Reviewer's report

Title: Use of a public park for physical activity in the Caribbean. Evidence from a mixed methods study in Jamaica

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Reviewer: Matthew Dennis

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The authors conduct work of a timely nature given the context of rising obesity linked to reduced physical activity in the study population. This background and the need for this study is generally well presented as are the methods.

However, the rationale and objective of the analytical approach taken was less clear to me, as were the means by which the data were interrogated. For example, the title suggests that this study will illuminate the role of public parks (plural) on physical activity. However, the study appears to focus primarily on difference between the physical activity of men and women and between age groups at one particular location. The latter is said to be "known" for a propensity of users engaged in physical activity but neither the details of this, nor a reference to the evidence, are provided. That difference in PA exists between male and female park users is of interest in itself, though such insight appears to confirm rather than build on the literature cited, so I was left questioning why there was such a seemingly singular focus on comparing men and women rather than comparisons between target areas, age groups or between activity levels. What, for example was the central research question? Were there hypotheses related to the different groups? Why there was no attempt to estimate statistically significant differences between age bracket and target area, for example, is not clear. This is a shame given the large and seemingly rich dataset that was generated through the field work carried out.
The 27 target areas are not given any description nor assigned to categories. If in some way (e.g. by design, location, light, aesthetic or functional characteristics) the different target areas comprised discrete zones, there would be merit in testing which of these supported greatest observed levels of the behaviours of interest. Clearly some (seven) of these areas were "high use" implying that 20 were low use, but was there are gradient of use and could lower scoring areas be grouped to look at difference in the characteristics which might lead to their respective mean EE scores? This could be done through tests such as ANOVA - i.e. on the EE values - between target areas with similar characteristics or discriminant function analysis based on high, med, low EE levels as groups and area characteristics as variables. Grouping sites according to their physical/functional/social characteristics could be done logically or with the help of cluster analysis on key variables. Variables might include PA-relevant factors such as green cover, number/type of facilities, terrain, overall design (e.g. open, forested, trail, promenade). Even if a detailed survey of the physical character of these sites was not undertaken, this could presumably still be carried out providing there have been no major changes since the research was carried out.

Although the methods section suggests that one-way ANOVAs were conducted on mean EE values for the different target areas, these results do not seem to be presented, which is a shame. Instead the emphasis here appears only to rest on sex (in which case it seems that an independent samples t-test would be more appropriate with only two groups) and, although demonstrating significance, these are ultimately descriptive results which do not test or compare physical elements of the park design itself, questioning the usefulness of the research beyond a simple survey of use.

I felt that more could have been done with these data and multiple factors could have been explored and/or combined to compare for example patterns of use in target areas per age-group. Perhaps with clearer headings in the results sections and with figures (e.g. clustered bar charts) to demonstrate the results of Chi-square tests, for example, the analysis would have been more compelling. I do feel that further tests offering greater interpretative power, such as ANOVA and general linear models, could be run given the usefulness of the EE variable that was created.

I thought the qualitative aspect of the study was somewhat vague. For example, the insistence that participants discuss their understanding of PA versus exercise was unexpected and no rationale for this in relation to the study aims was made. Although some coding of the transcribed interviews is suggested, the results are presented rather as a narrative. Therefore, I felt that there was a missed opportunity to shed light on the quantitative findings. Moreover, with only five interviews, given the high number of overall observations, this element of the mixed methods approach does not in my opinion provide a representative sample (as made clear in Table 5) and seems to detract from the overall rigour of the work.
Also, from a comparative point of view I felt the study lacked enough context and questions remained for me around, for example, the socio-economic and geographical context of the park. Were there other parks nearby for example for comparison or is this the only option for PA locally? Some images both of the physical location of the parks and the separate target areas would have been useful additions also. As it is, Figure 1 seems to be a poor representation of the study area without, for example, any legend/key, scale or colour for context. Suitable computer aided design or GIS software would have been a much more preferable option in this case. In addition, Figure 2 is equally badly composed. The axes are not sufficiently labelled and multiple vectors of different categories are presented together. This information would have made more sense as separate charts (for sex, age, activity for example). In addition it is not clear exactly what Figure 2 adds that is not already given in previous tables.

Due to these shortcomings I recommend that the paper not be considered for publication in its current form but that the authors are invited to address the issues highlighted and reconsider their analytical approach, before submitting a revised manuscript. This should focus on the comparative results between park areas and levels of activity, and how these vary by age and sex, with a more detailed account and discussion of the design and function of these target areas and the presence of statistical significance between them in terms of EE. This, for me, would provide greater insight into the distribution of PA throughout the park. The authors can then speculate with greater certainty the reasons for such differences, supported by the narratives documented through the limited interviews. This I think would be the basis of a more compelling study. In addition, the presentation of the paper needs to be greatly improved with proper cartographic representation of the study area and its geographical context and detailed descriptions of park observation areas with images.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Unable to assess

**Are the conclusions drawn adequately supported by the data shown?**
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No
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