

# Review of: "Could geographical features of green spaces influence physical exercise? Examining the roles of neighbourhood diversity and single status"

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Potential competing interests: No potential competing interests to declare.

## Could geographical features of green spaces influence physical exercise? Examining the roles of neighbourhood diversity and single status

Thank you for the opportunity to review this interesting paper. The following comments are intended to improve presentation and framing of the research.

### Abstract

First sentence of Methods is not complete - it does not say where the data came from.

Results – an abbreviation is used that is not explained (LGS)

### Keywords

Are 'daily visit' and 'visiting' useful keywords, given that they don't say visiting what?

### Introduction

Final sentence of first paragraph, it seems a bit odd to pick out just the colour green when there are so many other potential mechanisms described in the literature, including all the senses (e.g. sounds, smells).

Fourth sentence of second paragraph, you either want to 'improve mental health' or 'prevent mental health problems'.

Last paragraph, the statement "a series of linear and instrumental-variable regressions were designed to provide evidences for the associations of interest" is problematic, as we should not be designing analyses to generate certain evidence.

Neighbourhood diversity and single status feature in the title of the paper, so should be central concepts, yet don't feature in the Introduction. This suggests that they were not included in *a priori* hypotheses.

### Literature Review

Hypothesis 5: Please define 'neighbourhood diversity'. The preceding sentences do not fully justify the inclusion of this variable as a moderator (they discuss disadvantaged neighbourhoods, perceived walkability, low/high income neighbourhoods and the fact that "Perceptions of neighbourhood environment did not consistently predict physical activity in a deprived and ethnically diverse urban population"). It is noted that in a later section, where you describe how this variable was measured, it was based on self-reported data, so is actually measuring 'perceived neighbourhood diversity'.

The final paragraph repeats some of the final paragraph of the Introduction.

#### Method - Ethics approval and consent to participate

Repeat sentences:

"Informed consent was obtained from all research participants."

"Written informed consent was obtained from all participants before they agreed to participate in the study."

#### Method - Data source

First sentence, please replace "extrapolated from" with "collected using". I do not believe you are extrapolating data.

#### Method – Main Variables

It is appropriate here to describe how data for each variable was collected and coded, but not to give the descriptive statistics (i.e. percentages) as they belong in the Results.

#### Method - Geographical features of green spaces

Last sentence of first paragraph, please delete 'quality' as this is unnecessary and could cause confusion with rating the quality of a green space.

First sentence of last paragraph should read 'Barriers to *accessing* green space included...'. What is the rationale for summing the number of barriers to accessing green space?

Regarding exercise time, what guidance (and examples) was given to participants about the definition of vigorous and non-vigorous exercise?

#### Results

In relation to relationships between visiting and exercise time, the expression 'possibly lead to' should be changed to 'is associated with' because we cannot say anything about causation based on a cross-sectional survey. The same language is used at the beginning of the Discussion.

Adjusted R-squared is presented in Table 4 but not Table 2.

## Discussion

The following paragraph needs to be clarified:

“Hours visiting local and non-local green spaces vigorous exercise and non-vigorous exercise time concentrated in the areas less than 5 hours. This can be mainly explained by working time and life time. Physiologically, there were an optimal physical activity time for depressive symptoms [67] and comorbid insomnia [68].”

The meaning of the first sentence is unclear. Regarding the second sentence, the terms “working time” and “life time” have not been defined or used anywhere else in the paper, so it is not clear where it has come from or how this should be interpreted. The third sentence is confusing because there were no physiological measures in the study. To refer to other relevant literature, it needs to be rephrased e.g. “Previous research has reported that.....”

The meaning of “For example, a study in Australia indicated that park features and characteristics highly valued for physical activity and social interaction [69]” is not clear because it is not a complete sentence.

In the section on strengths and limitations, the sentence “including single status neighbourhood diversity that had not previously been included in previous studies of this nature” should read “including single status and neighbourhood diversity...”.

In the same section, the sentence “This study used self-report rather than time series nature of the data” is unclear because whether data is self-reported and whether data are collected as a time series are two separate issues.

I would question the statement “Obviously, the confounding effect of physical work was not carefully considered” because it is not obvious that you couldn’t have taken account of this by collecting data on physical work. Perhaps you should discuss why you didn’t do that.

Generally, in the Discussion, it would be helpful to go beyond repeating the associations and significant moderators found in your analysis by applying it to the population and considering what this means for them in practice e.g. “if you are single then.....”, “if you are in a more diverse neighbourhood then.....”. While you relate your findings to some previous literature, this again is quite superficial, rather than showing how your findings build on previous work.

## General

Some proof-reading is required throughout (e.g. fifth sentence of Introduction does not need both ‘improve’ and ‘protect’).