Reviewer’s report

Title: The Six Minute Walk Test Accurately Estimates Mean Peak Oxygen Uptake

Version: 3 Date: 21 January 2010

Reviewer: Eugene E Wolfel

Reviewer’s report:

GENERAL COMMENTS

You have done an exhaustive analysis of the potential ability of 6MWD data to predict peak VO2 in patients with cardiopulmonary diseases. As previously reported, 6MWD does not accurately predict peak VO2 in individual patients. However, it appears that mean 6MWD data can be used to predict mean peak VO2 when analyzing data between different studies as long as the patients had moderate to severe exercise limitation. The clinical usefulness of this finding remains to be determined but it may have value to determine if patients were similar in regards to their functional limitation when comparing response to therapy. Although you and your colleagues should be congratulated on your compulsive approach to this topic, there are several points that need clarification in order to better determine the importance of the findings in this study.

1. Although you presented the predicted versus reported 6MVD and peak VO2 data in the Results section, more information should be provided in the methods section on this method of scanning scatter plots from prior studies. Are there other studies that used this approach and what was the accuracy and reproducibility of this technique?

2. It does not appear that there were any patients with heart failure included in the analysis of the authors’ institutional data. Most of these patients had pulmonary hypertension or lung disease. Since most of the analyzed studies from the literature (7/10) had heart failure or cardiomyopathy, it appears that this group of patients dominated the data set. Is it possible to analyze the heart failure and non-heart failure patients separately to determine if the heart failure disease process would affect the relationship between 6MWD and peak VO2. Many patients with heart failure have peripheral vascular and skeletal muscle pathology that could influence both 6MWD as well as peak exercise performance. Their exercise limitations may be quite different than patients with chronic lung disease and pulmonary hypertension.

3. Some information should be provided on the validity of peak VO2 reported in the studies as a reliable measure of near maximal exercise capacity. What were the peak RER values for these studies and were the definition of peak VO2 similar in the various studies?

4. A table should be included that demonstrates the differences in exercise protocols, use of supplemental oxygen, and other pertinent differences between
the various studies analyzed in this study. If patients performed the 6 minute walk test with supplemental oxygen, did they perform a cardiopulmonary exercise test without oxygen? As you know, it is difficult to accurately determine peak VO2 with supplemental oxygen.

5. Why did you include the data from reference # 7 when you stated that there was a reporting error?

6. Reference # 9 presents data that are very different from the other studies. The regression coefficient is only 0.21 and there is a high value for the intercept at 12.910. Is there a problem with this study and should the data be included in the analysis?

7. In Table 1, it is unclear as to the significance of the numbers in parentheses after the authors’ names. If these are the reference numbers, they do not agree with those in the reference list.

8. The Discussion section is quite long and somewhat difficult to follow. Could this section be shortened without omitting any pertinent points.

SPECIFIC COMMENTS:

Page 7, para 1, lines 4-5: Could you specify as to the error in reporting.

Page 10, para 2, lines 8-9: How many of the analyzed studies used the ATS protocol?

Page 11, para 1, lines 9-11: You should specify that this relates to mean values of 6MWD and peak VO2.

The Tables 1-3 should be included as part of the manuscript.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests,