PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Perceived barriers to leisure time physical activity in adults with type 2 diabetes attending primary health care in Oman: a cross-sectional survey
AUTHORS	Alghafri, Thamra; Alharthi, Saud; Al-Farsi, Yahya; Bannerman, Elaine; Craigie, Angela; Anderson, Annie

VERSION 1 – REVIEW

REVIEWER	James Green University of Otago, Dunedin, New Zealand
REVIEW RETURNED	12-Apr-2017

GENERAL COMMENTS	This paper reports barriers to physical activity in a cohort with Type 2 diabetes and low levels of physical activity in Oman. The research presented in this paper is part of a larger project, and my main recommendation is more focus on the barriers to physical activity, including the questionnaire itself. This will make this paper's key contribution more obvious. Scales are no longer assumed to have inherent validity – that is, validity should be assessed with each new group of participants, rather than relying on the original analysis of validity. This is particularly relevant where a scale has been translated, and new items added. For example, although the new items on environment and religion were not frequently mentioned barriers, it may be that the outdoor heat contributes to the 'resources' barrier (ie because it's too hot outside to exercise, some sort of indoor exercise resource is required). Similarly, the religious items may actually load onto a different scale (conservative dress is mentioned as an element of social support in the discussion). I'd therefore recommend both factor analysis, and also scale reliability measures (see eg Crutzen and Peters, 2015 http://dx.doi.org/10.1080/17437199.2015.1124240) Further exploration of the scale data would facilitate other interesting analyses. Are some people more likely to experience multiple barriers, and if so, are these people at a lower likelihood of physical activity? Presenting correlations between each barrier, and the distribution of barriers exceeding 5 per person would both be useful findings to discuss.

	Other comments 1. Most readers will not be too familiar with Muscat, or even Oman. So a paragraph giving a little background detail will help the reader contextualise this research. (For example, having visited the UAE, I have an idea of what “hot” means in a GCC context, but may readers may not). 2. On p8 line 15, it says that a copy of the questionnaire is included in the online supplementary materials, but I only find the consent form. 3. For the power analysis, do you mean a precision of 20% of your 15% estimate. My calculations, suggest that with ~300 participants, you would have a +/- 4% precision on an estimate of 15%. This power analysis also seems more appropriate to the parallel paper, as the main aim of this paper is not to accurately estimate prevalence of physical activity; your primary outcome measure is the prevalence of barriers. So perhaps it would be more transparent to report the study as having been powered for hypotheses not directly related to this paper. 4. I read reference 31 to the CDC, and I didn’t’ find any recommendation to dichotomise based on a score of 5. Taking an ordinal or continuous variable and making it binary loses information, so some better justification is required. 5. Similarly, justify the median split at 57. Would it not be more informative to group by in 5 or 10 year age bands? 6. HbA1c is measured on different scales in different countries. Providing it in other metrics (e.g. mmol) in Table 1 makes your data more easily accessible to a broad readership. 7. p.12ff. All the p-values for the chi-square tests are in the table, so no need to clutter the text with them. 8. Figure 1 does not include religion and environment subscales. 9. Figure 2 would be better as a clustered box and whisker plot Minor 1. Spell out our uncommon abbreviations (e.g., GPAC, GCC), to save the reader having to remember what they mean. 2. Reference error at the top of p.12

REVIEWER	Samannaaz Khoja University of Pittsburgh, USA
REVIEW RETURNED	18-May-2017

GENERAL COMMENTS	Major comments: Recognizing barriers towards physical activity is valuable for enhancing interventions to improve physical activity. Overall, this is a well-articulated and interesting manuscript related to barriers to physical activity in the context of an eastern community. As physical activity is a complex behavior to change, it is important to recognize the implications of different cultural and societal values in influencing attitudes towards physical activity. Prior to acceptance, the authors need to address some key issues pertaining to the analyses and presentation of information in this paper: 1) Currently, the aims proposed in the introduction are not congruent with the statistical analysis or the results shown. The aims stated on Pg 5, lines 36-40 read as follows " The current study aimed to identify significant barriers…..and associations with sociodemographic factors…". However, the statistical analyses and results presented are set up to only reflect descriptive part of the aim (identifying the distribution of barriers among different socio-demographic characteristics using chi-square) and do not include association analyses such as bivariate correlations or linear regression models. The aims statement might have been lost in translation and the authors may not have intended to look at associations, so I strongly recommend revising the aims to reflect the descriptive nature of this paper, which is to describe/identify the different barriers and explore differences based on gender, age, socioeconomic status, stages of change in physical activity etc. However, if the authors intended to look at associations then chi-square statistic is not appropriate or sufficient. 2) The presentation of the results needs more refinement and there seems to be much overlap in the information provided in the text, tables and figures. It is also not clear what additional information is provided in the figure since all that information is already in the test/tables. Currently the figures are also difficult to read as they are small and the resolution is not good. The tables are confusing and need to be formatted and re-labelled. Please see my suggestions for the tables below: a. Please reorganize Table1. I am not sure why the descriptive information has been divided by gender. In your aims, gender is one of the socio-demographic factors influencing barriers, and hence should be included as a row and not a separate column. Unless, the authors propose in the aims that the intention is to look at differences in other socio-demographic factors and PA stages by gender, this information is unnecessary and can be confusing to the readers. Please remove/revise accordingly. b. In table 1 for values with median (LQ, UQ) distribution, please put the median first and LQ, UQ in parenthesis and not as is shown in the table currently, (25, 50, 75). For continuous variables such as age, HbA1, BMI– either provide the distribution of overall or the % above and below the given categories, but not both. Since the distribution of these variables are already mentioned in the text, you can shorten the table by removing repeated information.

	c. Table 2: This table is long and confusing. Please see my suggestions to help make it more concise and clear: i) remove the % in each category for >5 and <5 points, and provide only the chi-square statistic and p-values. Since you describe the percentages in the text, there is no need to repeat the information in the table; ii) If you prefer leaving the percentages in the table, please consider providing only % numbers for >5 scores. 3) It was also interesting to note that barriers to PA were not significantly different between those in non-active and active stages of PA except for lack of willpower and fear of injury. Please add some discussion on these findings. 4) Discussion Pg 16 Lines 42-51: These statements seems slightly disconnected as they are addressing different topics. I think you need to elaborate on how being low income contributes to lack of willpower. Lack of access to facilities is resource and directly related to low income and but it's difficult to understand how lack of access can explain the association between low willpower and low income. Minor comments: Pg 17 lines 42-49: Sentence is too wordy and difficult to follow, please revise or break up into two sentences. Pg 18 lines 44-45- Please correct the spelling of jeopardized.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

James Green
University of Otago, Dunedin, New Zealand

Please state any competing interests or state 'None declared': None declared.

Please leave your comments for the authors below

Comment: This paper reports barriers to physical activity in a cohort with Type 2 diabetes and low levels of physical activity in Oman. The research presented in this paper is part of a larger project, and my main recommendation is more focus on the barriers to physical activity, including the questionnaire itself. This will make this paper's key contribution more obvious.

Scales are no longer assumed to have inherent validity – that is, validity should be assessed with each new group of participants, rather than relying on the original analysis of validity. This is particularly relevant where a scale has been translated, and new items added. For example, although the new items on environment and religion were not frequently mentioned barriers, it may be that the outdoor heat contributes to the 'resources' barrier (ie because it's too hot outside to exercise, some sort of indoor exercise resource is required). Similarly, the religious items may actually load onto a different scale (conservative dress is mentioned as an element of social support in the discussion). I'd therefore recommend both factor analysis, and also scale reliability measures (see eg Crutzen and Peters, 2015 http://dx.doi.org/10.1080/17437199.2015.1124240)

Further exploration of the scale data would facilitate other interesting analyses. Are some people more likely to experience multiple barriers, and if so, are these people at a lower likelihood of physical activity? Presenting correlations between each barrier, and the distribution of barriers exceeding 5 per person would both be useful findings to discuss.

Response: Thank you for this comment. I have learned a lot
factor analysis and omega function results are all Included and highlighted in the method line 168-190 page 8 and in results page 16 and 17

Other comments:

1. Most readers will not be too familiar with Muscat, or even Oman. So a paragraph giving a little background detail will help the reader contextualise this research. (For example, having visited the UAE, I have an idea of what “hot” means in a GCC context, but may readers may not).

2. On p8 line 15, it says that a copy of the questionnaire is included in the online supplementary materials, but I only find the consent form.

Response: Location and climate described and highlighted line 72-75 page 4&110-114 page 5

3. For the power analysis, do you mean a precision of 20% of your 15% estimate. My calculations, suggest that with ~300 participants, you would have a +/- 4% precision on an estimate of 15%. This power analysis also seems more appropriate to the parallel paper, as the main aim of this paper is not to accurately estimate prevalence of physical activity; your primary outcome measure is the prevalence of barriers. So perhaps it would be more transparent to report the study as having been powered for hypotheses not directly related to this paper.

Response: Reworded line 191 page 9

4. I read reference 31 to the CDC, and I didn’t’ find any recommendation to dichotomise based on a score of 5. Taking an ordinal or continuous variable and making it binary loses information, so some better justification is required.

Response: Kindly refer to the corrected reference 31 https://www.cdc.gov/diabetes/ndep/pdfs/8-road-to-health-barriers-quiz-508.pdf. It is stated that score ≥5 is a barrier to overcome. This was equally practised by AlQuaiz {AlQuaiz et al., 2009 #537} study in Saudi Arabia
attached within the supplementary materials too

5. Similarly, justify the median split at 57. Would it not be more informative to group by in 5 or 10 year age bands?

Response: Since the population was slightly elderly we divided/ mean age to ensure adequate cell counts line 214-215 page 9

6. HbA1c is measured on different scales in different countries. Providing it in other metrics (e.g. mmol) in Table 1 makes your data more easily accessible to a broad readership.

Response: Added line 246 page 11

7. p.12ff. All the p-values for the chi-square tests are in the table, so no need to clutter the text with them.

Response: Deleted line 304-316 page 13

8. Figure 1 does not include religion and environment subscales.

Response: Included in the updated figure

9. Figure 2 would be better as a clustered box and whisker plot

Response: made it simpler since most of the descriptive information is within the text. Hope its satisfactory

Minor Comments:
1. Spell out our uncommon abbreviations (e.g., GPAC, GCC), to save the reader having to remember what they mean.

Response: Changed as requested

2. Reference error at the top of p.12

Response: Corrected

Reviewer: 2
Samannaaz Khoja
University of Pittsburgh, USA
Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below

Major comments:
Recognizing barriers towards physical activity is valuable for enhancing interventions to improve physical activity. Overall, this is a well-articulated and interesting manuscript related to barriers to physical activity in the context of an eastern community. As physical activity is a complex behavior to change, it is important to recognize the implications of different cultural and societal values in influencing attitudes towards physical activity.

Prior to acceptance, the authors need to address some key issues pertaining to the analyses and presentation of information in this paper:

Comment 1) Currently, the aims proposed in the introduction are not congruent with the statistical analysis or the results shown. The aims stated on Pg 5, lines 36-40 read as follows " The current study aimed to identify significant barriers…..and associations with sociodemographic factors…". However, the statistical analyses and results presented are set up to only reflect descriptive part of the aim (identifying the distribution of barriers among different socio-demographic characteristics using chi-square) and do not include association analyses such as bivariate correlations or linear regression models. The aims statement might have been lost in translation and the authors may not have intended to look at associations, so I strongly recommend revising the aims to reflect the descriptive nature of this paper, which is to describe/identify the different barriers and explore differences based on gender, age, socioeconomic status, stages of change in physical activity etc.

However, if the authors intended to look at associations then chi-square statistic is not appropriate or sufficient.

Response: Reworded to describe the nature of this paper (abstract line 35-37 page 2) (introduction line 115-117 page 7)

Comment 2) The presentation of the results needs more refinement and there seems to be much overlap in the information provided in the text, tables and figures. It is also not clear what additional information is provided in the figure since all that information is already in the test/tables. Currently the figures are also difficult to read as they are small and the resolution is not good. The tables are confusing and need to be formatted and re-labelled. Please see my suggestions for the tables below:

a. Please reorganize Table1. I am not sure why the descriptive information has been divided by gender. In your aims, gender is one of the socio-demographic factors influencing barriers, and hence should be included as a row and not a separate column. Unless, the authors propose in the aims that the intention is to look at differences in other socio-demographic factors and PA stages by gender, this information is unnecessary and can be confusing to the readers. Please remove/revise accordingly.

Response: changed as per your kind instructions page 11

b. In table 1 for values with median (LQ, UQ) distribution, please put the median first and LQ, UQ in parenthesis and not as is shown in the table currently, (25, 50, 75). For continuous variables such as age, HbA1, BMI– either provide the distribution of overall or the % above and below the given categories, but not both. Since the distribution of these variables are already mentioned in the text, you can shorten the table by removing repeated information.

Response: changed page 11

c. Table 2: This table is long and confusing. Please see my suggestions to help make it more concise and clear: i) remove the % in each category for >5 and <5 points, and provide only the chi-square statistic and p-values. Since you describe the percentages in the text, there is no need to repeat the information in the table; ii) If you prefer leaving the percentages in the table, please consider providing only % numbers for >5 scores.
Changed and looks better Page 14-15

Comment 3) It was also interesting to note that barriers to PA were not significantly different between those in non-active and active stages of PA except for lack of willpower and fear of injury. Please add some discussion on these findings.

Response: line 63-67 page 19

Comment 4) Discussion Pg 16 Lines 42-51: These statements seems slightly disconnected as they are addressing different topics. I think you need to elaborate on how being low income contributes to lack of willpower. Lack of access to facilities is resource and directly related to low income and but it's difficult to understand how lack of access can explain the association between low willpower and low income.

Response: line 50-56 page18

Minor comments:
Pg 17 lines 42-49: Sentence is too wordy and difficult to follow, please revise or break up into two sentences.

Response: Shortened page 74-75 page 19

Pg 18 lines 44-45- Please correct the spelling of jeopardized.

Response: Changed line 100 page20

VERSION 2 – REVIEW

REVIEWER	James Green University of Otago, New Zealand
REVIEW RETURNED	02-Jul-2017

GENERAL COMMENTS	I'd like to thank the authors for their careful attention to my comments. I have a few further strong recommendations in relation to the PCA, but otherwise just a few minor comments. Firstly, there are 3 main ways to determine the number of factors in a solution: eigenvalues > 1.0, scree plot, and a priori determination. As you were expecting 9 factors, extracting 9 would have been a reasonable solution to test. Or a scree plot might produce a solution with a smaller number of factors that adequately describes the data. Further, I recommend direct Oblimin rotation. This will make the factors more interpretable, and unlike other (orthogonal) rotation methods, factors can be correlated (which makes sense here). Following this, I would de-emphasise the KMO and communality output. It is useful for diagnostic purposes, but not commonly reported in such detail (or could be included in electronic supplementary materials). Instead, I would like to see the factor loadings for all 27 items and however many (e.g. 8 or 9) factors you end up selecting. If you use the non-orthogonal rotation, then correlations between the factors should also be presented. Finally, I'd recommend presenting the correlations between each barrier category for the sum scores. Minor points Strengths and Limitations > currently too focused on limitations (esp. e.g. commenting on the subjective nature of self-reports) p.9 l.196 – consider replacing indirectly related to, "at least in part facilitated by reporting fewer barriers". The whole point of this line of research is that barriers should prevent PA? p.19 l.52 "constrains" to "constraints" p.19 l.55 rephrase "hopeless"!

REVIEWER	Samannaaz Khoja University of Pittsburgh, United States
REVIEW RETURNED	05-Jul-2017

GENERAL COMMENTS	The authors have worked hard and the manuscript content have been significantly improved. However, few areas need to be revisited prior to acceptance: Abstract conclusion: Overstated and needs to be toned down. Since this study is only a cross-sectional analysis, causative inferences cannot be made. Therefore, directly suggesting that physical activity interventions need to be more cost-neutral and target psycho-social factors is a bit overstated. Please reword the conclusion appropriately. The results of this study can only speak to the nature of the barriers discovered and/or make suggestions on how this data can inform future longitudinal/intervention studies to test physical activity and behavioral programs that address barriers. The results of this study cannot make a conclusion on the most effective form of physical activity, as that was not tested. Statistical methods: Please provide some explanation of the additional statistical approach on factor analysis in this section. This would ensure that readers not familiar with this approach can understand the results reported in the section on "Factor Analysis and reliability test results". I suggest shifting some of the explanation of PCA (2nd paragraph) into the statistical methods, and also suggest the authors to briefly explain the purpose of scale reliability and factor analysis in the methods section. There should be a clear distinction between explanation of statistical methods and reporting of statistics that resulted after running the data analysis so as to not confuse the reader. Results: Please clarify the factor analysis results. In the text you mention Omega values of 0.75 but Table 3 shows Omega 0.9 for all the barrier categories. Discussion: Pg 18, Line 57"Comparably, Lack of willpower" - please de-capitalize L in lack. Please add cross-sectional design as a limitation, as no causal inferences can be drawn, and this study cannot confirm whether addressing these barriers in physical activity interventions would improve physical activity participation in this population. Conclusion: Same comments as abstract conclusion. Some statements here are too strong for a cross-sectional analysis. Instead of statements such as "should be considered" use "may need to be considered" and/or "may be useful to test in future longitudinal studies".

VERSION 2 – AUTHOR RESPONSE

Reviewer: 1
James Green
University of Otago, New Zealand
Please state any competing interests or state 'None declared': None declared

Comment 1 - Firstly, there are 3 main ways to determine the number of factors in a solution: eigenvalues > 1.0, scree plot, and a priori determination. 1- As you were expecting 9 factors, extracting 9 would have been a reasonable solution to test. Or a scree plot might produce a solution with a smaller number of factors that adequately describes the data. Further, I recommend direct Oblimin rotation. This will make the factors more interpretable, and unlike other (orthogonal) rotation methods, factors can be correlated (which makes sense here).

Response: Changed to Oblimin rotation line 17 and results presented

Comment 2- Following this, I would de-emphasise the KMO and communality output. It is useful for diagnostic purposes, but not commonly reported in such detail (or could be included in electronic supplementary materials). Instead, I would like to see the factor loadings for all 27 items and however many (e.g. 8 or 9) factors you end up selecting. If you use the non-orthogonal rotation, then correlations between the factors should also be presented.

Response: Table changed to meet your kind instructions (Table 4)

3- Finally, I'd recommend presenting the correlations between each barrier category for the sum scores.

Response: presented in Table 2 line 307-313

Minor points:

Comment: Strengths and Limitations > currently too focused on limitations (esp. e.g. commenting on the subjective nature of self-reports)

Rsponse: Changed line 71

Comment p.9 l.196 – consider replacing indirectly related to, "at least in part facilitated by reporting fewer barriers". The whole point of this line of research is that barriers should prevent PA?

Response: Changed line 195

Comment: p.19 l.52 "constrains" to "constraints"

Response: Changed line 59

Comment: p.19 l.55 rephrase "hopeless"!

Response: Changed to depressed line 61

Reviewer: 2
Samannaaz Khoja
University of Pittsburgh, United States
Please state any competing interests or state ‘None declared’: None declared

Comment 1- Abstract conclusion: Overstated and needs to be toned down. Since this study is only a cross-sectional analysis, causative inferences cannot be made. Therefore, directly suggesting that physical activity interventions need to be more cost-neutral and target psycho-social factors is a bit overstated. Please reword the conclusion appropriately. The results of this study can only speak to the nature of the barriers discovered and/or make suggestions on how this data can inform future longitudinal/intervention studies to test physical activity and behavioral programs that address barriers. The results of this study cannot make a conclusion on the most effective form of physical activity, as that was not tested.

Response: Reworded and changed line 58-60

Comment 2- Statistical methods: Please provide some explanation of the additional statistical approach on factor analysis in this section. This would ensure that readers not familiar with this approach can understand the results reported in the section on "Factor Analysis and reliability test results". I suggest shifting some of the explanation of PCA (2nd paragraph) into the statistical methods, and also suggest the authors to briefly explain the purpose of scale reliability and factor analysis in the methods section. There should be a clear distinction between explanation of statistical methods and reporting of statistics that resulted after running the data analysis so as to not confuse the reader.

Response: Reworded and changed line 188-191
reworded and changed line 227-232

Comment
Results: Please clarify the factor analysis results. In the text you mention Omega values of 0.75 but Table 3 shows Omega 0.9 for all the barrier categories.

Response: Omega values of 0.75
for the entire scale of the 27 items/questions
Presented in table 4

But Table 6 shows Omega 0.9
for the sub-scales of 3items per category

Comment
Discussion:
Pg 18, Line 57"Comparably, Lack of willpower" - please de-capitalize L in lack.

Response: Changed line 64

Comment: Please add cross-sectional design as a limitation, as no causal inferences can be drawn, and this study cannot confirm whether addressing these barriers in physical activity interventions would improve physical activity participation in this population.

Response: Reworded line 124-125

Comment
Conclusion: Same comments as abstract conclusion. Some statements here are too strong for a cross-sectional analysis. Instead of statements such as "should be considered" use "may need to be considered" and/or "may be useful to test in future longitudinal studies".

Response: Reworded and changed line 132-138

VERSION 3 – REVIEW

REVIEWER	James Green University of Otago New Zealand
REVIEW RETURNED	11-Aug-2017

GENERAL COMMENTS	My main suggestion now is a radical change to how you present the factor analysis/PCA, as I think it is now detracting from the main point of this paper. In my first review, I suggested you include a factor analysis. It was my intention that this should support the barrier structure of the CDC questionnaire (which it largely does). However, it now sits as a very large an unintegrated part of your results section. Looking over Table 4, it does seem that the hypothesised structure does fit your sample reasonably well. However, as I previously suggested, given that you were expecting 9 barriers, I would have tried a 9 component solution as first preference. Given the lack of integration of the PCA into the results, I now think the best solution is to move it into a supplementary file. I would report scale quality at the top of the section CDC questionnaire on barriers to PA. “PCA analysis (see supplementary materials) generally supported the previous found subscales in barriers to PA … [describe the items that didn’t quite fit]. Each of the subscales had good reliability [report Omega]. Based on this, further results are presented using sum scores” Other points 1. You should include an English translation of the questionnaire in the supplementary materials, not just the Arabic version. 2. Line 324ff on p.14. I would describe a correlation of r = .50 as strong rather than “weak”. The ones <.20 might qualify as weak, so revise this paragraph. 3. The first reasonably trivial point is that Principal Components Analysis is *not* a form of factor analysis – it aims to summarise the variation in the observed variables, whereas factor analysis is based on the variation in the observed variables being driven by latent factors. This confusion is not helped by PCA being the default ‘factor analysis’ in SPSS. Just delete “Factor analysis namely” from line 230 on p.11 4. Strengths and Limitations > still too focused on limitations. Just delete the last one and don’t replace it. You are clear in the design section of the abstract that it is cross-sectional, therefore it should be obvious that you can’t make causal inferences.

REVIEWER	Samannaaz Khoja University of Pittsburgh, United States
REVIEW RETURNED	15-Aug-2017

GENERAL COMMENTS	The authors' efforts in making changes to improve the manuscript are commendable and they have addressed all my comments adequately, except the conclusion of the paper still needs some modification. The changes in the abstract conclusion are adequate, modified. Currently the conclusion still reads as follows: "This study identified lack of willpower, low resources and low social support (especially in females) as the most common barriers to performing leisure PA. Overall, the findings suggest that the design of physical activity interventions should consider a) the inclusion of individuals' readiness to change b) options for PA resources and social support c) approaches aimed at increasing individuals' understanding of what constitutes PA and d) methods that are flexible and tailored to the specific needs of subgroups of adults with T2D." So from reading this conclusion it is still not clear whether the authors are making a recommendation for intervention or recommendation for the design of a future clinical trial to investigate whether addressing these barriers could improve PA. If it is the latter, then it is correct to state that this information can be used to inform the design of future clinical trials. However, this message does not come across when reading the conclusion. Please specify that you are talking about testing methods to remove these barriers in physical activity intervention clinical trials.

VERSION 3 – AUTHOR RESPONSE

Dear Reviewers,
Warm greetings from my country Oman. I would like to express my gratitude to your kind comments which has enriched this manuscript and certainly enlightened me towards better understanding of scale based questionnaires and possible interpretations from cross-sectional studies. Below are my corrections hope they are satisfactory.

Reviewer:
In my first review, I suggested you include a factor analysis. It was my intention that this should support the barrier structure of the CDC questionnaire (which it largely does). However, it now sits as a very large an unintegrated part of your results section.

Looking over Table 4, it does seem that the hypothesised structure does fit your sample reasonably well. However, as I previously suggested, given that you were expecting 9 barriers, I would have tried a 9 component solution as first preference.

Response: 9 factor solution is included - attached in supplementary file 3

Comment: Given the lack of integration of the PCA into the results, I now think the best solution is to move it into a supplementary file. I would report scale quality at the top of the section CDC questionnaire on barriers to PA.
“PCA analysis (see supplementary materials) generally supported the previous found subscales in barriers to PA … [describe the items that didn’t quite fit]. Each of the subscales had good reliability [report Omega]. Based on this, further results are presented using sum scores”

Response: Reported as advised and included as supplementary file

Other points
Comment 1. You should include an English translation of the questionnaire in the supplementary materials, not just the Arabic version.

Response: Included

Comment 2. Line 324ff on p.14. I would describe a correlation of r = .50 as strong rather than “weak”. The ones <.20 might qualify as weak, so revise this paragraph.

Response: Changed

Comment 3. The first reasonably trivial point is that Principal Components Analysis is *not* a form of factor analysis – it aims to summarise the variation in the observed variables, whereas factor analysis is based on the variation in the observed variables being driven by latent factors. This confusion is not helped by PCA being the default ‘factor analysis’ in SPSS. Just delete “Factor analysis namely” from line 230 on p.11

Deleted
4. Strengths and Limitations > still too focused on limitations. Just delete the last one and don’t replace it. You are clear in the design section of the abstract that it is cross-sectional, therefore it should be obvious that you can’t make causal inferences.

Response: Deleted

Reviewer: 2

Comment
Currently the conclusion still reads as follows:
"This study identified lack of willpower, low resources and low social support (especially in females) as the most common barriers to performing leisure PA. Overall,
the findings suggest that the design of physical activity interventions should consider a)
the inclusion of individuals’ readiness to change b) options for PA resources and social support c) approaches aimed at increasing individuals’ understanding of what
constitutes PA and d) methods that are flexible and tailored to the specific needs of
subgroups of adults with T2D." So from reading this conclusion it is still not clear whether the authors are making a recommendation for intervention or recommendation for the design of a future clinical trial to investigate whether addressing these barriers could improve PA. If it is the latter, then it is correct to state that this information can be used to inform the design of future clinical trials. However, this message does not come across when reading the conclusion. Please specify that you are talking about testing methods to remove these barriers in physical activity intervention clinical trials.

Response: Revised and reworded.

VERSION 4 – REVIEW

REVIEWER	Samannaaz Khoja University of Pittsburgh
REVIEW RETURNED	27-Sep-2017

GENERAL COMMENTS	Authors' hard work in improving the clarity and substance of their manuscript is noteworthy. I have no further comments/suggestions. Only minor editorial corrections required: Discussion, Pg 18 lines 21-22, there are too many "hads" and sentence needs to be reworded: "Additionally in a study in USA, older individuals with low income who were found to be depressed had had low participation in social activities had less odds of engaging in PA" Discussion Pg 21, lines 88-89. This sentence does not make sense, and should be deleted or re-worded. "Despite efforts to minimize potential bias due to the subjective nature of self-reports, accuracy of outcomes cannot be fully ensure." Supplemental file: Spelling error: Replace "week" in the sentence below with "weak" "Component correlation matrix, presented in table 2, shows week correlations between the extracted nine components <0.200 except for the correlations of 0.201and -0.204 between component 6 (lack of willpower) with 7 (combination of lack of skills and social support) and 2 (fear of injury) with 9 (lack of resources) respectively."

VERSION 4 – AUTHOR RESPONSE

Dear reviewers,

I would like to send you my sincere gratitude and thanks to the reviewers for their kind support in improving this manuscript. All required changes have been made as listed below:

Comment
Discussion, Pg 18 lines 21-22, there are too many "hads" and sentence needs to be reworded:
"Additionally in a study in USA, older individuals with low income who were found to be depressed had had low participation in social activities had less odds of engaging in PA"

Response: Extra "had" deleted and sentence restructured

Comment
Discussion Pg 21, lines 88-89. This sentence does not make sense, and should be deleted or re-worded. "Despite efforts to minimize potential bias due to the subjective nature of self-reports, accuracy of outcomes cannot be fully ensure."

Response: Deleted

Comment
Supplemental file: Spelling error: Replace "week" in the sentence below with "weak"
"Component correlation matrix, presented in table 2, shows week correlations between the extracted nine components <0.200 except for the correlations of
0.201and -0.204 between component 6 (lack of willpower) with 7 (combination of lack of skills and social support) and 2 (fear of injury) with 9 (lack of resources) respectively."

Response: Changed