Reviewer's report

Title: Water displacement leg volumetry in clinical studies - A discussion of error sources

Version: 2 Date: 29 September 2009

Reviewer: Fedor Lurie

Reviewer's report:

Major Compulsory Revisions

Page 6. “Effect size” This term may create some confusion, because it has a slightly different meaning when used in statistics. It appears that the authors attempt to examine the magnitude of change in the leg volume as it measured by water displacement. This examination should include two separate aspects: a) the relationship between the magnitude of change and the variability of measurements at the baseline (size effect) and the clinical importance of change of certain magnitude (Minimally Important Difference, MID). The authors address the latter point by citing a single paper (Marshall). It may be beneficial to know if any studies confirmed that 30 ml change has clinical meaning. The first point may be addressed by comparing the measurement precision of 0.1-1.0% (page 6, paragraph 3), and total leg volume of 2500 to 3200 ml (page 6, the last paragraph). This gives precision range of 2.5 to 32 ml making 30 ml change in the leg volume highly questionable as an outcome cut point.

Minor Essential Revisions

1. Page 7, paragraph 2. This text belongs to description of equipment-related errors, not to the effect size.

2. Page 13, paragraph 2. It may be helpful to illustrate the point, that there are no identifiable center-related errors by presenting standard deviations of means in multi-center studies and in single-center studies.

Level of interest: An article of outstanding merit and interest in its field

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests