

Peer Review

Review of: "Increasing Physical Activity in Inactive Adults: A Randomized Crossover Trial Comparing Two Highly Popular Apps"

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Qeios Review of "Increasing Physical Activity in Inactive Adults: A Randomized Crossover Trial Comparing Two Highly Popular Apps"

Abstract:

- Are the average minutes reported for PA in minutes per day or total per week?
- Why are the self-reported PA data used when accelerometry was collected (per the methods section)?

Background:

- Try to avoid starting sentences with "This can/is" or "There is" to improve clarity and readability throughout the entire paper.
- The last three "paragraphs" before the aims need to be combined into one paragraph because the others are only one or two sentences each and are disjointed as they are currently written.
 - This problem continues throughout the manuscript. I will leave the issue up to the editor for preference.

Methods:

- The following sentence is awkward. I recommend breaking it into two sentences or more clearly connecting the thoughts: Eligibility was restricted to adults identified as "moderately inactive" or "inactive" using the General Practice Physical Activity Questionnaire^[15] who owned a "smartphone": iPhone (operating iOS 6.0 or newer) or Android (version 2.3.3 and up).

- This sentence also needs to be rewritten for clarity. *Participants were excluded if they previously used the apps we intended to evaluate in the study; had medical conditions that required special attention when conducting PA, with participants asked if they had any conditions that might be exacerbated by running or high-intensity interval training; or if they were unwilling to use the accelerometer as per study instructions, as studies assessing digital interventions are likely to have high attrition rates.*
- How were participants screened for medical conditions that might limit PA?
- Remove the sentence that sits by itself or move it to the end of the previous paragraph: *Thus, only participants who were able and likely to adhere to study instructions were included.*
- How were the screenshots of app engagement stored to ensure confidentiality of the participants?
- Even though IPAQ is an established survey tool, please address it in the methods section related to its format, scoring, reliability, etc.
- What tool was used to measure the listed determinants of PA? You need to add more information about it as well.
- Remove the “e.g.” from the end of this sentence: *These thresholds have been validated and are widely used in PA research, e.g.*
- Remove the “e.g.” from another sentence about two lines below this one.
- How long did participants wear the accelerometer at the baseline and post-baseline time point? You stated earlier that it was 7 days, but it is unclear if they wore it for additional days during this time.
- Why are IPAQ and accelerometers used? When you say you are assessing the association between baseline PA and the change in PA in the intervention period, and the vector magnitude. Do you mean you are comparing the IPAQ to the accelerometer? Also, you threw in weather as a covariate at the end of the methods, and it had not been mentioned before this point.

Results:

- The data for this study are from 2018. How much have these apps changed, or have new/better apps been developed, in the past seven years since this data was collected? The length of time passed since data collection is a major limitation.
- The long list of demographic data was not introduced earlier in the paper as being relevant or measured. No previous mention of main motivators for increasing PA – was this another tool? If so, it should have been outlined in the methods section if used. Also, how can you argue no significant difference in these characteristics across the two groups without presenting a p-value or a similar measure?

- Under stability of effectiveness, change “480 and -480 METs” to “±480 METs” for clarity. If the number was an error, then please correct it.
- Under the impact of apps on objectively measured PA, you mentioned no significant difference between baseline and period 1. However, Figure 3 also includes period 2. What was the difference between periods 1 and 2 and between baseline and period 2? Were either of these comparisons significant? Also, what do the mean changes for period 2 reflect in Figure 3 – change from period 1 or baseline?
 - It would be helpful to include the objectively measured values from baseline, period 1, and period 2 in addition to these mean changes in Figure 3. The analyses in Appendix 3 do not include these numbers either.
- Under responder analysis, it would be more interesting to see if one app created more 20% increases in MVPA over another instead of only the time periods.
- Remove the “%” inside the brackets for all listed confidence intervals since these are not percentages themselves but lower and upper limits of the data.

Discussion:

- Under implications: The preliminary effects showed that 16/51 of patients increased their PA, and 13/51 decreased MVPA by 20%. – Where was this decrease reported in the results? I only saw the proportion of participants who increased MVPA by 20%, not those who decreased by that amount.

Declarations

Potential competing interests: No potential competing interests to declare.