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THE ORTHOPAEDIC FORUM

# Scholarly Success of Orthopaedic Surgeons Participating in the Clinician Scholar Career Development Program

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**Background:** A concern exists about the decline in young orthopaedic surgeons pursuing careers as clinician-researchers. One program designed to address this concern is the American Academy of Orthopaedic Surgeons/Orthopaedic Research and Education Foundation/Orthopaedic Research Society (AAOS/OREF/ORS) Clinician Scholar Career Development Program (CSCDP). The aims of this study were to better understand the characteristics of CSCDP participants and how the experience effects involvement in career-impacting opportunities and scholarly activity.

**Methods:** This study was a retrospective analysis. CSCDP participants from 2003 to 2014 were recorded, and demographic information was collected. An Internet search was utilized to determine each surgeon's current practice environment. The National Institutes of Health (NIH) Research Portfolio Online Reporting Tools Expenditures and Results (RePORTER) database was used to track NIH funding. The OREF and its web site were used to query OREF grant funding. American Orthopaedic Association (AOA) Traveling Fellowship awardees were recorded from the AOA web site. Specialty-specific traveling fellowship awardee information was collected via organization web sites, and direct-contact, scholarly activity, and impact were determined using the Scopus database Hirsch index (h-index).

**Results:** Two hundred and thirty-two individuals (229 confirmed current orthopaedic surgeons) participated in the CSCDP. Fifteen (6.6%), 41 (17.9%), 20 (8.7%), and 17 (7.4%) former CSCDP participants have been awarded NIH funding, OREF grant support, AOA Traveling Fellowships, and/or specialty-specific traveling fellowships, respectively. Those involved in any of the career-impactful opportunities post-CSCDP have had higher scholarly activity and impact compared with those who were not involved in the career-impactful opportunities (h-index: 15.9 [standard deviation (SD), 8.1] versus 10.0 [SD, 5.7], $p < 0.0001$). No scholarly activity and impact differences existed between orthopaedic subspecialties ($p = 0.077$).

**Conclusions:** The CSCDP appears to play an important role in promoting clinician-researcher careers in orthopaedic surgery.

*continued*

**Disclosure:** On the **Disclosure of Potential Conflicts of Interest** forms, *which are provided with the online version of the article,* one or more of the authors checked "yes" to indicate that the author had a relevant financial relationship in the biomedical arena outside the submitted work (http://links.lww.com/JBJS/E851).

**Clinical Relevance:** The CSCDP must continue to adapt to the surrounding health-care landscape to achieve an even better success rate in creating clinician-researchers who will further advance musculoskeletal health and discovery for the betterment of the patients and the profession.

Despite an acknowledgment over the past 2 decades that initiatives are needed to address the limited number of young orthopaedic surgeons seeking careers as clinician-researchers[1,2], ongoing discussions continue to note the shortage of research-oriented orthopaedic surgeons[3]. To further the field, a number of resources have been mobilized, and many believe that even more may be needed[4].

One major initiative for developing the next generation of academic orthopaedic surgery leaders is the Clinician Scholar Career Development Program (CSCDP). This yearly program introduces important topics, including developing a clinician-scholar career timeline, selecting a mentor, and writing successful grant applications. Created through a collaboration of the American Academy of Orthopaedic Surgeons (AAOS), the Orthopaedic Research and Education Foundation (OREF), and the Orthopaedic Research Society (ORS), the CSCDP endeavors to be the first step in creating lifelong clinician-researchers[5].

In order to evaluate the impact of the CSCDP, this study had 2 objectives: (1) to analyze the characteristics of those accepted to participate in the CSCDP from 2003 to 2014, and (2) to determine the percentage of those who participated in the CSCDP who then proceeded to be awarded National Institutes of Health (NIH) research funding, OREF grant support, American Orthopaedic Association (AOA) Traveling Fellowship(s), and/or specialty-specific traveling fellowships.

## Materials and Methods

CSCDP participants from 2003 to 2014 were identified from the publicly available lists on the AAOS web site[5]. Of the 232 program participants, 229 were enrolled (2 had transitioned to radiology and 1 could not be confirmed as currently in practice).

The authors determined each CSCDP participant's sex, degree(s) earned at the time of the program, residency location, fellowship status, current practice environment, and academic level, if applicable. AAOS and department web sites were the primary source of information whenever possible. Residency location was denoted as the United States or other. CSCDP participants who completed a fellowship were categorized into the following 9 subspecialties: adult reconstruction, foot and ankle, hand, oncology, pediatrics, shoulder and elbow, spine, sports medicine, and trauma. Current practice environment was categorized as academic, private, nonacademic hospital-based, and military. Surgeons who were denoted to be in academic medicine were those employed at an academic medical center or in training, not those in private or hospital-based practices with a clinical teaching appointment. Orthopaedic surgeons in private practice but operating at an academic medical center were included in the private practice group. Academic

**TABLE I Past CSCDP Participant Characteristics**

| | |
|---|---|
| Sex *(no. [%])* | |
| Men | 196 (86) |
| Women | 33 (14) |
| Residency location *(no. [%])* | |
| U.S. | 220 (96) |
| Non-U.S. | 9 (3.9) |
| Degrees (at time of grant) *(no. [%])* | |
| MD/DO only | 187 (82) |
| MD/DO plus additional degrees (PhD, MPH/MSPH, MBA, etc.) | 42 (18) |
| Fellowship training *(no. [%])* | |
| Non-fellowship trained/current trainee | 6 (2.6) |
| Adult reconstruction | 30 (13) |
| Foot and ankle | 4 (1.8) |
| Hand | 29 (13) |
| Oncology | 18 (7.9) |
| Pediatrics | 21 (9.2) |
| Shoulder and elbow | 13 (5.7) |
| Spine | 27 (12) |
| Sports | 51 (22) |
| Trauma | 30 (13) |
| Practice location *(no. [%])* | |
| Academic* | 151 (66) |
| Private | 39 (17) |
| Nonacademic hospital-based | 26 (11) |
| U.S. military | 13 (5.7) |
| Academic standing of academic orthopaedic surgeons *(no. [%])* | |
| Resident | 1 (0.6) |
| Fellow | 5 (3.3) |
| Instructor | 3 (2.0) |
| Assistant professor | 99 (66) |
| Associate professor | 41 (27) |
| Professor | 2 (1.3) |
| Years from CSCDP completion to initial NIH funding *(mean [SD])* | 5.5 (2.2) |
| Years from CSCDP completion to initial OREF grant *(mean [SD])* | 3.1 (1.9) |
| Years from CSCDP completion to initial AOA Traveling Fellowship *(mean [SD])* | 4.3 (2.5) |
| Years from CSCDP completion to specialty-specific traveling fellowship *(mean [SD])* | 5.2 (2.3) |
| h-index *(mean [SD])* | 11.8 (7.0) |

*Includes 5 fellows and 1 resident.

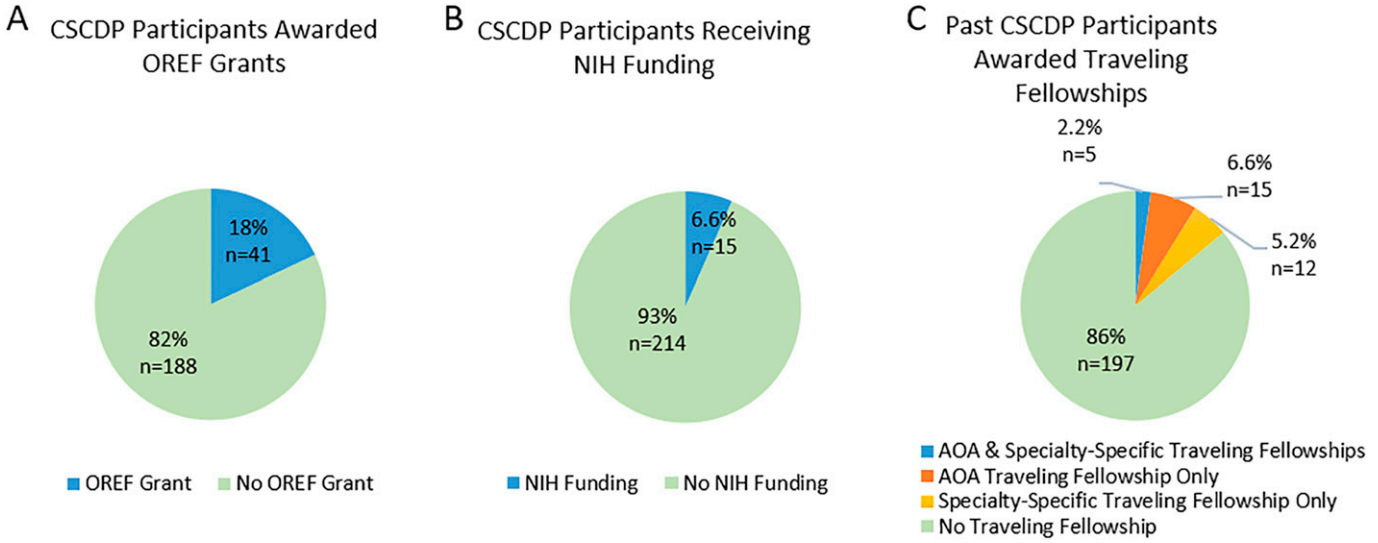


Fig. 1

**Figs. 1-A, 1-B, and 1-C** Pie charts demonstrating the scholarly success of prior CSCDP participants. **Fig. 1-A** An illustration of the percentage and raw number of past CSCDP participants who received subsequent OREF grants. **Fig. 1-B** An illustration of the percentage and raw number of past CSCDP participants who received subsequent NIH funding. **Fig. 1-C** An illustration of the percentage and raw number of past CSCDP participants who received AOA Traveling Fellowships and/or specialty-specific traveling fellowships.

level was divided into professor, associate professor, and assistant professor.

The NIH Research Portfolio Online Reporting Tools Expenditures and Results (RePORTER) web site contains research grant support data from the NIH from 1985 to the present[6]. The NIH RePORTER web site was queried to determine the CSCDP participants who received NIH grant support for their research. The type, the year(s), and the monetary amount of the NIH grant(s), and whether they were basic or clinical research grants, were recorded. The year(s) of NIH grant support were compared with the year of CSCDP participation.

OREF grant recipients from 2012 to 2014, along with the types of grants awarded, were reviewed on the OREF web site[7]. OREF grants from 2003 to 2011 were provided by OREF. CSCDP participants who received an OREF grant had their OREF grant years and type of grants recorded. The timeline of when the OREF grants were awarded compared with the year of CSCDP participation was determined.

The AOA web site was reviewed for CSCDP participants who were awarded an AOA Traveling Fellowship[8]. The years of AOA Traveling Fellowship participation were recorded and compared with the year of CSCDP participation. Information about specialty-specific traveling fellowships was gathered via respective web sites or directly from the granting organization. Specialty-specific traveling fellowship data were reviewed in a similar fashion to that of the AOA Traveling Fellowship. Lower-extremity adult reconstruction traveling fellowship information was unable to be obtained from the granting organizations.

The Hirsch index (h-index), defined as a researcher's number of publications cited ≥h times, can be used as a measure of scholarly productivity and impact[9-11]. Using the Scopus database, each CSCDP participant's current h-index as of October 2017 was recorded[10].

Univariate and bivariate analyses (t tests and chi-square tests) were conducted. A 1-way analysis of variance (ANOVA) was used to compare means across multiple groups; $p < 0.05$ was considered significant. All statistical analyses were performed using Stata/SE 14.2 for Mac software (StataCorp).

## Results

Of the 229 CSCDP participants, most were men (196; 86%), and most completed a residency in the United States (220; 96%) (Table I). Additional degrees, as reported in the list of past CSCDP participants, included 18 (7.9%), 5 (2.2%), and 4

**TABLE II NIH Funding Stratified by Type**

| NIH Grant | No. (%) |
|---|---|
| K08 | 6 (31.6) |
| K23 | 1 (5.3) |
| R01 | 1 (5.3) |
| R03 | 4 (21.1) |
| R13 | 1 (5.3) |
| R21 | 1 (5.3) |
| F32 | 1 (5.3) |
| P30 | 2 (10.5) |
| S10 | 1 (5.3) |
| ZIA | 1 (5.3) |
| Total | 19 (100) |

**TABLE III OREF Grants Stratified by Type***

| OREF Grant Type | No. (%) |
|---|---|
| Young Investigator Grant: all sponsors | 11 (20.4) |
| ORS/OREF Travel Award in Orthopaedic Research Translation | 7 (13.0) |
| Career Development Grant: all sponsors | 5 (9.3) |
| New Investigator Grant: all sponsors | 5 (9.3) |
| OREF and CCJR Clinical Practice Award | 5 (9.3) |
| Clinician-Scientist Grant: all sponsors | 4 (7.4) |
| Resident Educational Award: all sponsors | 4 (7.4) |
| Resident Clinician-Scientist: all sponsors | 3 (5.6) |
| OREF/Goldberg Research Grant in Arthritis | 2 (3.7) |
| OREF Soft-Tissue Repair and Regeneration Sports Medicine Grant in honor of Russell F. Warren, MD | 2 (3.7) |
| Resident Research Award: all sponsors | 2 (3.7) |
| OREF/Stryker Robotic-Assisted Surgery for Primary Total Knee Arthroplasty Prospective Clinical Research Grant | 1 (1.8) |
| OREF Perioperative Surgical and Medical Home Patient Safety Research Grant | 1 (1.8) |
| OREF/OTA Trauma Research Grant | 1 (1.8) |
| OREF/ASES/Rockwood Clinical Research Grant in Shoulder Care | 1 (1.8) |
| Total | 54 (100) |

*OREF = Orthopaedic Research and Education Foundation, ORS = Orthopaedic Research Society, CCJR = Current Concepts in Joint Replacement, OTA = Orthopaedic Trauma Association, and ASES = American Shoulder and Elbow Surgeons.

(1.7%) with a Doctor of Philosophy (PhD), Master of Public Health (MPH)/Master of Science in Public Health (MSPH), or Master of Business Administration (MBA), respectively. Fourteen participants (6.1%) held other master-level degrees, while 1 (0.4%) held a Juris Doctor (JD) degree.

The breakdown of the 6 CSCDP participants who have not pursued fellowship training to date is: nonacademic hospitals, 2; private, 1; military, 1; academia, 1; and residency, 1. Of those who completed a fellowship, the number of CSCDP participants in each subspecialty is: adult reconstruction, 30; foot and ankle, 4; hand, 29; oncology, 18; pediatrics, 21; shoulder and elbow, 13; spine, 27; sports, 51; and trauma, 30.

A total of 145 (63%) of the CSCDP participants currently hold faculty appointments within academic orthopaedic surgery departments and are not private surgeons with clinical instructor responsibilities. Thirty-nine (17%) and 26 (11%) orthopaedic surgeons are active in private and nonacademic hospital-based settings, respectively. There are 13 (5.7%) past CSCDP participants who currently serve in the U.S. military. Additionally, 5 (3.3%) of the awardees are current fellows, and 1 (0.6%) is a current resident. Of those in academic medicine, the majority (99; 66%) are assistant professors. A total of 41 (27%) and 2 (1.3%) of the orthopaedic surgeons who were past CSCDP participants are current associate professors or professors, respectively.

### *Prestigious Research and Scholarly Awards*

Of the 229 CSCDP participants, 67 (29%) were awarded NIH funding, OREF grant support, AOA Traveling Fellowship(s), and/or specialty-specific traveling fellowship(s) after CSCDP participation.

Nineteen NIH research grants have been awarded to 15 CSCDP participants (6.6% of total; 10.3% of current academic faculty) (Fig. 1-B). Of the 15 surgeons, 13 received at least 1 NIH grant that surpassed $100,000 over the time frame of the grant. Only 1 recipient was a dual MD/PhD holder. Four (27%) of the past CSCDP participants who have received NIH research grants have been awarded 2 NIH research grants each. The most common NIH grant types awarded were the K08 (6; 31.6%) and R03 (4; 21.1%) (Table II). Only 2 (11%) of the NIH research grants were for clinical research, while the remaining 17 (89%) supported basic science work. Two additional orthopaedic surgeons were awarded grant support through the U.S. Department of Veterans Affairs. The average length of time between participating in the CSCDP and receiving new NIH grant support was 5.5 years (standard deviation [SD], 2.2 years). To offer perspective, although 567 individuals were awarded OREF grants from 2003 to 2014, 28 (4.9%) garnered NIH funding only after they had received an OREF grant. When comparing all OREF grantees to all CSCDP participants, irrespective of other factors, there was no significant difference in rates of follow-up NIH funding (4.9% versus 6.6%, $p = 0.36$).

A total of 54 OREF grants were awarded to 41 CSCDP participants (18% of total; 28% of current academic faculty) (Fig. 1-A). After completing the CSCDP program, 9 (22.0%) of the individuals had won 2 OREF grants, while 2 (4.9%) individuals had won 3 OREF grants. The average time to the first OREF grant post-CSCDP was 3.1 years (SD, 1.9 years). For those who won multiple OREF grants, the average time from the CSCDP to second and third OREF grants was 6.6 years (SD, 2.4 years) and 6.5 years (SD, 0.7 years), respectively. The most common type of OREF grant awarded post-CSCDP was a Young Investigator Grant (11 [20.4%]), followed by the ORS/OREF Travel Award in Orthopaedic Research Translation (7 [13.0%]) (Table III). Career Development Grants, New Investigator Grants, and OREF/Current Concepts in Joint Replacement (CCJR) Clinical Practice Awards were tied for third most common (5 [9.3%] each) (Table III).

CSCDP participants (n = 20) were awarded 24 AOA Traveling Fellowships (8.7% of total; 14% of past CSCDP participants currently in academic medicine) (Fig. 1-C). Four past CSCDP participants have been awarded 2 AOA Traveling Fellowships each. AOA Traveling Fellowships awarded included 14 (58%) North American Traveling Fellowships (NATFs), 4 (17%) American-British-Canadian (ABC) Traveling Fellowships, 5 (21%) Japanese Orthopaedic Association (JOA) Traveling Fellowships, and 1 (4%) Austria-Swiss-German (ASG) Traveling Fellowship. The average time to the first AOA Traveling Fellowship post-CSCDP was 4.3 years (SD, 2.5 years). For

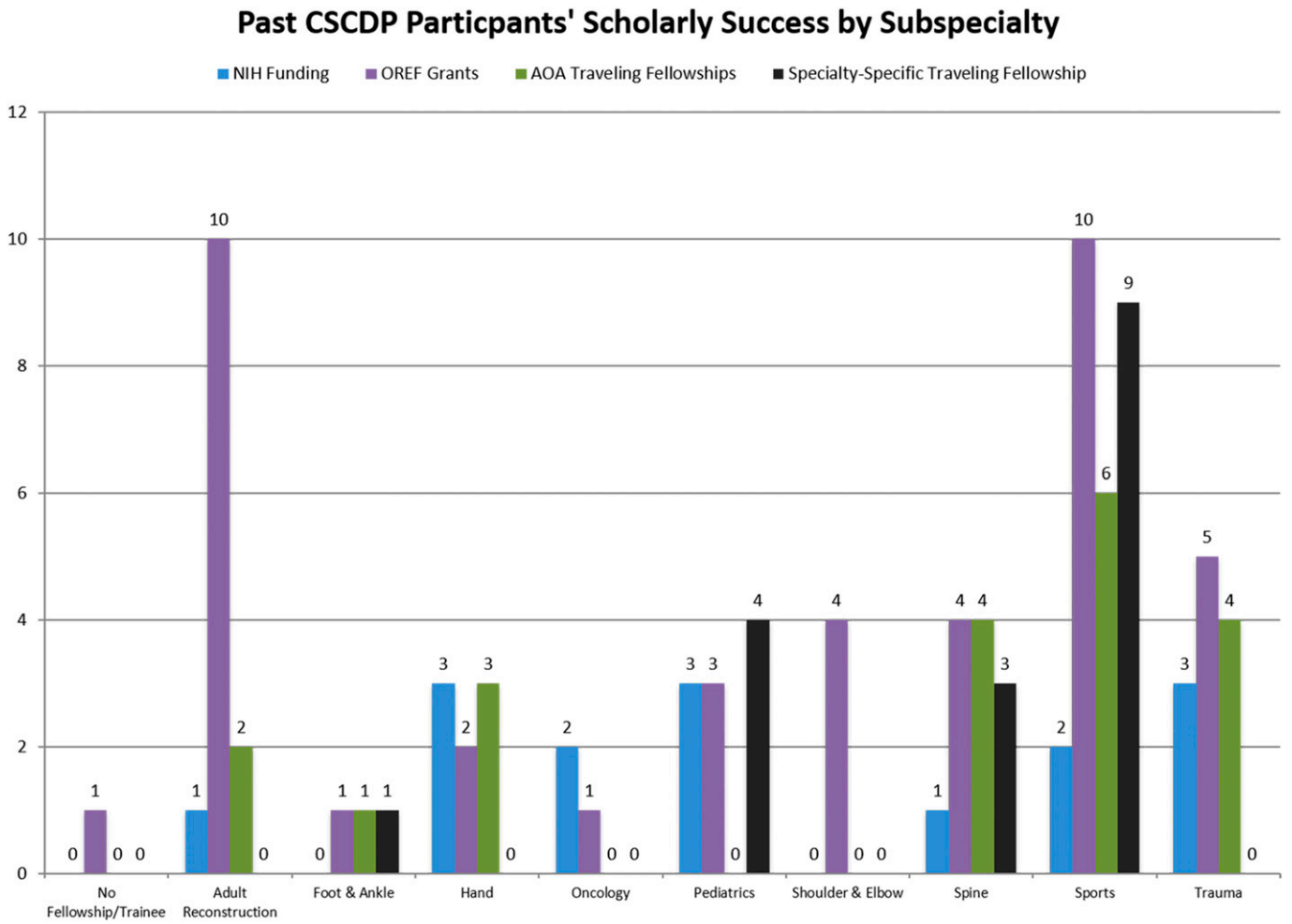


Fig. 2

An illustration of past CSCDP participants who received subsequent career-impactful opportunities (i.e., NIH funding, OREF grants, AOA Traveling Fellowships, and specialty-specific traveling fellowships) broken down by orthopaedic surgery subspecialty. Of note, traveling fellowship information for "adult reconstruction" was unable to be obtained from the granting organizations.

those who won 2 AOA Traveling Fellowships, the average time from the CSCDP to the second AOA Traveling Fellowship was 7.3 years (SD, 3.1 years).

A total of 17 (7.4%) orthopaedic surgeons were awarded specialty-specific traveling fellowships (9 sports, 4 pediatrics, 3 spine, and 1 foot and ankle) (Fig. 1-C). The average time to a specialty-specific traveling fellowship post-CSCDP was 5.2 years (SD, 2.3 years).

### *Prestigious Research and Scholarly Awards by Subspecialty*

The number of past CSCDP participants who received OREF grants, NIH funding, AOA Traveling Fellowships, and specialty-specific traveling fellowships was also stratified by orthopaedic surgery subspecialty (Fig. 2). Following CSCDP participation, 3 orthopaedic surgeons who subspecialized in pediatrics, hand, or trauma were awarded NIH funding. Ten orthopaedic surgeons who specialized in sports received OREF grants; 6 and 9 orthopaedic surgeons who specialized in sports received AOA and sports-specific traveling fellowships, respectively.

### *Scholarly Activity and Impact*

The average h-index of all past CSCDP participants is 11.8 (SD, 7.0), with a range from 1 to 43. For those in academia, the average h-index by academic rank is: assistant professor, 10.9 (SD, 5.2); associate professor, 17.7 (SD, 8.6); and professor, 24.0 (SD, 18.4). Overall, orthopaedic surgeons who participated in the CSCDP and then were awarded NIH funding, OREF grant support, AOA Traveling Fellowships, and/or specialty-specific traveling fellowships had a significantly higher h-index (15.9 [SD, 8.1] versus 10.0 [SD, 5.7], $p < 0.0001$) compared with those who were not involved in any of the career-impactful opportunities. There was no significant difference in the average h-index in former CSCDP participants who held dual MD/PhD degrees at the time of CSCDP participation compared with those who did not (10.2 [SD, 5.3] versus 11.9 [SD, 7.1], $p = 0.34$). Prior CSCDP participants in academia have a significantly higher h-index (13.0 [SD, 7.3] versus 9.7 [SD, 5.9], $p = 0.0008$) than those who are not in academia.

There was no significant difference in the average h-index between former CSCDP participants in all subcategories (non-fellowship trained and all 9 orthopaedic surgery subspecialties) ($p = 0.077$).

## Discussion

The study results suggest that the CSCDP assists in developing orthopaedic surgery clinician-research leaders. Analysis of the characteristics of those participating in the CSCDP yielded a number of notable results. Recently published work demonstrated that in 2010, only 13.2% of orthopaedic surgery residents were women[11]. Therefore, although the 14% proportion of past CSCDP participants who were women is low, this is consistent with the current percentage of female orthopaedic surgeons-in-training. Additional findings demonstrated that only 63% of past orthopaedic surgeons who participated in the CSCDP remain in academic medicine as faculty (specifically not as private surgeons who also provide clinical instruction). This is likely a result of the timing at which individuals can apply for the CSCDP. Orthopaedic surgery residents, fellows, and young faculty through year 3 are eligible to apply[5]. At this career stage, it may be challenging for an orthopaedic surgeon to know his or her career goals. Thus, it is not surprising that some participants do not further pursue a career as a clinician-researcher after completing the CSCDP. However, it is important to note that the percentage remaining strictly in academia, 63%, is higher than previously reported in 2 studies, which observed that 59% of 127 residents over a 15-year span and 8.8% of 93 residents over a 29-year span entered academia[12,13]. Additionally, it is estimated that 73.5% of those in the orthopaedic surgery workforce are in private-practice models, and only 15% are employed by a hospital or medical center[14]. Nonetheless, the authors had expected a higher number of CSCDP participants to remain in academic medicine. We hypothesize that concerns surrounding physician burnout and impediments to research support, including mentorship and funding, drive such results. Indeed, orthopaedic surgeons are not immune from increasing burnout rates within medicine, and substantial scholarly output can directly impact areas shown to be correlated with burnout, including excess workload, night/weekend work hours, and concern about tenure and promotion[15]. Additionally, orthopaedic surgery department research productivity has been correlated directly with scholarly productivity and funding of the department's leaders[16], suggesting that without robust mentorship, built-in department expectations, and support around research, a great deal of scholarly work may not be accomplished.

While substantial resources have been invested over time to support the development of orthopaedic surgeon clinician-researchers through opportunities such as the CSCDP, there are increasing concerns regarding the availability of extramural funding. NIH grant support to orthopaedic surgeons lags behind many other surgical fields, and inflation-adjusted NIH funding for surgical research has decreased[17,18]. In our work, 13 prior CSCDP participants received NIH support of >$100,000 over the time frame of the grant. A 2006 study revealed that only 58 currently practicing orthopaedic surgeons were principal investigators (PIs) in NIH-funded research of ≥$100,000[19]. Moreover, only 65% of these orthopaedic surgeons felt that they had adequate funding to conduct their research, while nearly 50% felt that their colleagues resented them for their time that was focused on research[19]. Subsequent studies have shown that the drive to be more clinically productive in these times of declining reimbursement has weakened the clinician-researcher's ability to thrive[20]. Opportunities like the CSCDP, as well as OREF grants and AOA Traveling Fellowships, are aimed to help develop young researchers and allow them to reach their future academic goals, including acquiring the funding that they need to succeed. This work demonstrates that previous CSCDP participants were awarded OREF grants and AOA Traveling Fellowships at rates of nearly 20% and 10%, respectively. In addition, 13 former CSCDP participants have received NIH funding of >$100,000 as a PI/project leader. However, there were a wide variety of NIH grants awarded, and the differences in the ease of acquisition and the prestige of the types of NIH funding should be considered (Table II).

Using prior research analyzing the use of the h-index in orthopaedic surgery, our work demonstrates that CSCDP participants have higher scholarly impact at each academic rank than the general orthopaedic surgery population: assistant professor (10.9 [SD, 5.2] versus 3.6 [SD, 4.5]); associate professor (17.7 [SD, 8.6] versus 8.4 [SD, 6.7]); and professor (24.0 [SD, 18.4] versus 15.1 [SD, 11.1])[21]. Additionally, our study demonstrates that CSCDP attendees who successfully pursue additional opportunities (i.e., AOA Traveling Fellowships) or receive research support (e.g., OREF grants or NIH funding) have higher scholarly activity and impact than CSCDP attendees who do not have these opportunities. Interestingly, no difference across orthopaedic surgery specialties was observed in scholarly activity among the CDCSP attendees. More recently (in 2014), about half of the CSCDP slots (16 of 31, 52%) were sponsored by orthopaedic surgery specialty societies (e.g., the North American Spine Society [NASS], the Orthopaedic Trauma Association [OTA], etc.), while the remainder were sponsored by the AAOS. This model of funding allows a wide range of subspecialty involvement but also allows for others who are not sponsored by their specialty societies to pursue the CSCDP opportunity with AAOS funding.

There were several limitations to this study. First, much of the data were derived from publicly available web sites that may or may not be complete or up to date. This also limits our ability to discern specific orthopaedic training years, years in fellowship, and time as an attending surgeon for each CSCDP participant. Additionally, the lack of granularity of the data that are publicly available does not allow for grant-award success comparisons between CSCDP participants and those who did not participate but practice in a favorable clinician-scholar environment. Second, our work utilized the CSCDP as the starting experience to analyze future career and academic success. This may or may not be the best program to use as the initial opportunity to gauge success because of the early timing

of the application in an orthopaedic surgeon's career. This may skew our data, not because past CSCDP participants were not successful in academic and scholarly endeavors, but because they may have chosen not to pursue such opportunities. Third, our work may be biased because it is limited to CSCDP participants as part of the inclusion criteria. There are orthopaedic surgeons who never partook in the CSCDP but are active clinician-scientists who have participated in AOA Traveling Fellowships or specialty-specific traveling fellowships and/or have received federal and foundation grant support. In essence, there is no control group. Fourth, due to data limitations, we did not include private orthopaedic surgeons who have clinical instructor appointments at academic institutions in the academic medicine group. This may underestimate those who participate in academia but are not directly employed by a teaching institution. Fifth, because we analyzed CSCDP participants from 2003 to 2014, many of those who most recently participated may not have had the necessary time to progress up the academic ranks; thus, our breakdown of academic rank may be biased toward the assistant professor level. Sixth, our analysis of specialty-specific traveling fellowships was limited by the willingness of sponsoring organizations to provide such data.

In conclusion, the CSCDP appears to play an important role in the development of orthopaedic surgery clinician-scientists. However, we suspect that even more attention to providing supportive environments for research during young surgeons' careers will improve the conversion of CSCDP participation to scholarly success. Additionally, determining the impact of the timing of CSCDP participation (e.g., as a resident, fellow, or young attending) on future scholarly success is an important next step in evaluating the program[22]. For those CSCDP participants who do not receive or do not seek subsequent research funding or pursue an academic career, a future survey-based study would allow for more insight into the factors at play that could be addressed. ■

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