

Habit-behaviour relationships in organised and leisure-time physical activity

Eleftheria Giannouli  based on peer reviews by 2 anonymous reviewers

Katerina Newman, Cyril Forestier, Boris Cheval, Zackary Zenko, Margaux de Chanaleilles, Benjamin Gardner, Amanda L. Rebar (2023) Comparing habit-behaviour relationships for organised versus leisure time physical activity. OSF preprints, ver. 4, peer-reviewed and recommended by Peer Community in Health and Movement Sciences.

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Despite public health campaigns, achieving recommended physical activity levels remains challenging. Investigating the factors influencing physical activity is essential for effective promotion. Habit strength is known to correlate with physical activity (Hagger, 2019), making habit formation a key intervention target. Newman et al. (2023) expand current knowledge on physical activity and habit strength. They investigate if habit strength and its association with behavior differ between organized and leisure-time physical activities. Given the broad definition of physical activity and individual differences in preferences, studying habit's influence on varied activities is crucial. The cross-sectional survey, spanning the UK, USA, Australia, and Switzerland, involves 120 young adults (mean age = 25) engaged in organized sports. Although self-report measures are used, excluding commuting and occupational activity, the study yields intriguing results: Authors find significant habit strength differences between organized sports and leisure-time activities, indicating potential distinctions in habit formation drivers. Investigating factors establishing habits in organized sports could inform broader interventions. Remarkably, the impact of habits on behavior is consistent across both activity types, suggesting a universal role of habits. Further analysis reveals stronger habit strength in team sports versus individual ones, with no behavior association difference. Diverse habit strength in organized versus leisure-time activities underscores the need for focused research. Understanding unique aspects of team sports that promote habituation can reshape interventions, aligning leisure activities with organized sports' characteristics.

References:

- Hagger, M. S. (2019). Habit and physical activity: Theoretical advances, practical implications, and agenda for future research. *Psychology of Sport and Exercise*, 42, 118–129.
<https://doi.org/10.1016/j.psychsport.2018.12.007>

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Reviews

Evaluation round #1

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Version of the preprint: 2

Authors' reply, 05 July 2023

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Decision by [Eleftheria Giannouli](#) , posted 21 June 2023, validated 22 June 2023

Revisions requested

Dear Professor Rebar,

Thank you for submitting your preprint to PCI Health & Mov Sci.

I have received two reviews of your manuscript and, as you can see, both found the topic relevant and that your work is a good addition to the current literature. However, they both raise some issues regarding the use of/distinction between "sport" and "leisure" time physical activity in the context of your study.

Please revise the manuscript based on the reviewers' comments as well as those below:

- Consider mentioning the data analyses you applied in the abstract
- Page 1, line 1: "Diseases" instead of "disease"?
- Page 1, line 52: Using the word "strength" twice sounds odd; are you sure this makes sense? Otherwise please rephrase
- Page 4, lines 23-24: The names of the ethical committees are named later under Acknowledgements so no need to mask them here I guess
 - Following up on the previous comment: Please check the first sentence "This is your acknowledgements", I guess it was placed there by mistake. Please delete it. Also, I don't think naming the names of the ethics committees should be placed in the Acknowledgements. Just in the Methods section would suffice.
 - Page 4, lines 27-31: Please provide a more thorough explanation about the sample size calculation. For example, clarify which outcome you based it on and provide concrete data/examples of "the range of the variability of habit-physical activity associations found in previous research".
 - Page 4, lines 37-44: I found this part rather confusing. I think some numbers don't add up. For example, the percentage of males and females. In addition, there is a discrepancy between the numbers presented here and in the abstract. The results are reported for participants that did not engage in sports although in line 35-36 it states that those participants were excluded from the analyses. Please clarify.
 - In general, please refrain from presenting any results in the Methods section.
 - Page 5, lines 30-31. Please clarify exactly what the "models" were and what the "evidence" was. I suggest to move this part to the Results section.
 - Table 1: Please explain (e.g. in the "note" below the table) what the numbers "2. , 3., 4. and 5" in the column headings mean.

- Page 6, lines 20-21: There seems to be a discrepancy between the CI values here and the values in the table. Please clarify.
- Page 7, line 1: You use a different reference here for the same statement made in the Introduction (for which several other references were used). Could you please clarify the rationale/differences?
- Page 7, lines 20-21: It would be helpful if you could provide some examples.

I look forward to receiving your revised manuscript.

Best regards,

Eleftheria Giannouli

Reviewed by anonymous reviewer 1, 24 April 2023

Overall, the authors of the manuscript address a relevant topic on comparing habit-behavior relationships and offer important insights for further research. Thank you at this point for addressing the issue. One thing that remains unclear to me is the differentiation and rationale for the distinction between sport physical activity and leisure time physical activity. In the manuscript, the terms are not used in a completely constant way. To bring clarity, I would suggest to revise this point mainly in the manuscript. Furthermore, I have only minor suggestions for a potential revision of the manuscript.

Introduction

- I would suggest deleting the subheadings in the introduction or continuing them continuously in the introduction.
- The distinction of the definitions to leisure physical activity and sport physical activity is a bit vague. In my understanding, running and jogging are not defined as non-sport related physical activity. In addition, these activities can be just as competitive (even during leisure time). I would prefer a more current definition of leisure time physical activity.
- Are everyday activities, such as cycling, walking, housework, etc., also included in leisure time physical activity? This point could be further delineated in the definition.
- Is there a reference for the sentence page 3, line 47?
- To classify the results, it might be useful to state the hypotheses (1 and 2) here (page 4, line 3).

Participants

- Considering the inclusion criteria, sports activity is equated with competitive sports activity. In this case, would it be reasonable to use the term competitive sport activity instead of sport physical activity in the title and in the text?

Methods

- I would suggest to briefly describe the study design under methods.
- Would you please explain how the Self-Report Behavioural Automaticity Index is suitable to measure Leisure time physical activity and sport habit strength according to the definition given in the introduction? Has the index been adapted for this study?
- Were the questionnaires translated into French?

In my opinion, the chapters on discussion, limitations and conclusion are very well done. The manuscript is well written.

Reviewed by anonymous reviewer 2, 28 May 2023

Thank you for the opportunity to review this article. I think this a great addition to the current research regarding the habit-behavior relationship and helps to understand regarding physical activity modalities and habits. Please see the few suggestions below.

p. 1, l. 17-20: Maybe the authors could demonstrate their habit definition on a physical activity example?

p. 3, l. 37: Here, you refer to competitive clearly as team sports with your examples. However, based upon your measures, I'm wondering what people were supposed to answer that engaged in sports club activity that was not play-related since all the examples you mentioned for free time activities – running, hiking, jogging – can also be done in a sports club. Vice versa, any team sport activity can be done outside a sport club – e.g., meeting for tennis with a friend on a tennis court or meeting with some friends for beach volleyball at a public open space. Since, from my understanding, the organization form of the physical activity was your main interest, you may want to consider rephrasing it into organized and unorganized physical activity or exercise.

Related to this, I think you could make a clearer case in the introduction regarding the mechanisms on the differences between leisure time physical activity and sporting behavior. Based upon your team-sports examples for sports activity vs. single sport behavior for leisure-time physical activity, it is not quite clear if you assume that the mechanisms are due to the organized character and / or due to the higher commitment coming with engaging in team sports. I could see that these are two different mechanisms – e.g., when meeting with friends for playing volleyball during leisure time, I could also see some of the mechanisms that help building a habit, as I could see it if someone signs up for running at a sports club. Since it looks like you some information on the specific sport type activity that was done, it would be informative to see how many people engaged in team vs. single sport activity for sports / competition.

Discussion

Also building upon the leisure vs. sports and team vs. single modalities, it may be useful for the reader to add a point on that for future research directions to further distinguish between exercise / physical activity being done alone or with others since the commitment may be similar across the two modalities as soon as other people are involved.