

## 2023 ORS Education RIG: Orthopaedic Research – Beyond the Lab and Into the Classroom

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**INTRODUCTION:** The ORS exists to accelerate musculoskeletal discovery to improve health. This is not achievable without a highly trained scientific workforce dedicated to orthopaedic research. While many early career trainees who attend the ORS Annual Meeting are interested in academic careers, few are aware of opportunities in academia beyond tenure-track, research-focused careers at research-intensive institutions. While performing research is of utmost importance, inspiring and educating the next generation of scientists and engineers to form the orthopaedic workforce of tomorrow is equally important to achieve the mission of the ORS. As such, there is a need to educate trainees and established mentors within the ORS about career options within academia that address this critical need to train the next generation of practitioners, especially at the undergraduate level. To this end, we organized a Research Interest Group (RIG) at the 2023 ORS Annual Meeting to form a community that engages, inspires, and supports ORS members at all career stages who are motivated to address this need of the society. We sought to cultivate an environment to discuss and disseminate professional development opportunities, pedagogical training, and networking within the ORS. Our session had three invited speakers at different career stages discuss their current positions, which included: (1) teaching faculty roles at R1 institutions, (2) post-doctoral opportunities that combine high-level research with pedagogical training, such as the NIH's Institutional Research and Academic Career Development Awards (IRACDA) fellowships, and (3) balancing teaching and running a research lab at primarily undergraduate institutions (PUIs). In addition to forming this community, we sought to understand how our session impacted the attendees' outlook on teaching and outreach, their sense of belonging within the ORS in the context of their professional interests, and how to improve future offerings by this RIG. We hypothesized that this RIG would alter attendees' attitudes toward academic careers involving teaching and outreach, encouraging trainees to broaden their horizons when considering career options and also educating more senior mentors regarding where to advise their mentees to look for jobs.

**METHODS:** The ORS Education RIG was held on Sunday, February 12, 2023 from 11:30am-12:30pm CT. We built awareness of our session among conference attendees through word-of-mouth, listing the session in the conference program, social media posts, and announcements at the ORS Open Door Event. We assessed changes in the perception of attendees around teaching and/or research careers, support for teaching and outreach efforts at the ORS, awareness of teaching training opportunities, and other sentiments related to RIG content using a battery of Likert-type questions that were shared via QR code displayed on the screen before and after the RIG. This study was deemed exempt from review by the Human Subjects Review Committee at Union College as per 45 CFR 46.104(d)(2). Attitudes toward teaching-related careers and support within the ORS and beyond were assessed both pre- and post-session on a Likert scale, where 1=strongly disagree, 3=neither agree or disagree (neutral), and 5=strongly agree. Pre- and post-survey responses were matched through personal "PINs" that each participant provided. Pre- vs. post-session responses were compared using Wilcoxon matched-pairs signed-rank tests with a significance level of  $p \leq 0.05$  and trend of  $p \leq 0.10$ . Data are shown as mean  $\pm$  standard deviation.

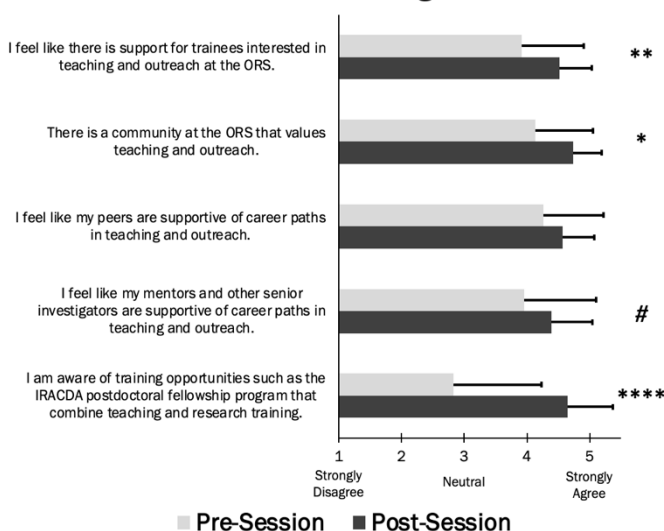
**RESULTS:** According to a contemporaneous head count performed by an author, over 70 ORS members attended the session. Of these, 39 individuals completed a pre-questionnaire. **Demographics:** Seventeen (43%) were graduate students (M.S., Ph.D., M.D., or other professional degree), 4 (10%) were postdoctoral fellows, residents, or medical fellows, 7 (17%) were undergraduate students, 5 (12%) were in the early stage of their career (1-5 years), 4 (10%) were in the mid-stage of their career (5-10 years), and 2 (5%) were in the late stage of their career (>10 years). Over half of the participants were currently enrolled at or employed by R1 or R2 institutions (23, 58%). Three (7%) individuals were currently enrolled at or employed by master's colleges or universities. Five people (12%) were from a PUI, and eight people did not know their institution type (20%). When asked "How did you hear about this event," 23 (58%) of respondents reported "The Program Book" and 18 (32%) reported personal communication. **Program Impacts:** Twenty-three attendees completed both the pre- and post-session anonymous surveys and were thus included in the subsequent analysis. Respondents reported significantly improved attitudes toward teaching and outreach in most survey questions after the ORS Education RIG session, with the largest difference being awareness of the IRACDA postdoctoral fellowship program (**Figure 1**). Twenty-one out of 23 attendees reported they would support creating an ORS Education and Outreach Section following participation, with the remaining 2 reporting "Maybe."

**DISCUSSION:** Anecdotally, our Education RIG was very well received by attendees. While we do not have access to the relative breakdown of the home institution types of all ORS attendees, we anticipate that the percentage of R1/R2 researchers is substantially higher than the 56% that attended our session. This provides evidence that our RIG provided a gathering space at ORS for those outside of the research-intensive institution type. We observed significant, positive shifts in almost all questions regarding attitudes towards teaching and outreach, which provides further evidence that we not only convened a relatively unique, but important, group within the ORS, but also provided support and encouragement for their efforts in musculoskeletal education. Interestingly, attitudes towards the support from mentors and senior investigators of career paths in teaching and outreach were not significantly different ( $p=0.086$ ), which suggests that more targeted offerings may be needed to address this uncertainty regarding the perceived support of senior ORS membership. We also increased the awareness of attendees regarding specific opportunities, in this case, the IRACDA fellowship program, that support teaching and research. The high number of attendees (58%) who heard about the RIG through the program book indicates the importance of ORS support within the formal conference program (as opposed to simple informal meetups at the conference organized by word of mouth) to further grow and strengthen this nascent ORS community. We believe that the decrease in responses between the pre- and post-questionnaires was mainly due to logistical issues around displaying the QR code on the screen following the RIG (we had to quickly leave the room due to the next session). We believe that this can be easily addressed in future iterations of this event.

**SIGNIFICANCE/CLINICAL RELEVANCE:** The ORS 2025 Mission & Vision specifically identifies connection and collaboration, as well as education and career development, as core values to our mission to accelerate musculoskeletal discovery to improve health. Our RIG, and the responses of the attendees, indicate that there is a growing need for the society to support the creation of a dedicated and long-term community focused on education and outreach in the near future, as this community would add significant value to the ORS and its members.

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### Attitudes Toward Teaching & Outreach



**Figure 1.** Attitudes toward teaching and outreach improved as a result of the ORS Education RIG. (# $p \leq 0.10$ , \* $p \leq 0.05$ , \*\* $p \leq 0.01$ , \*\*\*\* $p \leq 0.0001$ ).