

American Society of Biomechanics Final Report
April 23, 2014

Task Force Members

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In September 2013, following interest expressed at the Diversity Luncheon at the 2013 Annual Meeting in Omaha, NE, a Diversity Task Force was chartered for the American Society of Biomechanics (see Appendix A). The goals are to define diversity in the context of the Society, propose an approach to ensure continuity of effort and responsibility with regard to diversity in the Society, and suggest appropriate activities related to diversity. A task force was formed of volunteers, drawing from the regular and student membership and the various disciplines. This group has met regularly since September to address this charge. Our report in response to the directives of the charter follows.

Section 1: Define Diversity in the context of the American Society of Biomechanics.

Our committee examined the diversity missions and definitions from a variety of peer societies, academic institutions, and other organizations. From this research, as well as suggestions taken from the task force members and the Diversity Luncheon discussion, the task force developed a proposed Diversity Mission Statement for the American Society of Biomechanics. This statement was also reviewed by an external professional in the area of diversity and inclusion from the Mayo Clinic and his suggestions incorporated into the form we propose here. We suggest that the mission statement may also be appropriate to include in future ASB Strategic Plans; current diversity goals fall under section 2.3 of the Strategic Plan.

ASB Diversity Mission

The American Society of Biomechanics is committed to building a professional community that respects and promotes diversity and inclusion. We strive to learn from the diverse perspectives of our membership as we seek common goals for the biomechanics community.

As a Society, we seek to 1) support career development of all members to achieve their highest potential; 2) promote sound science and research Justice¹; 3) promote enhanced engagement in the Society of underrepresented groups through involvement in Society activities and dialogue with leadership; and 4) foster respect for diversity and inclusion in our community among our members and leadership.

¹As defined in *The Belmont Report*, <http://www.hhs.gov/ohrp/humansubjects/guidance/belmont.html>

Section 2: How can the American Society of Biomechanics ensure continuity of effort on Diversity within ASB throughout the year and over multiple years?

The committee recommends the formation of a standing committee on Diversity to be appointed by the Executive Board. This committee would: oversee the diversity- and career development- related activities, be a conduit for feedback from the membership regarding diversity issues, and report on the successes or challenges for our diversity initiatives. A standing committee with multi-year membership could ensure some measure of continuity in our inherently volunteer organization without giving additional responsibilities to the existing Executive Board positions. In addition, the formation of such a committee would demonstrate the commitment of the Society to diversity and inclusion in a concrete manner.

Implementation suggestion: Student representation on this committee is encouraged.

Section 3: What ideas have been proposed at previous Diversity Luncheons, and what ideas have led to action?

Previously suggested activities are compiled in Appendix B.

Section 4: Identify additional ideas about what the ASB can do in the area of Diversity.

The committee recommends several primary activities that support the 4 arms of the mission statement. Several of these activities are existing efforts of ASB that we believe support the diversity mission and could be supervised by the proposed Diversity Standing Committee.

1) Support Career Development

- a. Continue mentoring programs for students and young faculty at the annual meeting

Implementation suggestions:

- 1. Allow post doctoral fellow participation as mentees
 - 2. Solicit and honor requests from mentees for diversity mentors from underrepresented groups (See 3a, vi re: database).
 - 3. Consider industry mentors for mentees interested in industry careers. Vendors could potentially fill mentor roles or form an industry panel for discussion. In the past, vendors have enjoyed the opportunity to present their products and explain their career trajectory. Will assist with vendor engagement as well.
- b. Continue career programs such as grant writing workshops and academic job search tutorials
 - c. Add resources page to website with links to funding opportunities and fellowships, especially those supporting underrepresented scientists or research topics (such as health disparities)
 - d. Compile an annual list of member accomplishments to promote successes of our membership. This list can also be used to document the successes or challenges of our career development initiatives. Examples of included accomplishments: graduation, tenure, prestigious grants, administrative positions, Society Fellow or National Academy. The list could be presented at the annual Diversity Luncheon and made available on the website or in another written form.

- e. Provide a Diversity column to the ASB newsletter to disseminate information regarding resources and accomplishments annually.
 - f. Consider adding additional awards programs or technical advisory committees to enhance member participation, recognition, and career development
- 2) Promote Sound Science and Research Justice
- a. Add resources to website regarding recruitment and good research practice, including the Belmont Report, methods to describe subject population, clinicaltrials.gov, etc.
 - b. Suggest a statement be included in ASB abstracts regarding study population composition (see Appendix C for abstract describing historical inclusion of these details in ASB abstracts)
 - c. Consider encouraging abstracts that include understudied populations or study health disparities.
- 3) Promote Enhanced Engagement
- a. Develop an enhanced database of members who have expressed interest in participating in Society activities
 - i. Augment existing membership database fields (see Appendix D)
 - ii. Draw from annual meeting survey of participation interest
 - iii. Serve as resource for identification of session chairs, standing committee chairs and membership, other roles
 - iv. Participation in these roles can be recorded in database to quantitatively track engagement and success of initiatives
 - v. Self-reported accomplishments for annual report can be recorded
 - vi. Self-identification of underrepresented group membership, and willingness to serve as diversity mentor

Implementation suggestion:
Consider whether database information can be recorded at conference registration in addition to membership renewal, to increase member response and to record demographics of conference attendees.
 - b. Provide a link on the website to the Diversity Task Force (or standing committee) to facilitate feedback from the membership
 - c. Facilitate self-organized affinity groups for social networking at conferences or regionally

Implementation suggestion:
Use database to form contact list for various underrepresented groups. List existing affinity groups with contact leader on website. “If you don’t see your affinity group – form one!” with link to diversity committee to facilitate formation.
 - d. Promote interaction among the 5 components of the society and our diverse membership via a poster scavenger hunt activity
 - i. Similar to vendor bingo
 - ii. Offer a prize

- iii. Encourage poster viewing, and find posters from different tracks, theme areas, geographical regions, etc.
 - e. Increase diversity in new members to ASB
 - i. Work with other organizations with targeted memberships of underrepresented groups (e.g. National Society of Black Engineers, Women in Science and Engineering) to advertise ASB and identify barriers to inclusion of these groups.
 - ii. Use local or regional affinity groups to sponsor events to increase recruitment
- 4) Foster Respect
 - a. Annual meeting event
 - i. Working luncheon to report on the progress of the annual activities (as listed above), present accomplishments from annual report, etc.
 - ii. Evening social event (informal) to promote networking
 - iii. Affinity group networking and social event – member organized

APPENDIX A

ASB DIVERSITY TASK FORCE CHARTER

Last revised 9-27-13

Members: Katherine Saul, Ph.D. (Chair)
Richard E. Hughes, Ph.D. (*Ex-officio*)

Individuals who have indicated interest in serving on the task force (members to be selected by Dr. Saul):

Rob Siston, Ph.D., siston.1@osu.edu, regular member

Kristin Zhao, Ph.D., zhao.kristin@mayo.edu regular member

Szu Ping Lee szupinglee@gmail.com regular member

Portia Flowers pflowers@udel.edu student member

Rumit Kakar runit@uga.edu student member

Lakisha Guinn lguinn@udel.edu student member

The Charge for the Task Force is to submit a written report to President of ASB by the 2014 World Congress on Biomechanics that addresses the following three questions:

1. *What do we mean by "Diversity" in the context of the American Society of Biomechanics?* The final product would be a written statement on Diversity that defines the term.
2. *How can the American Society of Biomechanics ensure continuity of effort on Diversity within ASB throughout the year and over multiple years?* The final product would be a recommendation for the Executive Board to consider. The ASB faces the challenge of being a wholly volunteer organization. As such, there is no professional staff to pursue ideas developed at the annual Diversity Luncheon. How can volunteer effort be organized into meaningful projects, and how can these projects be managed between Annual meetings? How can the inherently multi-year nature of Diversity Enhancement be managed with a constantly changing Executive Board and Presidency?

3. *What ideas have been proposed at previous Diversity Luncheons, and what ideas have led to action?* Is there an archive of ideas that have come from the Luncheon? If there is, compile a list and attach it to the report as an appendix.
4. *Identify additional ideas about what the ASB can do in the area of Diversity.*

The report of the Task Force will be submitted to the ASB Executive Board, and the Task Force Chair will be given the opportunity to present the recommendations at the Executive Board meeting immediately following the World Congress on Biomechanics in Boston.

APPENDIX B

List of previously suggested diversity activities

11/11/2013

The following is a record of suggestions made by attendees at the 2012 ASB Diversity Luncheon, as provided to Katherine Saul by Jenny Bagwell, ASB Student Representative:

The **top answers** from last year as to how ASB can best promote diversity were as follows:

1. Outreach via the web
2. Enhance participation across all experience levels (high school students, undergraduates, etc)
3. Rather than only focusing on improving diversity, we should not forget to celebrate the diversity that we have
4. Scholarships or funding for minority groups or individuals with disabilities
5. Reach out to individuals with disabilities

Specific Suggestions:

- **Outreach at Conference**

Invite local high schools to lab tours/vendors

Travel, scholarships, financial support for conferences

Seek to recruit people of color, African Americans, Central/South Americans, Pacific Islanders

Mayas, SHPE, NSBE

Diversity of schools, including undergraduates

Forums

- **Outreach throughout the year**

Coordinated biomechanics outreach

Speak at VA hospitals

Scholarship funds

Involve high school students and educate regarding careers in biomechanics

Technology

Coordinated best practices- maybe via ASB web pages/resources

Webinars explaining what biomechanics is, careers, etc. (Francisco Valero Cuevas was suggested)

Outside of the conference foster continued involvement through webinar outreach, outline tutorials on basic biomechanics concepts (mini-online course)

Teasers with 3-5 minute short videos

Increase diversity through facebook page and social media

Better integration and easier searches

Use biomechanics as a vehicle for educating about disabilities

Highlight or celebrate diversity rather than just trying to increase it

Task force present at other conferences

Student Chapters

Survey demographics

Ask if individuals feel underrepresented

Compare with overall demographics

Initiate student chapters at schools that do not have a chapter

Use models from Westpoint and other design models to promote research at the undergrad level

LS AMP and AGAP (NSF programs)

Professors need to recruit students more internationally

Enhanced communication between disciplines within ASB

Enhanced participation from individuals with disabilities

- **Mentoring program ideas**

Use mentoring program or groups for women or diversity mentoring groups

Enhance scientific diversity and foster relationships across experience levels

Newsletter- mentor/mentee experience to share

APPENDIX C

SEX DISTRIBUTION OF STUDY POPULATIONS REPORTED IN AMERICAN SOCIETY OF BIOMECHANICS ANNUAL MEETING ABSTRACTS

¹Sarah Bach, ²Melissa Morrow, Ph.D., ²Kristin Zhao, Ph.D., and ¹Richard Hughes, Ph.D.

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INTRODUCTION

An important aspect of scientific validity is study generalizability. For study results to be generalized to a population, the study population must appropriately represent the population. Currently, little is known about study population characteristics of abstracts presented at American Society of Biomechanics (ASB) annual meetings. Thus, the goal of this study is to evaluate the scientific soundness of ASB abstract study populations over time in regards to the ratio of male to female participants.

Thus, our aims were to test the hypotheses that: the proportions of total abstracts (a) reporting sex of participants, (b) including both male and female participants, and (c) having appropriately selected study populations in regards to sex, in ASB Annual Meeting abstracts, have changed since 1983.

METHODS

We used four years of ASB annual conference abstracts, 1983, 1993, 2003, and 2013, to complete this study. Included abstracts involved human or animal participants. Excluded abstracts consisted of keynote addresses, award lectures, and studies that focused on genderless objects or did not collect any empirical data. For each year analyzed, we randomly selected 43 abstracts for analysis. An exception occurred for 1983 in which only 45 abstracts were presented, 36 of which met this study's inclusion criteria. We recorded each abstract's conference year, title, applicable population, and study population information.

Certain research interests may inherently exclude one sex. Therefore, we recorded whether the abstract's research was relevant to both sexes, males only, or females only. Next we recorded if the study's participant population included both sexes, males only, females only, or did not provide data of sex of participants. If both sexes were included we recorded the total numbers of male and female participants. All of these data were collected to determine if study populations were adequately selected. For studies that did not have a valid scientific reason to preclude one sex, we used the following criteria to categorize an abstract as having an "appropriately selected study population":

- Inclusion of both sexes in study participants
- Each sex accounts for $50 \pm 20\%$ of total study participants
- A justification for a different percentage of male and female participants

We performed three logistic regressions to test for an increasing linear trend in the proportion of abstracts (a) reporting sex of participants, (b) including both sexes, and (c) being appropriately selected between 1983, 1993, 2003, and 2013.

RESULTS AND DISCUSSION

Overall, results of the logistic regression analysis show a significant linear increase since 1983 of the proportion of abstracts including both sexes ($p < 0.05$) and the proportion of abstracts appropriately selected ($p < 0.05$) (Fig 1). The proportion of abstracts reporting sex of participants did not result in a significant linear trend.

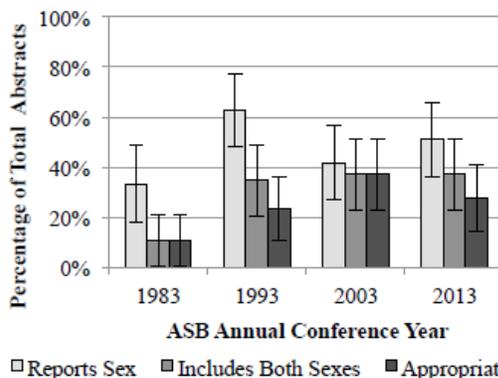


Figure 1: ASB Abstract Study Population Results. The bar graphs display the mean proportion from each year for the three study aims. Error bars correspond to 95% confidence intervals about the mean.

CONCLUSIONS

All reported percentages are far below 100%, suggesting opportunity for improvement. We recommend organizers of biomechanics meetings consider requiring authors to report sex of participants in abstracts.

ACKNOWLEDGEMENTS

We would like to thank Don Anderson for providing the 1993 ASB Annual Meeting Conference Proceedings.

APPENDIX D

Existing and Recommended Database Fields

Existing

ID
Member #
Name
Access Level
Member Type
Expiration
Discipline
Sex
Ethnicity
State
Country

Recommended (*commentary appears in italics*)

Interest in service:

Graduate student or post-doc mentor
Diversity mentor
Session chair
Committee member

Diversity affiliation (self-identify, choose as many as apply)

Ethnicity (existing field)
Sex (existing field)
Disability
Veteran
LGBTQ
Other: Please describe

Service Role History (*for records made by the Board and committees, of service to the society or at ASB conferences*)

Accomplishments in the last year (*example of potential accomplishments to record follow*)

PhD graduation
Tenure
Administrative role (Department head, Dean, etc.)
Fellow of Scientific Society

Implementation suggestion:

Consider whether database information can be recorded at conference registration in addition to membership renewal, to increase member response and to record demographics of conference attendees.