Reviewer's report

Title: Muscle fiber-type distribution predicts weight gain and unfavorable left ventricular geometry: a 19 year follow-up study

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Reviewer: Andrew D Blann

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Statistician’s Report

This paper reports a group of 40 middle age men, and classifies them according to whether or not they have more or less than 50% type 1 skeletal muscle fibres. According to this criterion, 11 men have <50%, 29 have >50%. Differences in 9 indices are then presented in table 1, with 17 other indices in table 2. Regression analyses then follow (tables 3-6). There are 9 figures of assorted correlations.

Gross opinion

I am concerned firstly about the large (n=26) binomial analyses performed on data from only 40 people. Secondly, to do a regression analysis on this data is therefore bound to come up with something 'significant' by mere chance.

Specifics

1. Whilst it is good to see any kind of hypothesis, the one at the end of the Introduction is weak in view of its non-quantification. How 'low' is 'low'?

2. This is repeated at the beginning of the paragraph on statistical methods. I will not question the decision to classify according to the 50% rule, but note that this gives two groups of unequal power and thus variance. Choosing the median % value would be better as it would by definition give two equally sized groups.

3. Because there is no good original and quantified hypothesis, then there is no power calculation. I am concerned of the strongly likelihood of a small number driven risk of false positive because the major defining factor(s) may not have been equally distributed between the groups on outset.

4. The regression models that follow are all very well, but for the fact that the data set is comparatively tiny. Once more, the authors need to quantitatively justify these analyses.

5. I am struck by the likelihood that several of the 26 indices in tables 1 and 2 may well be inter-related mathematically in not physiologically. If A correlates with B, and if B correlates with (or is related to) C, then there is a good chance that A correlates with C in a totally spurious manner, and vica versa. This is typified by blood pressure.

6. Some of the data in the tables looks to be non-normally distributed, e.g. mean 16.4 SD 13.5, and so should be median (IQR). What test of distribution was used? It follows that at least some non-parametric methods should be used. None are alluded to.

7. Whilst I appreciate that this may not always be possible, 95% confidence intervals give the reader
a clear insight of the reliability of the data.