Author's response to reviews

Title: Lean mass, muscle strength, and physical function in a diverse population of men: a population-based cross-sectional study

Authors:

Andre B Araujo (aaraujo@neriscience.com)
Gretchen R Chiu (gchiu@neriscience.com)
Varant Kupelian (vkupelian@neriscience.com)
Susan A Hall (shall@neriscience.com)
Rachel E Williams (rachel.e.williams@gsk.com)
Richard V Clark (richard.v.clark@gsk.com)
John B McKinlay (jmckinlay@neriscience.com)

Version: 5 Date: 28 May 2010

Author's response to reviews: see over
Dear Dr. Graham,

We are delighted to have the opportunity to respond to the thoughtful critiques made by the reviewers of the above-referenced manuscript. We have revised the manuscript accordingly, and detail our responses to the critiques below. All changes to the manuscript have been marked using track-changes.

Thank you for your consideration.

Respectfully submitted,

Andre B. Araujo, Ph.D.
Director, Epidemiology

Response, MS: 6872598723341902

Lean mass, muscle strength, and physical function in a diverse population of men: a population-based cross-sectional study Andre B Araujo, Gretchen R Chiu, Varant Kupelian, Susan A Hall, Rachel E Williams, Richard V Clark and John B McKinlay

Reviewer's report

Title: Lean mass, muscle strength, and physical function in a diverse population of men: a population-based cross-sectional study

Version: 4 Date: 13 April 2010

Reviewer: German Vicente-Rodriguez
Reviewer’s report:
General comment
Overall the paper faces and important and relevant issue. Introduction and discussion are well written but statistics and results are not clear.

One of the main concerns is that there is not date on bone fracture. Another one is that data on balance is also not included. To me these are big concerns because the whole message is focus on bone fracture. Strength and functional capacity is interesting per se and also in relation with other health outcomes. Authors should reconsider the focus of the paper.

>Response: We agree with the reviewer that strength and functional capacity is of interest in its own right and also of interest with respect to other (non-fracture) outcomes. Therefore, we have modified the focus of the paper in accordance with the reviewer’s comments while in the discussion, still highlighting in an abbreviated fashion the potential relevance of our data with respect to racial/ethnic differences in fracture risk.

Unfortunately, data on balance and outcomes like fracture, disability, etc. were not collected in the study, which is presented as one of the limitations of the study.

Abstract
1. The objective seems quite unspecific.

>Response: The objective of the paper has been revised to be more specific.

2. Results seem to me to general.

>Response: The results have been revised to provide more details.

3. In the conclusion the term “minority men” is not clear to me.

>Response: The language has been tightened and refrains from using “minority men” in the revised paper.

Methods
1. Page 5, line 2, please identified the devices used.

>Response: Specific references to the devices used have been added.

2. Page 5, line 3, please specify the calculation for BMI.

>Response: The calculation for BMI has been added.

3. Page 5, line 13-15, which hand?

>Response: Grip strength was measured in the dominant hand; methods have been updated.

4. Page 6, 1st paragraph is not clear to me. Shouldn’t be 8 instead of 7 in line 3?

>Response: We have clarified the design of the physical function variable on p. 5-6 of the manuscript.
5. Page 6, line 11. To me when you divide by arms LM the measure you obtain is not specific but relative strength. This should apply for lower extremities and for the whole manuscript. Additionally, to me these indexes are just strength but not physical function.

  >Response: We thank the reviewer for the helpful suggestion and have clarified the language regarding variables which have been indexed by lean mass quantities by explicitly referring to the measurements themselves (e.g., grip strength/arms LM).

Statistical methodology
1. To me it is not quite clear the second paragraph.

  >Response: We have clarified the definition of LOESS in the second paragraph of the statistical methodology: “Exploratory graphical analysis was conducted using locally weighted linear regression (LOESS) models where non-linear functions are fit to subsets of the data using weighted least squares.”

2. Also, the analysis proposed in lines 19-21 (p. 7) is not clear.

  >Response: We have clarified the analysis on p. 7: “Race/ethnicity was placed in each model as a categorical variable. Regression coefficients and 95% confidence intervals (CI) for black and Hispanic men (using white men as a reference) were presented.”

Results
1. In general this part is confused and should be more systematically written. Please, clearly state the significant differences; include p values when needed. Also include p values in tables and figures.

  >Response: We have done as the reviewer requested, adding detail (e.g., p-values to indicate significant differences) where necessary.

2. I do not understand table 2 and the treatment of this data. How do you calculate differences in beta between racial groups? Also when you adjust by race/ethnicity in the models?

  >Response: We have clarified how the analysis was performed on p. 7: “Race/ethnicity was placed in each model as a categorical variable. Regression coefficients and 95% confidence intervals (CI) for black and Hispanic men (using white men as the reference category) were presented.”

Discussion
1. Please clarify the term “minority men” through the text.

  >Response: The language has been tightened and refrains from using “minority men” in the revised paper.
Reviewer's report

Title: Lean mass, muscle strength, and physical function in a diverse population of men: a population-based cross-sectional study

Version: 4 Date: 11 April 2010

Reviewer: Soham Al Snih

Reviewer's report:
Manuscript # BMC Public Health-2009-12-11
Title: “Lean mass, muscle strength, and physical function in a diverse population of men: a population-based cross-sectional study”.

General: This is a well-written manuscript and logically organized.

Abstract: Concise and specific.

Introduction: The literature used is pertinent to the study and the purpose of the study was clearly stated.

>Response: We appreciate the reviewer’s kind comments.

Methods: The study design was appropriate to achieve the objective. Study population was well described. However, I have a few concerns:
1-It will be useful to report the validity of the PASE scale in young adults, since this scale measures physical activities in older adult population. The age participants in this study ranges from 30 to 74 years.

>Response: To our knowledge, there are no validation data on PASE in young adults. Nonetheless, in our study PASE clearly shows validity with respect to its association with age and BMI (shown below). These data support its use as a covariate in the analysis.

<table>
<thead>
<tr>
<th>Age</th>
<th>Active on PASE (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-39 y</td>
<td>25.1</td>
</tr>
<tr>
<td>40-49 y</td>
<td>22.1</td>
</tr>
<tr>
<td>50-59 y</td>
<td>15.5</td>
</tr>
<tr>
<td>60-69 y</td>
<td>9.1</td>
</tr>
<tr>
<td>70+ y</td>
<td>2.0</td>
</tr>
</tbody>
</table>
2- Were measures of muscle strength adjusted by body weight?

>Response: No, our models of muscle strength were not adjusted for body weight, but rather, fat mass. This decision was based on preliminary modeling which indicated that fat mass was more strongly associated with the outcomes of interest than was body weight. See Results section, p. 8-9.

3- Were statistical tests applied to findings reported on Table 1? I don’t see any p-value there and I’m not sure if the differences seen by race/ethnic group are statistically significant.

>Response: A column has been added to Table 1 to indicate pairwise statistical comparison of the 3 racial/ethnic groups.

4- I don’t see any data related to fractures. The introduction of the study focused on the importance of non-skeletal and skeletal risk factors for fractures. The design of this study is not appropriate to answer this question. No data is available prior fracture of these measures.

>Response: As noted above, we have modified the focus of the paper, but retain an abbreviated discussion with respect to racial/ethnic differences in fracture risk.

Results: Two Tables and one Figure (6 Panels). Well presented. Please provide p-value for each Panel.

>Response: We have added p-values testing the null hypothesis of no age difference in the outcomes (within race/ethnic group) as requested.

Discussion:
1. In the first paragraph the authors state that there was evidence of age and racial/ethnic differences in measures of lean mass and lean mass index.

However, I don’t see that there were statistical significant differences by age (No p-values on Table 1 were presented) and analyses presented on Figure 1 didn’t show any significant differences by age on these measures.

>Response: A column has been added to Table 1 to indicate pairwise statistical comparison of the 3 racial/ethnic groups and racial/ethnic group-specific p-values testing the cross-sectional age differences in the outcomes have been added to the Figure as requested. We also added some of these details to the Results section.
2. Previous pertinent literature was mentioned.

   \textbf{Response:} N/A

3. Study limitations and implications were identified.

   \textbf{Response:} N/A