

## PEER REVIEW HISTORY

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### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	Cohort Profile - Examining Neighbourhood Activities in Built Living Environments in London: the ENABLE London - Olympic Park cohort
<b>AUTHORS</b>	Ram, Bina; Nightingale, C; Hudda, Mohammed; Kapetanakis, Venediktos; Ellaway, Anne; Cooper, Ashley; Page, Angie; Lewis, Daniel; Cummins, Steven; Giles-Corti, Billie; Whincup, Peter; Cook, Derek; Rudnicka, Alicja; Owen, C

### VERSION 1 - REVIEW

<b>REVIEWER</b>	Erica Hinckson Auckland University of Technology/New Zealand
<b>REVIEW RETURNED</b>	12-Jun-2016

<b>GENERAL COMMENTS</b>	<p>The authors of this study sought to examine, in a natural experiment, the ENABLE London project, whether physical activity and other health behaviours show sustained changes amongst individuals in a physical activity permissive built environment. This project is well designed. This is a unique paper and looking forward to the actual results as it examines a large scale experiment that includes individuals from widely differing socioeconomic origins. Two major concerns include the was the omission of any ethical approval statement and that there is no detailed description about the activity permissive built environment/neighborhoods.</p> <p>Minor comments:</p> <p>Introduction: In Line 30 "with 1439 housing units for market rent, and 1379 affordable units (including 675 households for social rent)" Why is the term "affordable" used rather than "intermediate"? Also used in Line 47. "Intermediate" is used throughout the rest of the paper- less of a subjective term than affordable.</p> <p>Line 33 Would benefit from more examples of built environment features. These are mentioned later in the paper.</p> <p>Cohort Description: There is no date/time period provided for when actual data collection began. Is that the recruitment period? Not clear.</p>
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<b>REVIEWER</b>	Dr Chris Bunn University of Glasgow, Scotland
	I work with colleagues at SPHSU and also receive MRC funding in

	my work
<b>REVIEW RETURNED</b>	08-Jul-2016

<b>GENERAL COMMENTS</b>	<p>This is a well-written paper that clearly describes the cohort for the ENABLE study. My main concern is that this paper does not add much to the knowledge base; that it reports information that is usually found in an outcomes evaluation paper. Presumably when the authors publish the findings of the study they will have to include much of the detail described in this current paper-it is inconvenient to have to cross-refer to another paper to interpret findings. One way to address this could be to offer a detailed description of methodology in this paper (a section which is absent, but lots of the 'cohort description' section is actually methods text).</p> <p>That said, if BMJ Open are happy with this kind of contribution, then it should go forward with major revisions.</p> <p>Additions to be made:</p> <ul style="list-style-type: none"> <li>• Details of ethics approval and consent procedures</li> <li>• Fuller explanation of GIS – it is currently a 'black box' and we're not told much about it – there are no clear references to literature on this either</li> <li>• The authors tell us which stadiometer and body composition analyser was used, but do not mention a specific set of scales (was this equipment standardised or were multiple models used?)</li> <li>• What were the 'established validated methodologies' referred to in relation to electronic questionnaire? Refs are required and explanation of the technology – tablets, computers... etc?</li> <li>• The authors report 63% compliance with 9 hour wear time of ActiGraph for social housing group, but lump affordable and market rent groups together (80%)– please break this down by all three groups.</li> <li>• A major weakness of this study is that it is not mixed methods: there are no qualitative methods mentioned. Interview and observations would allow proper consideration of 'perceptions', which are not readily accessible through pre-structured questionnaires alone.</li> <li>• Another weakness is that the study cohort is not well balanced: market rent households are under-represented, amounting to less than 50% of the number of households recruited from social and intermediate households. This deserves comment and, if possible, explanation</li> </ul> <p>The paper could also be enhanced by a discussion of the cohort – how do the 'baseline' findings on PA etc compare to those from other studies? How does the cohort compare to other areas of London? In short, it could do with 'saying' something, other than reporting information that will be included in the study findings paper.</p>
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<b>REVIEWER</b>	Gavin Sandercock University of Essex, UK.
<b>REVIEW RETURNED</b>	11-Jul-2016

<b>GENERAL COMMENTS</b>	This is going to be such an interesting study when completed and I very much look forward to reading it.
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	<p>Can the authors justify the use of HADs in the general populace - this is clinical scale, predominantly used in hospitalized or out-patients?</p> <p>The authors report LPA &amp; MVPA but not sedentary time - although this can be derived from the data would it not be of interest to assess the (hopefully) reduction in time spent sedentary.</p> <p>The abstract and the text both make reference to measures of well being and a reference is given but I cannot see any baseline data in the tables? Is this an accidental or deliberate omission.</p> <p>Anthropometric data:</p> <p>BMI is given as a continuous measure then again as % overweight and %obese but %fat mass (FM) is given only as a continuous variable - why?</p> <p>Given that the BMI classification of Overweight has no meaningful association with ill-health in the general population it should be removed for clarity and only 'Obese' retained.</p> <p>The same should be done for FM - I suggest the authors remove FFM (as this can be derived) and replace it with %obese according to &gt;30%FM as is becoming routine in NHANES and other studies.</p> <p><a href="http://www.ncbi.nlm.nih.gov/pubmed/22947612">http://www.ncbi.nlm.nih.gov/pubmed/22947612</a></p> <p>This seems minor but it makes the anthropometric assessments more uniform - you get BMI %Obese and FM and %Obese.</p>
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### VERSION 1 – AUTHOR RESPONSE

Reviewer 1 – Dr Erica Hinckson

1.1. This project is well designed. This is a unique paper and looking forward to the actual results as it examines a large scale experiment that includes individuals from widely differing socioeconomic origins.

Author's response: We thank the Reviewer for these favourable comments about our work.

1.2. The omission of any ethical approval statement.

Author's response: Agreed - an ethical approval statement was not included. This has now been corrected.

Changes to the paper: Text has been added to 'Cohort Description - Data collection' section (page 7) to outline that the study was approved by the City Road and Hampstead Ethical Review Board (REC reference number 12LO1031), and that all participants gave written, informed consent.

1.3. There is no detailed description about the activity permissive built environment / neighbourhoods.

Author's response: We only provided a brief statement that East Village has been specifically designed to optimise walking and cycling, including active green space, with facilities for daily needs provided locally. Details have been added.

Changes to the paper: We have expanded the text in the 'Introduction' (page 3) considerably, to provide further details about the activity permissive elements within East Village.

#### 1.4. Why is the term “affordable” used rather than “intermediate”?

Author’s response: The terms “affordable” and “intermediate” are used interchangeably within the housing association sector, but we agree that intermediate is a more helpful term for readers, which we have now used throughout.

Changes to the paper: We have used the term “intermediate” throughout.

#### 1.5. Would benefit from more examples of built environment features.

Author’s response: We agree further details about the specific design features of East Village could be provided.

Changes to the paper: We provide further details of the activity permissive features within East Village. See response to point 1.3 above.

#### 1.6. There is no date/time period provided for when actual data collection began. Is that the recruitment period?

Author’s response: Yes – recruitment and data collection were carried out co-terminously between January 1st 2013 and December 31st 2015.

Changes to the paper: We have clarified that recruitment and data collection periods were identical in the ‘Cohort description’ ‘Participants section’ on page 5.

Reviewer 2 – Dr Chris Bunn

#### 2.1. This is a well-written paper that clearly describes the cohort for the ENABLE study.

Author’s response: We thank the Reviewer for these positive comments about our work.

2.2. This paper does not add much to the knowledge base; that it reports information that is usually found in an outcomes evaluation paper. Presumably when the authors publish the findings of the study they will have to include much of the detail described in this current paper-it is inconvenient to have to cross-refer to another paper to interpret findings. One way to address this could be to offer a detailed description of methodology in this paper (a section which is absent, but lots of the ‘cohort description’ section is actually methods text).

Author’s response: We acknowledge that this paper does not contain a detailed description of methodology. The study protocol, which details the methods to be used has been published on the NIHR website. Our understanding of BMJ Open Cohort profiles is ‘to fill the space between a study protocol and a results paper’. Hence, we focussed on presenting methods, baseline data and future plans, as opposed to giving a detailed methodology.

Changes to the paper: To respond constructively to the Reviewer’s suggestion we have included a further paragraph in the ‘Findings to date’ section (pages 8-9) to briefly outline the methodology to be used to address the primary research questions, i.e., whether moving to East Village increases physical activity levels compared to the equivalent change amongst those who do not move to East Village. We have also made a citation to the detailed project description published on the NIHR website, should anyone require further information.

#### 2.2. Details of ethics approval and consent procedures.

Author’s response: We agree there is a need to describe these more clearly.

Changes to the paper: Details of the ethical approval and consent procedures have been added (see

response to Reviewer 1, point 1.2).

2.3. Fuller explanation of GIS – it is currently a ‘black box’ and we’re not told much about it – there are no clear references to literature on this either.

Author’s response: We agree further detail about the GIS measures is needed.

Changes to the paper: We have expanded the description of the GIS measures used in the ‘Cohort description’ ‘Environmental exposures’ section (page 6). We now outline the data sources being used and the measures of the built environment being obtained. We have also added citations to previous work, which underpins the approach being used.

2.4. The authors tell us which stadiometer and body composition analyser was used, but do not mention a specific set of scales (was this equipment standardised or were multiple models used?)

Author’s response: We thank the Reviewer for drawing attention to this. The Tanita SC-240 body composition analysers included weight scales and were used to measure all weights; this is now clarified in the text.

Changes to the paper: Text has been added to the ‘Cohort description’ Data collection’ ‘Anthropometric measurements’ (page 6) section to confirm that weight measurements were made by the Tanita SC-240 devices.

2.5. What were the ‘established validated methodologies’ referred to in relation to electronic questionnaire? Refs are required and explanation of the technology – tablets, computers... etc?

Author’s response: Questionnaires were converted into electronic format using SNAP Surveys software, and completed by study participants using dedicated laptops. The established validated methodologies refer to the use of the ‘Neighbourhood Physical Activity Questionnaire’ to gauge environmental correlates of walking within a neighbourhood, and the ‘Neighbourhood Environment Walking Scale’ (NEWS) to gauge perception of environment.

Changes to the paper: We have added further text to the ‘Cohort description’ ‘Data collection’ Questionnaire data’ section (page 6) to clarify the form of delivery of questionnaires and the validated methodologies being used (including relevant citations).

2.6. The authors report 63% compliance with 9 hour wear time of ActiGraph for social housing group, but lump affordable and market rent groups together (80%) – please break this down by all three groups.

Author’s response: Agreed.

Changes to the paper: On page 8, we now provide compliance rates with wearing the ActiGraph for 9 hours per day for at least 4 days for all housing sectors, i.e., 66% in the social sector, 84% amongst those seeking intermediate accommodation and 89% for those seeking market rent housing. Note, the percentage in the social sector has been updated since the last submission of the paper.

2.7. A major weakness of this study is that it is not mixed methods: there are no qualitative methods mentioned. Interview and observations would allow proper consideration of ‘perceptions’, which are not readily accessible through pre-structured questionnaires alone.

Author’s response: We agree strongly that qualitative data, as well as quantitative data, are needed to give a more nuanced perspective on participants’ perceptions of living in East Village and control accommodation. We are therefore carrying out focus groups amongst study participants who have moved and not moved to East Village, and we are also supplementing GIS and GPS data with qualitative spatial narratives in order to provide context of use, i.e., reasons and purpose of travel and

how the built environment influences individual patterns of behaviour. We have now added details of the qualitative data collection.

Changes to the paper: We have added a 'Qualitative data' section (page 7) to the 'Cohort description' outlining the focus group being carried out amongst study participants who move and do not to East Village. Themes that have emerged from these focus groups are outlined in the 'Findings to date' (page 8). In particular, that East Village was recognised as a safe, clean, spacious environment, with good local facilities, including public transport, which encouraged walking activities. However, amongst the social sector, the cost of living was high, with few shops, particularly super markets, serving their income range, making it more difficult to save. The cost of living was also raised as an issue amongst non-movers. We have also added that we are carrying spatial narratives to supplement GIS and GPS data collection (see the 'Cohort description' 'Qualitative data' section on page 7), in order to establish purpose and individual influences on journeys made.

2.8. Another weakness is that the study cohort is not well balanced: market rent households are under-represented, amounting to less than 50% of the number of households recruited from social and intermediate households. This deserves comment and, if possible, explanation.

Author's response: We thank the Reviewer for drawing attention to this issue. We agree that this deserves explanation and comment. The smaller number in the market rent sector occurred because our access to applicants for market rent accommodation was limited and terminated early by 'Get Living London', before we could complete recruitment of similar numbers of households as in the Social and Intermediate rental sectors. This decision was not explicitly discussed, but we believe it reflected concerns (which we believe were inappropriate) that study recruitment interfered with GLL marketing strategy. We can assure the Reviewer that considerable efforts were made both to obtain access to recruit within this sector and secondly, to extend the period of recruitment as long as possible. In the event, we were fortunate in being able to recruit nearly 200 households from this sector, in the face of considerable difficulty.

Changes to the paper: We have now added a statement to the 'Cohort description' 'Recruitment' section (page 5) explaining that we were unable to recruit the same number of participants in the Market Rent sector as in the Social and Intermediate sectors because our access to potential participants was limited.

2.9. The paper could also be enhanced by a discussion of the cohort – how do the 'baseline' findings on PA etc compare to those from other studies? How does the cohort compare to other areas of London? In short, it could do with 'saying' something, other than reporting information that will be included in the study findings paper.

Author's response: We agree it would be useful to say something about how baseline physical activity findings in the ENABLE London cohort compared to other studies, and we have now included information on this issue. We have compared our physical activity data to a nationally representative study, Health Survey for England 2008,<sup>1</sup> which used a similar methodology, i.e., the same waist-worn accelerometer (ActiGraph), worn for an equivalent wear time (one week). Adults aged 16 to 34 years from this study recorded 40 minutes per day in MVPA, of which 15 minutes was in 10 minute bouts. Our baseline data suggest that participants in the social sector had comparable levels of activity to those in Health Survey for England at a similar age, with 47 minutes of daily MVPA, 7 minutes in bouts (with an IQR between 1 and 15 minutes), but higher levels amongst those in the intermediate and market rent sectors, who had 65 minutes of MVPA and >20 minutes recorded in bouts. While this suggests differences in baseline physical activity levels across the housing sectors in the present study, there was no evidence of a trend across other social markers (i.e., income groups) in the Health Survey for England study. In terms of geographic patterns in physical activity, re-analysis of Health Survey for England (2012) data did not suggest that self-reported higher levels of physical activity in London were unduly higher or lower compared to other Government Office Regions.<sup>2</sup>



Changes to the paper: We have added text to the 'Strengths and limitations' section on page 10 to 11, outlining the representativeness of the ENABLE London cohort in comparison with the Health Survey for England as detailed above.

Reviewer: 3 - Gavin Sandercock

3.1. This is going to be such an interesting study when completed and I very much look forward to reading it.

Author's response: We thank the Reviewer for these positive comments and interest in our work.

3.2. Can the authors justify the use of HADS in the general populace - this is clinical scale, predominantly used in hospitalized or out-patients?

Author's response: We agree that HADS provides a clinical measure of anxiety and depression, and has limitations for use in community settings. However, we have also used the EuroQol to provide a subclinical form of assessment. Both forms were used in this population setting in order to characterise a spectrum of anxiety, depression and emotional stress. We thought this was particularly important given the inclusion of individuals from widely differing socio-economic circumstances. We avoided giving two measures of the same outcome within the paper, and opted for HADS, as this showed that the levels and differences in borderline/abnormal baseline levels of depression and anxiety between housing sectors were appreciable and of considerable interest. However, a further measure can be provided if this is considered helpful.

Changes to the paper: In addition to Table 1, which outlines the measures used to quantify levels of anxiety and depression (i.e., both HADS and EuroQol forms of assessment), we have also added text to the 'Cohort description' 'Data collection' 'Questionnaire data' section (page 6), to outline that both clinical and subclinical forms of assessment, suitable for use in community settings, were used to determine levels of anxiety and depression.

3.3. The authors report LPA & MVPA but not sedentary time - although this can be derived from the data would it not be of interest to assess the (hopefully) reduction in time spent sedentary.

Author's response: We agree that reductions in sedentary time are as important as measuring potential changes in higher levels of activity.

Changes to the paper: A comment has been added to the 'Strengths and limitations' section (page 10) to state that in addition to the study examining whether the built environment has a favourable influence on higher levels of physical activity, including walking and cycling, the study will also be able to examine potential reductions in sedentary time.

3.4. The abstract and the text both make reference to measures of well-being and a reference is given but I cannot see any baseline data in the tables? Is this an accidental or deliberate omission.

Author's response: Agreed.

Changes to the paper: We apologise for this inconsistency. To correct this, integrated Household Survey measures of satisfaction with life have now been added to Table 2, and are summarised in the text ('Characteristics of study participants' section, page 7). Other aspects of well-being are being summarised in a separate, further paper, which we are currently preparing for publication.

3.5. BMI is given as a continuous measure then again as % overweight and %obese but %fat mass (FM) is given only as a continuous variable - why? Given that the BMI classification of Overweight has no meaningful association with ill-health in the general population it should be removed for clarity and only 'Obese' retained. The same should be done for FM - I suggest the authors remove FFM (as this

can be derived) and replace it with %obese according to >30%FM as is becoming routine in NHANES and other studies. This seems minor but it makes the anthropometric assessments more uniform - you get BMI %Obese and FM and %Obese.

Author's response: Agreed.

Changes to the paper: The overweight and Fat Free Mass (FFM) categories have been removed from Table 3. The FFM category has been replaced with FM derived obese prevalence, defined as  $\geq 30\%$  body fat in females, and  $\geq 25\%$  body fat in males, in accordance with guidelines from the American Society of Bariatric Physicians (ASBP), an American Medical Association (AMA) specialty board.<sup>3</sup> The Authors could not find a reference suggesting a universal definition of >30% FM to define obesity for both men and women. However, we are happy to modify the definition if the Reviewer can refer us to preferred definitions.

#### Reference List

- (1) Craig R, Mindell J, Hirani V. Health Survey for England 2008 Volume 1 Physical Activity and Fitness. [Accessed April 2011] [serial online] 2009.
- (2) Townsend N, Wickramasingher K, Bhatnagar P, Rayner M. Physical Activity Statistics 2015. Available from <https://www.bhf.org.uk/publications/statistics/physical-activity-statistics-2015> [Accessed July 2016] British Heart Foundation, London, 2015.
- (3) OOEM Task Force. Overweight and Obesity Evaluation and Management. Available for <http://www.inlandempireweightloss.com/documents/ASBPGuidelinesForOverweightAndObesityEvaluationManagement.pdf> [Accessed July 2016] American Society of Bariatric Physicians, 2009.

#### VERSION 2 – REVIEW

<b>REVIEWER</b>	Dr Chris Bunn University of Glasgow, UK
<b>REVIEW RETURNED</b>	18-Sep-2016
<b>GENERAL COMMENTS</b>	The authors have improved the paper significantly and I will be delighted to see this in press.  One small typo: P8, line 23 – focus groupS – plural?