Author's response to reviews

Title: The relationship between physical functional capacity and lung function in obese children and adolescents

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Author's response to reviews: see over
Review

Dear editor and reviewers (Neeti Pathare e Mohamed M Elloumi).

Authors would like to thank the suggestions and revisions of the manuscript entitled initially as “Association between physical functional capacity and lung function in obese children and adolescents”. Considering your points, we forward the correction letter with the answers to reviewers and a new document with highlighted corrections.

Considering the extensive alteration performed by the Nature Publishing Group. Only the questions performed by the reviewers were marked in the text.

Reviewer: Neeti Pathare

The current manuscript evaluates the association between physical function capacity measured by six minute walk test (6MWT) and the lung functions in obese children and adolescents. The topic is important. However there are many concerns regarding this study.

Major Compulsory Revisions

Abstract:

The conclusion needs to correspond with the purpose of the study. – Answer: After the alteration, the conclusion in the abstract is “In the present study, the obese group walked shorter distances and demonstrated lower values in some markers of lung function. However, there is no relationship between their physical conditions and these test results. Therefore, we cannot conclusively state that poor physical performance results from damaged pulmonary function”.

Introduction:

The authors provide the current prevalence of obesity in children and explain the need to conduct research in this population. However, the rationale of studying the association between physical functional capacity and lung function is not clearly explained. Also, there is lack of literature provided in the manuscript about lung function and physical function capacity in obese children and adolescents. It is important to provide a scientific rationale for conducting this study. **Answer: In current scientific literature, the association between obesity and performance is clear, and its relation to lung function is exposed on third paragraph.** The main question of the present study was to define if the limitations on lung function were associated to the performance damages, considering an age group population still in development. The best of our knowledge, we could just find the manuscript of Morinder et al. 2009 that compared obese and non-obese children and adolescents on 6MWT and lung function, and they did not find a good correlation between variables. Although, they evaluated the **VO_{2max}** in ergospirometry, while we used spirometry. So, we can conclude there is a “true” lack on the literature compring obese and non-obese subjects during growth period.

Results:

• This section needs to be aligned with the aim of the study. The current manuscript includes associations between weight and lung function, all lung function, weight and 6MWT variables, all 6MWT variable and finally between lung function and 6MWT variables. The main findings of the study are not clear. It is important to focus on the results that correspond with the purpose of the study. Based on the purpose, only
association between lung function and 6MWT variables is needed. Also, it is important to clarify in the purpose which of the lung function and 6MWT variables the authors want to correlate. – **Answer:** In the present version of the manuscript, we prefer to present all data. Although, we emphasize that the main question of the study is about the correlation between 6MWT performance and lung function, comparing obese and non-obese subjects. The literature about the association between obesity and 6MWT performance in children and adolescents is shortage, unless in manuscripts approaching weight loss programs, that is not our focus. Already, we could find more studies about lung function in obese children and adolescents, however they present divergent results. We consider that complete reports showing all the associations and correlations are missing. So, exposing each variable and their associations could provide a better understanding to the reader. We kindly request the possibility to expose all data, however, if you consider it relevant we could include specific data as manuscript supplement. The new paragraph of the manuscript is “Therefore, the principal aim of the present study was to evaluate obesity’s influence on physical conditioning and lung function in children and adolescents to determine if any correlation among these variables exists and to compare said values with those of a control group. Another point of investigation involved the relationship among height, weight and body mass index (BMI) with lung function variables, as well as the relationship among height, weight and BMI with 6MWT variables”

- All results should be represented in 3-4 tables and 3-4 figures. Please include units and statistical significance in the table. Specifically, data in Tables 3-10 does not correspond with the aim of the study. Data presented in table should not be replicated in figures. – **Answer:** As we mentioned before, we will be grateful if we could expose data as the present version because we consider that it can make easier the reading comprehension.
The manuscripts of the present journal are published in a digital version, not a printed one. It could make easier the publication with no number of pages limitation. Another consideration is that some tables have only p-value for all associations, which can facilitate reading. On the other hand, the graphic representations can illustrate the variables behavior.

Discussion:

• The focus should be on the aim of the study which is to associate the lung function and 6MWT variables. This is not included in the discussion; In the current manuscript, lung function findings and whether they agree with the literature are stated. The section needs to provide explanations for interpretation of findings and why the findings concur or is in contrast with the literature. 

   Answer: As we mentioned before, to the best of our knowledge, we could just find Morinder et al. 2009 reference to discussion including similar age group and comparing 6MWT and lung function variables of obese and non-obese subjects. Even the comparison with Morinder et al. manuscript is difficult because they evaluated the lung function using ergospirometry and analyzing VO2max, while we used spirometry variables. That is why our group decided to peculiarly expose the discussion each variable.

Minor Essential Revisions

• The language needs some corrections before being published. Some examples:

   o Abstract: Methods section: “56 control individuals peered” is not appropriate

   Answer: The alteration was done.
Abstract: Results: When comparing two groups please state that obese group had lower expiratory volumes compared to the healthy weight group. – **Answer:** The alteration was done.

Also, there are several typos – **Answer:** All the text was rewrite and corrected by the nature publishing group.

- Please consider including a hypothesis for the purpose of the study. Also, please make the purpose more specific. – **Answer:** Dear reviewer we decided not include the hypothesis for the study and we rewrite the objective.

- Please define the term eutrophics in the methods section. – **Answer:** The alteration was done.

- Please clarify why the obese group received bronchodilator – **Answer:** The phrase was included: “Following the first measurement, the obese group underwent salbutamol inhalation and repeated the test after 20 min.”

- Statistical analysis: Please clarify why no parametric tests were included: **Answer:** The non-parametric test was performed to determine sample distribution. The data demonstrated a non-parametric distribution following an analysis using the Kolmogorov-Smirnov test of normality and the Shapiro-Wilk test of normality, which accounted for the graphic analysis for the distribution of data.”

- Statistical analysis: **Answer:** The sample size was calculated using G*Power 3.1.9.2. After taking into account the number of subjects enrolled (38 obese and 56 healthy controls) for all tests performed, the power was greater than 0.80. For the Mann-Whitney test, given an $\alpha = 0.05$ and an effect size, $d = 0.80$, a power, $\beta$, equal to 0.96 was achieved. For the Kruskal-Wallis test, given an $\alpha = 0.05$, a number of groups = 4, an effect size, $f = 0.40$, a power, $\beta$, equal to 0.90 was achieved. For the Wilcoxon test,
given an \( \alpha = 0.05 \), an effect size, \( dz = 0.50 \), a power, \( \beta \), equal to 0.99 was achieved. For the Spearman Regression, given an \( \alpha = 0.05 \), a correlation, \( \rho H1 = 0.3 \), and a correlation, \( \rho H0 = 0 \), a power, \( \beta \), equal 0.84 was achieved.

Discretionary Revisions

• Consider adding details on participant recruitment - **Answer:** Dear review, for us is not possible included new data about the patients and controls.

• Why are figure captions 10 and 11 highlighted? – **Answer:** There is no explication about it.

Level of interest: An article whose findings are important to those with closely related research interests.

Quality of written English: Needs some language corrections before being published. – **Answer:** The English was corrected by the Nature Publishing group.

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

Declaration of competing interests: I declare that I have no competing interests
Reviewer: Mohamed M Elloumi

Reviewer's report:

This cross-sectional study among 38 obese and 56 control individuals of both sex, aged ranging 05 to 17 years old sought to evaluate the association between physical functional capacity and lung function in obese children and adolescents.

The authors of this study used the six-minute walk test (6MWT) and spirometry.

This is a comprehensive and an interesting study; however several weaknesses should be mentioned that will be presented as following:

1) The abstract section

The aim of the study presented in page 2 was not align with the results and conclusion of the study. - **Answer:** After the alteration, the conclusion in the abstract is “In the present study, obese group walked a shorter distance, and showed lower values in some markers for lung function. However, there is no association between these tests performed. In this context, we cannot state that low physical performance elapses from pulmonary function damages”.

2) Method section.

The sample of study was very small and I am not sure how this data will be generalizable to determine a consensus about obesity repercussions in pulmonary
function in a large cohort of obese children and adolescents. Answer: About the suggestion, we decided to include a new paragraph: “The sample size was calculated using G*Power 3.1.9.2. After taking into account the number of subjects enrolled (38 obese and 56 healthy controls) for all tests performed, the power was greater than 0.80. For the Mann-Whitney test, given an \( \alpha = 0.05 \) and an effect size, \( d = 0.80 \), a power, \( \beta \), equal to 0.96 was achieved. For the Kruskal-Wallis test, given an \( \alpha = 0.05 \), a number of groups = 4, an effect size, \( f = 0.40 \), a power, \( \beta \), equal to 0.90 was achieved. For the Wilcoxon test, given an \( \alpha = 0.05 \), an effect size, \( dz = 0.50 \), a power, \( \beta \), equal to 0.99 was achieved. For the Spearman Regression, given an \( \alpha = 0.05 \), a correlation, \( \rho_{H1} = 0.3 \), and a correlation, \( \rho_{H0} = 0 \), a power, \( \beta \), equal 0.84 was achieved”.

In statistic section, the authors should verify the normality of the variable before using nonparametric tests authors. Also, a stepwise analysis should be performed to select which data is added or not added to the analysis. Answer: The data showed no normal distribution, in this context, we performed no parametric test. About the suggestion, we include the follow paragraph: “The non-parametric test was performed to determine sample distribution. The data demonstrated a non-parametric distribution following an analysis using the Kolmogorov-Smirnov test of normality and the Shapiro-Wilk test of normality, which accounted for the graphic analysis for the distribution of data.” Considering the study model, we stepwise analysis was not considered.

The pubertal status is a determinant factor of spirometry parameters (consult the paper of Trabelsi et al 2007, Trabelsi Y1, Tabka Z, Richalet JP, Gharbi N, Bienvenu A, Guenard H, Buvry A. Spirometric values in Tunisian children: relationship with pubertal status. Ann Hum Biol. 2007 Mar-Apr;34(2):195-205); this factor is missing in this paper. – Answer: We would like to thank you and to inform that the reference was useful and included in the present study.
3) Result section

Figures were confused and slightly presented. - Results presented in tables need not be repeated in the text. – **Answer:** if we could expose data as the present version because we consider that it can make easier the reading comprehension. The manuscripts of the present journal are published in a digital version, not a printed one. It could make easier the publication with no number of pages limitation. Another consideration is that some tables have only p-value for all associations, which can facilitate reading. On the other hand, the graphic representations can illustrate the variables behavior.

4) The discussion should be shortened. This section should comply with the aim of the study, not only an overview of the results of other research. Some grammatical errors are noted in the manuscript. - **Answer:** The English was corrected by the Nature Publishing group.

Consequently, I don’t give this manuscript a high priority score.