Reviewer’s report

Title: Resting heart rate: Its correlations and potential for screening metabolic dysfunctions in youth

Version: 2 Date: 28 November 2012

Reviewer: Rima Chedid

Reviewer’s report:

Major Compulsory Revisions:

1- In the abstract, 4th line ,the authors talk about “screening metabolic dysfunction”. In the abstract last line “the development of dysfunctions” is used. These terms are too wide and encompass many diseases. Specially that in the objective of the study, Background section, the end of the second paragraph, the authors talk about “increased cardio vascular risk” The authors should narrow down the term “metabolic dysfunction” in order to be more specific.

2- In the Background section, the end of the second paragraph is unclear “The above mentioned data is promising…..of RHR in these populations”. It should be reformulated again, as this is the key sentence in the objective of your study. Did you mean:

“The above mentioned data is in favor of the use of RHR as an index in screening pediatric population for increased cardiovascular risk. However, since pediatric populations have not been thoroughly studied in epidemiology, the determinants of RHR in children need to be more clarified”?

3- In the Methods section, Sample paragraph, the authors mention a high human development index in South Brazil and state a figure. Indicate in the reference section where you took this figure from.

The sentence “The minimum sample size was estimated using an equation for correlation coefficients, adopting a power of 80% and alpha error of 5% (Z=1.96).” is unclear. Try to explain it or cite a reference.

The sentence “Among obese youth, Freitas Junior et al. [11] identified that RHR was significantly related to triglycerides (r= 0.21; p= 0.004) and total cholesterol (r= 0.18; p= 0.011).” is not relevant here. Move it to the Discussion section where you discuss the significance of triglycerides and TC values in your study population.

4- In the Methods section, there are too many details on how you proceeded with your sample size. Try to summarize it in a couple of lines.

5- In the Methods section, the Independent variables paragraph, did the authors also compute the coffee intake, as well as cola and energy drinks as these also affect RHR? If not, specify it in the limitations to your study, Discussion section.
The Peak Height Velocity ideal age of prediction works best between 9 and 13 for girls and 12 to 16 for boys, whereas your population age ranges from 11 to 17. This should be mentioned in the limitations to your study as the Pubertal Stage, which is directly derived from this value, is used as a potential confounder in the multivariate models.

6- In the Methods section, Resting Heart Rate paragraph, explain more about the 2 types of cut offs which were used according to the arm circumference. State figures or cite a reference as RHR is the key word and issue of your manuscript.

7- In the Discussion section, 4th paragraph, the authors state that “Adolescents are prone to perform many activities at night (TV viewing and computer usage) and thus they are more exposed to shorter periods of sleep.” As compared to whom? Do they mean that they are more exposed than children?

8- In the Discussion section, 4th paragraph, the authors talk about pro-inflammatory agents which increase in people with short sleep periods. Did you measure any of these agents in adolescents affected with short sleep pattern in your sample population?

9- In the Discussion section, last paragraph, the authors admit that there are not widely recognized RHR cut offs values. It will be interesting to establish their own RHR cut offs from their study population. It can be easily done first because the sample size has been carefully selected and is large enough, and second because they already plotted the ROC analysis curves. The article will be richer and more attractive.

10- In the Discussion section, last paragraph, the authors recommend to measure adipokines and insulin resistance in future investigations. This could be easily done on the same population if some serum stored at -80 degrees is left.

11- In the Discussion section, last paragraph, last sentence, be more specific and explain what do you mean by “low magnitude”: as compared to what? Moreover, state the other putative variables that might interfere in the outcome.

Minor Essential Revisions:

1- In the Abstract, the Objective section, use the word “impact” instead of “potential”. In the Results of the Abstract, add the word “curve” after “The receiver operating characteristic”.

2- In the Methods section, statistical procedures, the 4th sentence is unclear. Do you mean: “Gender, age and maturational status were adjusted for in both multivariate models”?

3- In the Methods section, the blood sample paragraph, use the word “measured” instead of “evaluated” when you talk about the biochemical parameters.
4- In the Results section, first paragraph, first line, be careful with the word Youth that admits no plural and generally refers to young men.

5- In the Discussion section, 3rd paragraph, “in an intervention protocol of eight months […] with obese children”, are the words “physical training” missing here? In the same paragraph, “The positive effect of sports practice in RHR was mediated by cardiorespiratory fitness”, it is better to replace the verb “mediated” by “estimated”.

6- In the Discussion section, 4th paragraph, “as a stressor in the acute and chronic setting”, the word setting is unclear.

7- In the Conclusion section, replace “the development of RHR cutoffs” by “further studies of RHR cutoffs.”

8- In Tables 1 and 2, add at the end of both charts the sentence: “Statistical significance was set as p<0.05”. In Table 1, the footnote VO2=maximum oxygen uptake is not necessary as it is not mentioned as a variable in the Table. In Table 3, draw physical lines between every series of RHR. The Table will look more reader friendly. Mention why you used bold font as you did in the Results section (“highest quartile was associated with increased values of glucose and decreased values of HDL-C.”).

9- In Figure 1 legend, write: Impact of Resting Heart Rate in screening metabolic variables…… State what the abbreviation AUC±95%CI stand for and what the reference line you drew indicate. Mention the reference figures next to the legend of this chart listed in the Blood Sample, Methods section. Does the small vertical lines indicate the Standard Deviation? Mention it.

Discretionary Revisions:

1- In the Discussion section, second paragraph, the authors use the sign “to the” when indicating the references 10 and 20.

2- I noticed some punctuation errors such as extra or missing commas. The manuscript should be carefully edited in this regard

**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

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**
'I declare that I have no competing interests'