assigned to review. The group meets to address the collective comments and makes final edits to items worthy of retaining and including in the examination. On occasion, items are sent back to the authors for additional components (images, expanded discussion) and are reviewed upon completion of the requested additions.

After the collection of items for each domain have undergone a series of reviews, a smaller committee (OITE chair and leads in each subject area domain) convene to assemble and approve the final form of the OITE. Currently, only one form is used across all PGY programs.

### Item Formats

OITE item format is traditionally a four-part multiple-choice item, with a single correct/best response key and three competing and compelling distractors (non-correct options). The items may present as short clinical cases or straightforward knowledge-based content. SMEs may include images, videos, visuals or other stimuli to authenticate the topic being tested to address "real world" subject matter into the examination. All items are stand-alone, meaning they are not dependent on any other items in terms of sequence, association, or content.

### Administration

The OITE administration is coordinated and proctored by each of the residency programs. AAOS provides detailed instructions and guidelines regarding testing conditions, proctoring, requirements for the technical (hardware and bandwidth) components of the administration. AAOS schedules a four-day window, typically in November each year to cover the OITE administrations nationally and internationally. Because the examination is web-based, administrations are occurring around the clock in various locations throughout the world. There are exceptions made, on occasion for a resident to test outside of the defined testing window. These requests are made on a case-by-case basis and require approval from the AAOS.

The examination is a 275-item multiple-choice format. Examinees are permitted up to 7-hours of examination time. Breaks are traditionally at the discretion of the residency programs and proctors. AAOS suggests a 1-hour break at the mid-point of the examination (3.5 hours into the session).

Prior to starting the OITE, examinees are highly encouraged to navigate the exam tutorial which covers how enter answers, navigate through images and videos, review

items etc. Once the examination is complete, examinees are invited to respond to a brief survey relating to their testing experience.

## Use of Scores

The OITE is a comprehensive examination designed to facilitate knowledge assessment in established principles and conventional procedures and treatment modalities in orthopaedic surgery. Orthopaedic residency programs use the OITE performance outcomes at the individual and programmatic levels to support orthopaedic resident education through study, research, discussion, review, and assessment.

The Chair of Exams and Assessments provides guidelines to all residency programs relating to the use, interpretation and inappropriate use of scores. See Appendix B

## Construct Irrelevant Variance

### Fairness Review

During their training, SME item writers and reviewers are instructed to ensure that items are free from any detectable bias that could unduly advantage or disadvantage the test taker based upon individual characteristics. Careful attention to ensure that the construct being targeted is free from bias alleviates construct-irrelevant variance in the interpretation of scores.

## Scoring Process

### Item analysis and Key Validation

Prior to scoring, an analysis of item performance and key validation study were conducted. Generally, items displaying negative discrimination (or point measure) and proportion correct (p-value) of less than 0.20 are reviewed by the SMEs. On occasion, an item may be determined to be mis-keyed and in that case, the item would be re-keyed and retained in the final scoring. Items that are determined to be flawed in any way (double key, not targeted, no longer relevant or accurate) are removed from scoring. For the 2019 OITE, 16 items were removed from final scoring.

Because the OITE is administered across the five-year span of residency training, it is recommended to use the PGY 5 item level data to make decisions regarding item performance and retention.

### Classical and IRT Scoring

The AAOS historically scored the OITE using a classical scoring model (raw number correct) and reported the raw score, mean, standard deviation and percentile rank (individual and program). An extension of the scoring was conducted using a Rasch (item response theory model) to place the examinee performance outcomes and item difficulty measures on the same (logit) scale. Examinees and items can be rank ordered while the interval between the measures is scalable and subject to clearer interpretation than the classical model.

## Results

**Table 2** Overall Results by Program Year

| Program Year | N    | Mean (SD)     | % correct | Min | Max |
|--------------|------|---------------|-----------|-----|-----|
| 5            | 955  | 185.46(14.45) | 72%       | 110 | 219 |
| 4            | 1040 | 179.54(16.32) | 69%       | 83  | 216 |
| 3            | 1063 | 171.62(16.76) | 66%       | 98  | 213 |
| 2            | 1075 | 149.38(31.21) | 58%       | 49  | 216 |
| 1            | 977  | 137.97(16.74) | 53%       | 68  | 187 |

**Table 3** Overall Results by Program Year and Cohort Designation

| PGY 5         | N   | Mean (SD)     | % correct | Min | Max | Rasch |
|---------------|-----|---------------|-----------|-----|-----|-------|
| ACGME         | 735 | 188.57(11.60) | 73%       | 140 | 219 | 1.36  |
| Canadian      | 52  | 172.40(14.47) | 67%       | 143 | 203 | 0.95  |
| International | 45  | 155.24(16.50) | 60%       | 110 | 187 | 0.55  |
| Osteopathic   | 123 | 183.45(12.68) | 71%       | 150 | 208 | 1.23  |
| <b>PGY 4</b>  |     |               |           |     |     |       |
| ACGME         | 749 | 183.72(12.27) | 71%       | 137 | 216 | 1.24  |
| Canadian      | 69  | 160.81(16.10) | 62%       | 118 | 200 | 0.69  |
| International | 101 | 158.43(21.04) | 61%       | 83  | 209 | 0.64  |
| Osteopathic   | 121 | 181.98(12.47) | 70%       | 154 | 213 | 1.19  |
| <b>PGY 3</b>  |     |               |           |     |     |       |
| ACGME         | 773 | 175.18(13.39) | 68%       | 132 | 213 | 1.02  |
| Canadian      | 58  | 150.10(13.21) | 58%       | 117 | 189 | 0.45  |
| International | 107 | 152.25(20.98) | 59%       | 98  | 197 | 0.5   |
| Osteopathic   | 125 | 176.18(13.66) | 68%       | 144 | 212 | 1.04  |
| <b>PGY 2</b>  |     |               |           |     |     |       |
| ACGME         | 785 | 153.18(28.75) | 59%       | 49  | 207 | 0.45  |
| Canadian      | 56  | 117.79(33.90) | 45%       | 53  | 168 | 0.07  |
| International | 114 | 134.81(29.62) | 52%       | 53  | 177 | -0.28 |
| Osteopathic   | 120 | 153.17(34.28) | 59%       | 58  | 216 | 0.46  |
| <b>PGY 1</b>  |     |               |           |     |     |       |
| ACGME         | 755 | 138.84(15.37) | 54%       | 93  | 184 | 0.2   |
| Canadian      | 45  | 114.38(10.37) | 44%       | 90  | 138 | -0.3  |
| International | 56  | 128.25(21.51) | 50%       | 68  | 175 | -0.02 |
| Osteopathic   | 121 | 145.75(14.74) | 56%       | 112 | 187 | 0.34  |

## ANOVA

Under the null hypothesis that there is no significant difference between mean scores among the residency cohorts, an analysis of variance (ANOVA) was conducted to test the proposition. The analysis was run across all combinations of cohort comparison;

however only the ordered cohort results are presented. The following tables display results for PGY 5->PGY 4, PGY 4->PGY 3, PGY 3->PGY 2, PGY 2-> PGY 1. All analyses resulted in a rejection of the null hypothesis, implying a statistically significant difference between scores across all program years.

**Table 4 ANOVA PGY 5\*PGY 4**

|             |                |            | Sum of Squares | df  | Mean Square | F        | Sig. |
|-------------|----------------|------------|----------------|-----|-------------|----------|------|
| PGY5 * PGY4 | Between Groups | (Combined) | 198750.910     | 59  | 3368.659    | 4846.904 | .000 |
|             | Within Groups  |            | 622.036        | 895 | .695        |          |      |
|             | Total          |            | 199372.947     | 954 |             |          |      |

**Table 5 ANOVA PGY 4\*PGY 3**

|             |                |            | Sum of Squares | df   | Mean Square | F        | Sig. |
|-------------|----------------|------------|----------------|------|-------------|----------|------|
| PGY4 * PGY3 | Between Groups | (Combined) | 276424.161     | 78   | 3543.900    | 4783.996 | .000 |
|             | Within Groups  |            | 711.892        | 961  | .741        |          |      |
|             | Total          |            | 277136.053     | 1039 |             |          |      |

**Table 6 ANOVA PGY 3\*PGY 2**

|             |                |            | Sum of Squares | df   | Mean Square | F        | Sig. |
|-------------|----------------|------------|----------------|------|-------------|----------|------|
| PGY3 * PGY2 | Between Groups | (Combined) | 297965.460     | 118  | 2525.131    | 4104.513 | .000 |
|             | Within Groups  |            | 580.757        | 944  | .615        |          |      |
|             | Total          |            | 298546.216     | 1062 |             |          |      |

**Table 7 ANOVA PGY 2\*PGY 1**

|             |                |            | Sum of Squares | df  | Mean Square | F        | Sig. |
|-------------|----------------|------------|----------------|-----|-------------|----------|------|
| PGY2 * PGY1 | Between Groups | (Combined) | 279950.730     | 93  | 3010.223    | 4137.153 | .000 |
|             | Within Groups  |            | 642.477        | 883 | .728        |          |      |
|             | Total          |            | 280593.208     | 976 |             |          |      |

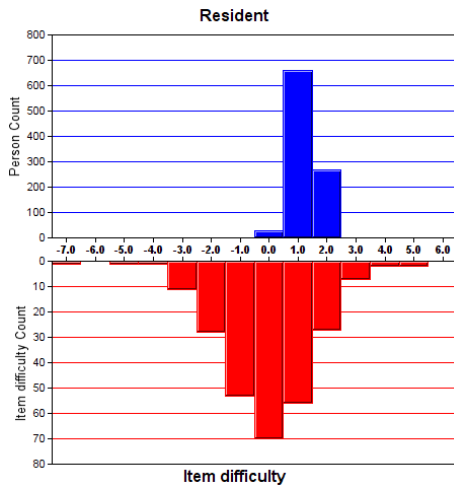
### Item\_Resident Diagrams

The following diagrams show the distribution of examinee ability estimates and item difficulty estimates on the Rasch interval scale. The distributions show the alignment

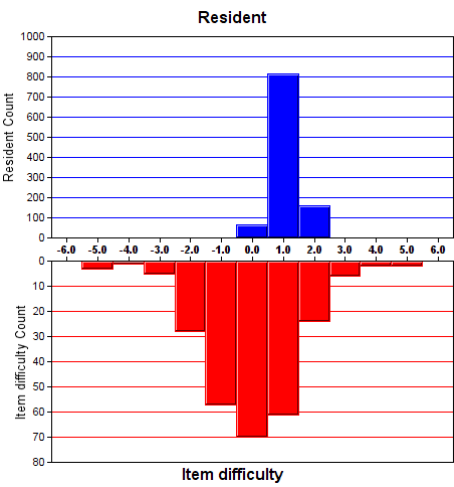


between candidate ability and item difficulty. It is not uncommon to see somewhat of a misalignment in ability and difficulty among highly knowledgeable, skilled test takers. The diagrams are used as a component of exam review and are not intended to suggest any intentional effort to increase the difficulty of the test items.

**Figure 1 PGY 5**



**Figure 2 PGY 4**



**Figure 3 PGY 3**

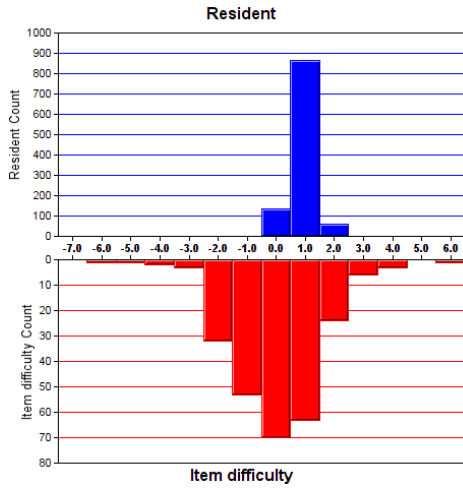


Figure 4 PGY 2

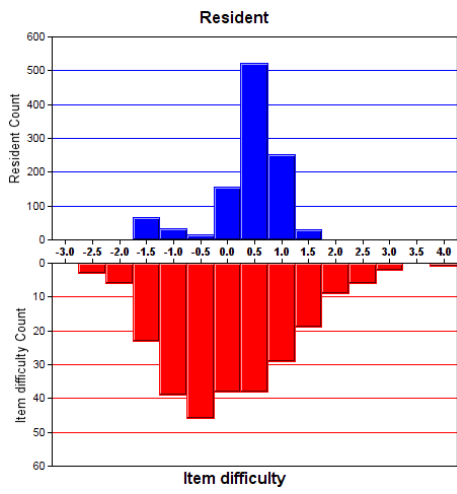
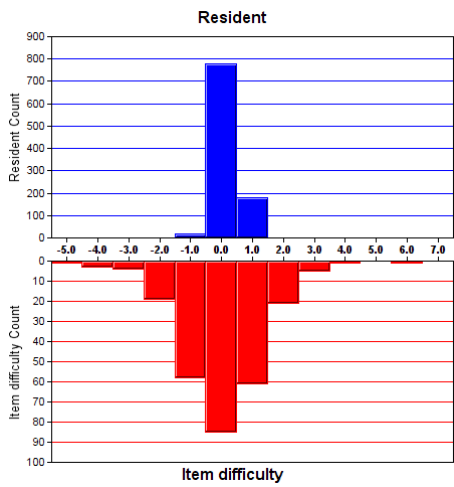


Figure 5 PGY 1



## Reliability

Test form reliability is a measure of internal consistency of the examination and more importantly the magnitude of measurement error. Reliability measures are typically reported on a scale from 0-1. The precision of measurement is critical in high-stakes, decision making (pass/fail) examinations such as in licensing or certification and thus a very high (0.90 or >) reliability measure is anticipated. In educational assessment, reliability may be interpreted as the confidence that the scores accurately and consistently measure the knowledge of the test-takers.

Reliability is directly influenced by test length (higher reliability with longer exams) because longer test provides a larger sample of responses to the questions. Reporting reliability measures on subcategories or subdomains of an exam may introduce noise in interpretability if the number of items in the categories are low (typically <20).

KR20 reliability measures the repeatability of raw scores, while the Rasch Person Reliability Index produces a measure indicating how repeatable the measures are for the sample.

The standard error of measurement (SEM) estimates the variation in test scores within a sample of test-takers.

Table 4 shows the reliability estimates and SEM across the five testing cohorts. Apart from the PGY 2 cohort, there is not much variation in the reliability estimates. By comparison, the PGY 2 cohort has more “spread” in the scores (See Table 3 Min/Max correct), which contributed to a higher KR20 and Rasch reliability estimate.

**Table 8** Reliability Estimate (Overall exam) of the 2019 OITE Across Program Years

|       | KR20 | SEM<br>raw score | Rasch<br>Person<br>Reliability |
|-------|------|------------------|--------------------------------|
| PGY 1 | 0.83 | 7.01             | 0.82                           |
| PGY 2 | 0.95 | 6.90             | 0.95                           |
| PGY 3 | 0.85 | 6.54             | 0.84                           |
| PGY 4 | 0.85 | 6.36             | 0.83                           |
| PGY 5 | 0.82 | 6.20             | 0.80                           |

## Summary

The 2019 OITE test development and analyses process align consistently with the standards set forth for professional, high stakes examinations. The steps to define the purpose of the examination and use of scores, selection of SMEs, training, item development, review and validation follow rigorous standards set forth by the AAOS Assessment and Examinations Committee members.

The 2019 OITE provides key information relating to the progression of knowledge in the topics covered for orthopaedic residents across their educational trajectory. Educational exams by design should differentiate among cohorts that are categorized or differentiated by their place in the program. The 2019 OITE outcomes show that the examination measures what it is purported to measure as evidenced by the differences in scores among residents in training over time. The 2019 OITE data supports the expectation of growth over time by the presentation of composite scores that are significantly different across the PGY cohorts.

The significant efforts by the volunteer physicians whose contributions support the overall positive results and commendable outcomes of the 2019 OITE should be recognized as critical components of the OITE test development process.

## Appendix A

### 2019 OITE Item Writers and Reviewers

#### Disclosure Information for the 2019 Orthopaedic In-Training Examination

**Norman Yoshinobu Otsuka, MD:** Submitted on: 04/15/2019

AAOS: Board or committee member

ACGME: Board or committee member

American Academy of Pediatrics: Board or committee member;  
Publishing royalties, financial or material support

American College of Surgeons: Board or committee member

American Journal of Orthopedics: Editorial or governing board

Journal of Children's Orthopaedics: Editorial or governing board

Journal of Orthopaedic Surgical Advances: Editorial or governing board

Journal of Pediatric Orthopedics: Editorial or governing board

Journal of Pediatric Orthopedics, Part B: Editorial or governing board

Journal of the American Academy of Orthopaedic Surgeons: Editorial or  
governing board

**Joseph A Abboud, MD:** Submitted on: 04/07/2019

Aevumed: Stock or stock Options

American Shoulder and Elbow Surgeons: Board or committee member

Arthrex, Inc: Research support

Curical Technologies LTD: Other financial or material support

Department of Defense: Research support

DePuy, A Johnson & Johnson Company: Research support

DJ Orthopaedics: IP royalties; Paid consultant  
Dolevium: Other financial or material support; Stock or stock Options  
Flexion Therapeutics: Paid consultant  
Globus Medical: IP royalties; Paid consultant  
Integra: Research support  
Integra Life Sciences: IP royalties  
Journal of Shoulder and Elbow Arthroplasty: Editorial or governing board  
Journal of Shoulder and Elbow Surgery: Editorial or governing board  
Marlin Medical Alliance, LLC: Stock or stock Options  
Mid Atlantic Shoulder and Elbow Society: Board or committee member  
Mininvasive: Other financial or material support  
OBERD: Stock or stock Options  
OREF: Research support  
Orthopedics Today: Editorial or governing board  
Orthospace: Research support  
Parvizi Surgical Innovation LLC: Stock or stock Options  
Shoulder JAM LLC: Stock or stock Options  
SLACK Incorporated: Publishing royalties, financial or material support  
Tornier: Paid presenter or speaker; Research support  
Trice Medical: Other financial or material support  
Wolters Kluwer Health - Lippincott Williams & Wilkins: Publishing royalties, financial or material support  
Zimmer: IP royalties; Paid consultant; Research support

**Craig Scott Bartlett, MD:** Submitted on: 01/28/2019

AAOS: Board or committee member  
Bristol-Myers Squibb: Stock or stock Options  
Johnson & Johnson: Stock or stock Options  
Journal of Orthopaedics and Traumatology: Editorial or governing board  
Medtronic: Stock or stock Options

Merck: Stock or stock Options

Orthopaedic Trauma Association: Board or committee member

SI Bone: Paid consultant; Stock or stock Options

Stryker: Paid consultant

**Claire Francis Beimesch, MD:** Submitted on: 06/08/2019

American Academy for Cerebral Palsy and Developmental Medicine:  
Board or committee member

Pediatric Orthopaedic Society of North America: Board or committee  
member

**Maryse Bouchard, MD, FRCSC, MSc:** Submitted on: 03/10/2019

Orthopediatrics Corp.: Paid consultant

**Brian E Brigman, MD, PhD:** Submitted on: 05/23/2019

Daiichi Sankyo: Paid consultant

Journal of Surgical Oncology: Editorial or governing board

Lumicell Diagnostics: Research support

Musculoskeletal Transplant Foundation: Paid consultant; Paid presenter or  
speaker; Research support

Musculoskeletal Tumor Society: Board or committee member

Plexxicon: Paid consultant

PLOS-one: Editorial or governing board

**Brandon Dubose Bushnell, MD, MBA:** Submitted on: 01/06/2019

AAOS: Board or committee member

American Orthopaedic Association: Board or committee member

American Shoulder and Elbow Surgeons: Board or committee member

Georgia Orthopedic Society: Board or committee member

Rotation Medical: Paid consultant

Rotation Medical, Inc.: Research support

Smith & Nephew: Paid consultant; Research support

**Mickey S Cho, MD:** Submitted on: 04/18/2019

AAOS: Board or committee member

American Society for Surgery of the Hand: Board or committee member

AXOGEN: Research support

**Robert Hyun Cho, MD:** Submitted on: 04/29/2019

AAOS: Board or committee member

DePuy Spine: Paid consultant

Journal of Pediatric Orthopedics: Editorial or governing board

Nuvasive: Paid consultant

OrthoPediatrics: Paid consultant

Orthopedics: Editorial or governing board

Pediatric Orthopaedic Society of North America: Board or committee member

Scoliosis Research Society: Board or committee member

**Michael Patrick Clare, MD:** Submitted on: 08/09/2019

AAOS: Board or committee member

American Orthopaedic Foot and Ankle Society: Board or committee member

BESPA Global: Paid consultant

**Lawrence F Cohen, MD:** Submitted on: 09/03/2018

Globus Medical: IP royalties

Johnson & Johnson: Stock or stock Options



**Ilvly Cotterell, MD:** Submitted on: 04/23/2019

AAOS: Board or committee member

Medartis: Paid presenter or speaker

Virginia Orthopaedic Society: Board or committee member

**Thomas Charles Dowd, MD:** Submitted on: 04/29/2019

AAOS: Board or committee member

American Orthopaedic Foot and Ankle Society: Board or committee member

Journal of Bone and Joint Surgery - American: Editorial or governing board

Medscape: Editorial or governing board

Society of Military Orthopaedic Surgeons: Board or committee member

**Stephen Thomas Duncan, MD:** Submitted on: 06/02/2019

Bone Support: Paid consultant

Heraeus: Paid consultant

Journal of Arthroplasty: Editorial or governing board

Journal of the American Academy of Orthopaedic Surgeons: Editorial or governing board

Kentucky Orthopaedic Society: Board or committee member

Morph: Unpaid consultant

Smith & Nephew: Paid consultant; Research support

Stryker: Research support

Zimmer: Paid consultant; Research support

**Patrick Brian Ebeling, MD:** Submitted on: 07/22/2019

AAOS: Board or committee member

American Orthopaedic Foot and Ankle Society: Board or committee member

Clinical Orthopaedics and Related Research: Editorial or governing board  
FH Orthopedics: Paid consultant  
Foot and Ankle International: Editorial or governing board  
Integra Life Sciences: Paid consultant  
Journal of Bone and Joint Surgery - American: Editorial or governing board  
Orthosolutions: Paid consultant

**Albert Ooguen Gee, MD:** Submitted on: 07/30/2019

Medbridge Inc.: Publishing royalties, financial or material support

**David Samuel Geller, MD:** Submitted on: 04/17/2019

AAOS: Board or committee member

Musculoskeletal Tumor Society: Board or committee member

**Brian M Grawe, MD:** (This individual reported nothing to disclose);  
Submitted on: 05/01/2019

**Brian Michael Haus, MD:** Submitted on: 07/31/2019

AAOS: Board or committee member

American Orthopaedic Society for Sports Medicine: Board or committee member

**John William Hinchey, MD:** Submitted on: 04/26/2019

AAOS: Board or committee member

Bexar County Medical Society: Board or committee member

ROM 3: Stock or stock Options

Texas Medical Associate: Board or committee member

Texas Orthopaedic Association: Board or committee member

Texas Orthopaedic Political Action Committee: Board or committee member

TexPAC: Board or committee member

**Kyle T Judd, MD:** Submitted on: 05/01/2019

AAOS: Board or committee member

AO Trauma: Paid presenter or speaker

DJ Orthopaedics: Research support

**Richard Louis McGough, MD:** Submitted on: 06/05/2019

AAOS: Board or committee member

IlluminOss: Paid consultant; Research support

Musculoskeletal Tumor Society: Board or committee member

Stryker: Paid consultant

Zimmer: IP royalties; Paid consultant

**Kathleen A McHale, MD:** (This individual reported nothing to disclose);  
Submitted on: 08/13/2019

**Varatharaj Mounasamy, MD:** Submitted on: 06/18/2019

AAOS: Board or committee member

European journal of orthopedic surgery and traumatology: Editorial  
or governing board

**Matthew Oetgen, MD:** Submitted on: 07/23/2019

AAOS: Board or committee member

Journal of the American Academy of Orthopaedic Surgeons: Editorial or  
governing board

Pediatric Orthopaedic Society of North America: Board or committee  
member

Scoliosis Research Society: Board or committee member

**Shervin V Oskouei, MD:** Submitted on: 06/06/2019

Lima: Paid consultant

Onkos: Paid consultant

**Jonathan David Packer, MD:** Submitted on: 04/25/2019

AAOS: Board or committee member

American Orthopaedic Society for Sports Medicine: Board or committee member

**Rajeev Pandarinath, MD:** Submitted on: 06/02/2019

AAOS: Board or committee member

Procter & Gamble, AstraZeneca: Stock or stock Options

Smith & Nephew: Paid consultant

**Tom E Reinsel, MD:** Submitted on: 04/03/2019

AAOS: Board or committee member

American Board of Orthopaedic Surgery, Inc.: Board or committee member

Lumbar Spine Research Society: Board or committee member

North American Spine Society: Board or committee member

Spine: Editorial or governing board

The Spine Journal (reviewer): Editorial or governing board

**Christopher James Roach, MD:** Submitted on: 06/03/2019

AAOS: Board or committee member

American Orthopaedic Society for Sports Medicine: Board or committee member

**Milan Kumar Sen, MD:** Submitted on: 04/30/2019

AAOS: Board or committee member

ACell: Paid consultant; Paid presenter or speaker

Globus Medical: Paid consultant

Orthopaedic Trauma Association: Board or committee member

Smith & Nephew: Paid consultant; Paid presenter or speaker

Synthes: Paid consultant; Paid presenter or speaker

**William Franklin Sherman, MD:** (This individual reported nothing to disclose); Submitted on: 05/28/2019

**Kenneth F Taylor, MD:** Submitted on: 08/09/2019

AAOS: Board or committee member

American Orthopaedic Association: Board or committee member

American Society for Surgery of the Hand: Board or committee member

Orthopaedic Research Society: Board or committee member

**Krishna Raj Tripuraneni, MD:** Submitted on: 05/25/2019

Arthroplasty Today: Editorial or governing board

DJO Surgical: Research support

Graftworx: Stock or stock Options

Journal of Arthroplasty: Editorial or governing board

Orthopaedic Implant Company: Stock or stock Options

Zimmer: Research support

**Harmeeth Singh Uppal, MD:** Submitted on: 01/07/2019

AAOS: Board or committee member

AO Trauma: Board or committee member

Orthopaedic Trauma Association: Board or committee member

**Brian C Werner, MD:** Submitted on: 04/14/2019

American Orthopaedic Society for Sports Medicine: Board or committee member

American Shoulder and Elbow Surgeons: Board or committee member

Arthrex, Inc: Paid presenter or speaker; Research support

Biomet: Research support

Integra LifeScience: Research support

**Nadine L Williams, MD:** (This individual reported nothing to disclose);  
Submitted on: 01/24/2019

**John S Xenos, MD:** Submitted on: 01/20/2019

Journal of Arthroplasty: Editorial or governing board

Medtronic: Paid consultant

Regenesis Biomedical: Stock or stock Options

Smith & Nephew: Paid consultant

## Appendix B

### Letter Accompanying 2019 Score Reports

The purpose of the Orthopaedic in-Training Examination (OITE) is to improve orthopaedic surgery physician education. Questions are constructed to test knowledge, interpretation, and problem-solving skills in orthopaedic surgery. The OITE is a formative assessment to be used as one of several instruments to measure residents' acquired knowledge as compared to their peers among a national norm group composed of orthopaedic surgery residents from Accreditation Council for Graduate Medical Education (ACGME)- accredited U.S. and Canadian allopathic and osteopathic orthopaedic surgery graduate training programs. Likewise, the OITE is a formative assessment to be used among several instruments to measure that the program's teaching in the area of orthopaedic surgery as compared to a national norm comprised on ACGME recognized orthopaedic surgery training programs. The OITE is intended to provide information to resident programs that will be used to improve each program's teaching; it is not intended to measure intelligence, aptitude, or clinical skills.

It is inappropriate to use the OITE as:

- A single criterion for promoting a resident to the next year of training;
- A single method of determining whether a resident should be retained in a training program;
- A means of obtaining admission into an orthopaedic surgery residency program, or
- Part of the application process for a fellowship or other position.

Sincerely,



Norman Otsuka, MD

Chair, Assessments and Examinations Committee