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Cody Reeves
Brigham Young University

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Meta-Analytic Investigation of Physical Ability Subgroup Differences Based on Age and Race

Cody Reeves, Management, Marriott School of Business

**Evaluation of Academic Objectives**

The academic objectives are still in the process of being met as the research effort is ongoing. We had hoped to have an academic manuscript submitted during the Fall 2018 semester, however this proved impossible as the project timeline was set back due to the mental health needs of a participating student research assistant and the evacuation of an academic collaborator at Pepperdine University (due to the Woolsey Fire). Fortunately, we have made strong progress on the project and it is anticipated that a final manuscript will be ready for submission sometime during the Winter 2019 semester. That said, early results based on a subset of the data look promising as we see evidence of differential rates of change in physical abilities for men and women as they age. We have also seen evidence of non-linear relationships between physical abilities and age, which may also serve as a key contribution given that nearly the entirety of prior research in the area has focused on linear relationships only. We are optimistic that our study will help guide researchers to an improved and more nuanced view of physical ability subgroup differences.

**Evaluation of the Mentoring Environment**

This has been a valuable learning experience for me as a relatively novice research mentor. I was able to develop positive working relationships with the three student research assistants who have participated in this project. Between weekly progress meetings and training sessions focused on basic research and organization skills, we were able to ensure that students had the skills they needed for this specific project while also discussing how the same skills could be applied in other contexts. I am also glad to report that one of the student research assistants has made clear an intention to apply to graduate school and the other two have signaled an interest in doing so at some point. Whether each student ultimately does so will surely depend on a large number of factors, however I am glad that their research experience was such that they appear interested in further pursuing research and confident in their ability to do so successfully. What I view as perhaps the best indicator of the mentoring environment has been the student research assistants’ willingness to consult with me about a wide range of topics, ranging from graduate study and other professional opportunities to more personal mental health struggles. One student has even called a few times since her 2017 graduation to ask about HR issues, professional development opportunities, and, most recently, graduate school opportunities. I am glad that they have felt comfortable enough to reach out. Although I know that this isn’t the only measure of a successful mentor/mentee relationship, it has given me hope perhaps my efforts weren’t too far off base.

**List of Students who Participated**

Allyson Mehner – Managed communication with an estimated 150 state agencies for primary data requests. Produced a primary dataset with physical ability test scores for over 60,000 individuals.

Rachel McDougal – Searched multiple academic databases for relevant articles for inclusion in the meta-analysis. Gathered several hundred relevant articles out of tens of thousands that were searched.
Nathan Eyring – Searched multiple academic databases for relevant articles for inclusion in the meta-analysis. Gathered several hundred relevant articles out of tens of thousands that were searched. Is currently finalizing the screening of all articles for a final meta-analytic sample. Anticipates helping to run the meta-analysis itself once the final set of articles is ready. With continued participation, Nathan will merit authorship on our anticipated submission to the Journal of Applied Psychology.

Description of Findings/Results

As noted above, these results should be considered tentative at this point as the final meta-analytic dataset is still being compiled. That said, we were able to make use of the primary data collected by Allyson Mehner in order to begin examining relationships. Not surprisingly, we found a generally negative relationship between physical ability test scores and age. This was true generally across the dimensions of muscular strength, cardiovascular endurance, and movement quality. However, at the test-specific level multiple tests (weight carry, push-ups with 2-minute time limit) demonstrated no relationship with age and some tests (bench press, dynamometer grip tests) had positive associations with age. Additionally, our preliminary investigation of subgroup differences found that male-female differences tend to be larger when more strenuous test administrations are used. For example, mean differences between men and women are larger when push-ups must be completed in a shorter time frame (1-minute time limit compared to 2-minute time limit) and when a greater amount of weight must be transported (165 lb dummy versus 40 lb weight). Finally, we found interactive age-sex effects for muscular strength and movement quality tests, but not cardiovascular endurance tests. Said differently, we found that while muscular strength scores tend to decrease over time for both male and female groups, the rate of decline is significantly faster for women. In the case of movement quality tests, we found that movement quality declines with age for men, but not for women (for whom there was no significant age-movement quality effect).

Description of How Budget was Spent

The vast majority of the project spending involved the wages of participating students, two of whom participated for multiple semesters. Instead of the three undergraduate student semesters anticipated in the original project budget, five student semesters have been paid so far (with at least one more forthcoming in Winter 2019), two of which were paid at the graduate student rate. Anticipated travel expenses were not incurred as the student who planned to attend Academy of Management in August 2018 was temporarily sidelined due to mental health setbacks. Finally, additional expenses were incurred for data acquisition (e.g., open access fees), although not as much was spent as was originally expected. This difference was due in part to some agencies that denied our data requests and some agencies that requested exorbitant fees to fulfill our requests (e.g., $10,000+….which we opted not to pursue).