PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Enhancing Intrinsic Motivation for Physical Activity among Adolescents with Cystic Fibrosis: A Qualitative Study of the views of healthcare professionals
AUTHORS	Denford, Sarah; Mackintosh, Kelly; McNarry, Melitta A.; Barker, Alan; Williams, Craig

VERSION 1 - REVIEW

REVIEWER	Nicole Saxby Tasmanian Paediatric Cystic Fibrosis Service, Royal Hobart Hospital, Hobart, Australia
REVIEW RETURNED	05-Feb-2019

GENERAL COMMENTS	Thank you for the opportunity to review this manuscript - it is well written and I agree that physical activity is an important component of cystic fibrosis care. Overall the quality of this manuscript is good and the discussion section valuble. I would have liked more information about the participant characteristics rather than just sex - information about years of experience with working with CF. Also, I found the use of the abbreviation of PA frustrating and it would have made things easier to read if the authors had of written physical activity.

REVIEWER	Eileen Savage University College Cork, Ireland
REVIEW RETURNED	21-Feb-2019

GENERAL COMMENTS	REVIEWER COMMENTS Enhancing Intrinsic Motivation for Physical Activity among Adolescents with Cystic Fibrosis: A Qualitative Study This is an interesting paper focusing on the views of health professionals' regarding physical activity (PA) for individuals with cystic fibrosis (CF). Overall, a qualitative exploratory study is appropriate given that little exploration of healthcare professionals perspectives conducted to date. Abstract: Clear overall. Objective: Consider replacing 'clinical staff' with 'healthcare professionals'. Design: Suggest removing 'clinical practice' because it implies exploration of practice beyond their perspectives.

Results: Clarify ‘health reasons’ – does this mean specific to CF.

Keywords: Include ‘physical activity’

Article summary: Consider replacing both ‘health care providers’ and ‘participants’ with ‘healthcare professionals’.
I think that a key limitation is that it reflects views of healthcare professionals’ only and that further exploration from patients themselves is needed.

Introduction: Context for PA is clear with current and relevant literature specific to the merits of PA for individuals with CF. What is missing however is literature/research specific to motivation e.g. what is meant by intrinsic motivation and how can healthcare professionals work with individuals to enhance this. Is there a need to consider interventions such as motivational interviewing or brief interventions such as ‘making every contact count’?
Line 51/52 – clarify if you are referring to the general population, or populations with chronic conditions. The reference citation (#12) relates to CF only and is dates at 2004. Comparisons with general population is appropriate here and so relevant literature is needed to support the claims.
Line 59 – be clear that it is decline in PA here.
Line 18/19 – not clear what is meant by a ‘therapeutic tool’.

Design: Be clear that is healthcare professionals from MDTs which is implied in line 9/10. There is a need to include a comment on reflexivity e.g. how might the researchers influenced the data e.g. relating to their own professional backgrounds/other.
Not sure what is meant by ‘Opportunity sampling’ ?/ convenience sampling.
Consider including a sample of initial interview schedule topics.
PPI is not explicit here but noted later. Reference to telephone interviews here rather than later in the results. How long did interviews last for. Were there any challenges in terms of time especially if conducted during the worktime of participants.

The account of Patient and Public Involvement is unclear e.g. what is meant by research portfolio?; how many were in this group and for each category; how were they recruited? Who were the ‘public’ since it seems to be dominated by healthcare personnel. What was the added value of having PPI?

Results
Generally clear presentation under 2 main headings. The theme ‘understanding PA behaviour’ might have more resonance with ‘ ‘Drivers of PA Behaviour’ since ‘drivers’ are explicit in the results. Consideration for health status of patients with CF is noted in terms of not emphasising PA within context of lung function – important finding. Sense of personal fulfilment and enjoyment associated with PA is another important finding. Regarding the second these on ‘changing PA Behaviour’ - individualised education is clear. However, enhancing enjoyment and making PA part of everyday life are less clear and seem more like outcomes than ‘techniques’ to promote PA. Under the results for Enhancing enjoyment – a strategy seems to be ‘building intrinsic and extrinsic motivation’. Again, was there any reference to interventions such as ‘brief interventions’ or motivational interviewing.
The findings under ‘making activity normal’ draw to mind ‘social prescribing’ especially the reference to ‘outreach with schools and

	communities'. Later in the discussion, some reference to potential of social prescribing seems merited. A good range of quotations are offered but out of context as presented in Table 1. If permitted by journal convention, some quotes could be integrated into the text in findings section. Discussion The discuss ion does flow from the findings with a critical perspective e.g. the argument that PA should not be 'medicalised' is well made. I would like to see some perspective on motivational interviewing / brief interventions e.g. making every contact count' and whether these strategies may be of value or 'not' based on evidence specific to PA and chronic conditions. Some reference to potential of social prescribing also would add value. The challenges young people face in interacting with peers could be highlighted e.g. Hughes M.et al wrote about this specific to asthma in terms of young people 'accommodating Interruptions' in their daily lives. Strengths and Limitations Line 44 – reference to 'behaviours' does not seem appropriate. ; views only were explored. Consider replacing both 'clinical staff' with 'healthcare professionals'; also, be consistent with the terms used throughout (e.g.' clinicians' also noted in this section). A major limitation is that views of adolescents were not sought – I do not think that recommendations for interventions etc. can be justified without hearing adolescents' perspectives and what would work for them e.g. in overcoming barriers. The need for further research with adolescents is noted in the last sentence but it is not clear that the absence of their voice in this study is a limitation. Typographical Issues Use of apostrophe for plural e.g. patient' (vs patient's) individual needs (abstract). Check use of apostrophe throughout text.

REVIEWER	Anne Stephenson St. Michael's Adult CF Centre, Canada
REVIEW RETURNED	28-Feb-2019

GENERAL COMMENTS	This is a qualitative study exploring the view of the clinical staff from CF multidisciplinary teams on physical activity promotion for adolescents with CF, including the strategies they have used and barriers they have encountered. The authors highlighted importance of targeting patient's intrinsic motivation; and use the self-determination theory to support the idea. This is a well written manuscript; easy to read. Major comments: 1) It appears that authors recognised the physical activity and exercise are different entities (p.6 lines 24 and 54; p.15 line 31, 51; p.20 lines 21, 26) and authors intended to focus on "physical activity" specifically (p.7 lines 11, 18, 31, 36, 46 and others). However, from the quotes from participants it seems they treated physical activity and exercise interchangeably (in fact, most of the quotes talked about exercise, except Table 1 quotes 9 and 11;

	Table 2 quote 3; Table 3 quote 3 – first sentence and quote 12; Table 4 quotes 1-5) and then the authors also talked about them interchangeably (p.11 lines 14, 23; p.12 lines 3; p.15 lines 43, 46). It is questionable if the results of this study are applicable to promotion of physical activity as well as exercise. The authors are recommended to clarify their definitions of physical activity and exercise; but to make to clear that they use the terms interchangeably. For example, p.12 lines 19, 43, when the intensities and duration are specified (i.e. referring to exercise), while the authors used the term “physical activity.” 2) It is unclear what “resources” authors meant when talking about the resources for such an individualized approach were often lacking (p.12, line 53). Does it imply resources from the clinician, e.g. time, skill? Please clarify. 3) Since the study is based on expert opinions, it is important to provide information on the number of years of clinical experience participants have with adolescents with cystic fibrosis. Please provide this information. 4) it was stated they were from across a large geographical area of the UK but there is no information about the span of this area or location beyond being in the UK. Can the authors provide more detailed information in this regard. It speaks to generalizability. 5) The invitation to participate was sent out to all MDTs but the authors do not include how many individuals this included. What is the denominator of the sample? 6) The authors are recommended to change to title of the manuscript to reflect that objectives of this study, i.e. exploring the strategies clinicians recommend to promote physical activity in adolescents with cystic fibrosis. The current title makes it sound as though it is the patients that are the subjects of the study rather than the clinicians. 7) I am struggling with the fact that this evaluation of the patients’ activity is from a third party (i.e. clinicians). It is not entirely clear how accurate the impressions of the MDT are of what the most effective strategies for exercise/PA would be for patients. Somehow it seems that asking the patients themselves would be much more relevant and applicable. Also, the sample size is very small so this limits the generalizability even more. Can the authors strengthen the argument that what the MDT thinks is actually relevant to the patients themselves? Furthermore, they need to consider editing some of the text to make it clear this is the opinion of clinicians and not patients. For example on page 19, lines 21-24, “By providing an additional perspective, we present a more complete picture of the challenges and issues likely to be faced by individuals with CF.” this statement sounds as though it is based on data from patients themselves. I would suggest that the authors re-word the sentences to make sure it is clear that this is based on the opinion of clinicians and not the patients directly. 8) Some of the conclusions might be tempered slightly the study doesn’t actually evaluate or prove that these opinions, if implemented, will actually change patients’ behaviour. For example the statement on page 19 “…our findings highlight the need for clinical staff to focus on the enjoyment element of PA rather than its role in promoting health.” The study hasn’t actually shown that this will increase PA but rather it is the clinicians’ opinion that it might. A study focused on evaluating this specifically is needed to make such conclusions. 9) Given the subjects were MDT members, I was expecting some discussion around barriers to promoting PA and exercise from the team members' perspective i.e. lack of knowledge, lack of time in

	clinic etc etc. It would add to the manuscript to include some of these issues because even if you have a program to implement that will increase PA in patients, it may be difficult to implement in a busy clinic due to time constraints etc. Suggestions around how to overcome such barriers would be useful. Minor comments: 1) Spell out SRQR (p.8 line 14) 2) Spell out MDTs (p.15 line 6) or add a bracket with the abbreviation after multidisciplinary teams on first line of the Abstract (p.2 line 6) 3) Use abbreviation PA instead of physical activity (p.10 line 25; p.12 line 19) 4) P.13 line 43 should read Quote 10 (instead of 11) 5) P.13 lines 50-51 should read Quote 11 (instead of 12) 6) P. 13 lines 56 should read Quote 12 (instead of 13)

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Reviewer Name: Nicole Saxby

Institution and Country: Tasmanian Paediatric Cystic Fibrosis Service, Royal Hobart Hospital, Hobart, Australia

Thank you for the opportunity to review this manuscript - it is well written and I agree that physical activity is an important component of cystic fibrosis care. Overall the quality of this manuscript is good and the discussion section valuable.

Thank you very much for your positive review.

I would have liked more information about the participant characteristics rather than just sex - information about years of experience with working with CF.

We agree this would add value, but unfortunately, we did not collect information on the participant's experience. However, we have added additional information on participant's locations on page 10.

Also, I found the use of the abbreviation of PA frustrating and it would have made things easier to read if the authors had of written physical activity.

Thank you for highlighting this – we have removed this abbreviation throughout.

Reviewer: 2

Reviewer Name: Eileen Savage

Institution and Country: University College Cork, Ireland

This is an interesting paper focusing on the views of health professionals' regarding physical activity (PA) for individuals with cystic fibrosis (CF). Overall, a qualitative exploratory study is appropriate given that little exploration of healthcare professionals perspectives conducted to date.

Thank you for this positive appraisal of our work.

Abstract: Clear overall.

Objective: Consider replacing 'clinical staff' with 'healthcare professionals'.

Thank you – this has been replaced throughout the manuscript.

Design: Suggest removing 'clinical practice' because it implies exploration of practice beyond their perspectives.

Thank you. We have removed the term clinical practice throughout.

Results: Clarify 'health reasons' – does this mean specific to CF.

Thank you. This has been clarified on page 2.

Keywords: Include 'physical activity'

Thank you for this comment. Given that "physical activity" features in the title, we would prefer to have physical inactivity as a key word. We hope that the reviewer is happy with this suggestion.

Article summary: Consider replacing both 'health care providers' and 'participants' with 'healthcare professionals'.

Thank you – this has been replaced throughout.

I think that a key limitation is that it reflects views of healthcare professionals' only and that further exploration from patients themselves is needed.

We agree that consideration of patients' perspectives is needed. A paragraph has been added to this effect on page 24/25.

Introduction: Context for PA is clear with current and relevant literature specific to the merits of PA for individuals with CF. What is missing however is literature/research specific to motivation e.g. what is meant by intrinsic motivation and how can healthcare professionals work with individuals to enhance this. Is there a need to consider interventions such as motivational interviewing or brief interventions such as 'making every contact count'?

Thank you for this comment. We have now inserted two paragraphs on pages 7 and 8 in which we discuss intrinsic motivation and ways in which motivation can be enhanced.

Line 51/52 – clarify if you are referring to the general population, or populations with chronic conditions. The reference citation (#12) relates to CF only and is dates at 2004. Comparisons with general population is appropriate here and so relevant literature is needed to support the claims.

Thank you for this comment. We have clarified that we are referring to both clinical and healthy populations, and added citations to support this claim (Page 7)

Line 59 – be clear that it is decline in PA here.

Thank you – we have clarified that we are referring to decline in physical activity.

Line 18/19 – not clear what is meant by a 'therapeutic tool'.

This term has been removed from page 8.

Design: Be clear that is healthcare professionals from MDTs which is implied in line 9/10.

Thank you – this has been clarified on page 2.

There is a need to include a comment on reflexivity e.g. how might the researchers influenced the data e.g. relating to their own professional backgrounds/other.

Thank you for highlighting this omission. A paragraph has been added into the discussion (Page 24) in which we reflect on how our professional backgrounds could have influenced the data.

Not sure what is meant by ‘Opportunity sampling’ ?/ convenience sampling.

Thank you for highlighting this lack of clarity. We have rephrased this to “convenience sample” throughout the manuscript to reflect that we used indirect recruitment methods whereby a wide population were approached and those who were interested invited to participate.

Consider including a sample of initial interview schedule topics.

We agree that the inclusion of the interview schedule would be useful. This has been included as supplementary material.

PPI is not explicit here but noted later. Reference to telephone interviews here rather than later in the results. How long did interviews last for. Were there any challenges in terms of time especially if conducted during the worktime of participants.

Thank you for this suggestion. We have now stated that interviews were conducted over the telephone. There did not appear to be any issues or challenges in terms of time for the participants, however, the interviewer was flexible in when the interviews took place (e.g., lunch/break times, evenings etc). Participants were informed that interviews would last between 20-40 minutes and asked to identify a suitable time for the interview to take place. None of the participants requested a shorter interview. All participants were very willing to take part in the interviews and did not report having any challenges in terms of time. We have added in a sentence to clarify this on page 10.

The account of Patient and Public Involvement is unclear e.g. what is meant by research portfolio?; how many were in this group and for each category; how were they recruited? Who were the ‘public’ since it seems to be dominated by healthcare personnel. What was the added value of having PPI?

We have removed the term portfolio from this sentence. We have also clarified that our skype calls comprised of six individuals with CF, two parents, two physiotherapists, one technician and one paediatrician (Page 12).

This group were distinct from our research participants and their main role was to inform the direction of the research that we conduct (e.g., what are the important questions that these stakeholders want us to answer). We also asked them to comment on research procedures (interview schedules and participation information sheets). This has been clarified within the manuscript on page 12.

Results

Generally clear presentation under 2 main headings. The theme 'understanding PA behaviour' might have more resonance with ' 'Drivers of PA Behaviour' since 'drivers' are explicit in the results.

Thank you for this suggestion. The title of this theme has now been changed throughout the manuscript.

Consideration for health status of patients with CF is noted in terms of not emphasising PA within context of lung function – important finding.

We agree and have ensured that this finding is highlighted in the conclusions (Page 19).

Sense of personal fulfilment and enjoyment associated with PA is another important finding. Regarding the second theme on 'changing PA Behaviour' - individualised education is clear.

However, enhancing enjoyment and making PA part of everyday life are less clear and seem more like outcomes than 'techniques' to promote PA.

We agree that 'enhancing enjoyment' and 'making activity part of everyday life' are not behaviour change techniques per sae. They may be better considered as interim outcomes (or processes) by which the change techniques lead to changes in physical activity behaviour. In response to this, we now indicate that these sections discuss "approaches used to promote enjoyment" and "approaches used to promote normality of physical activity".

Under the results for Enhancing enjoyment – a strategy seems to be 'building intrinsic and extrinsic motivation'. Again, was there any reference to interventions such as 'brief interventions' or motivational interviewing.

Within the data there were no mention of motivational interviewing or brief interventions or indeed any reference to any of the approaches commonly utilized in motivational interviewing. The reviewer's suggestion of including discussions relating to motivational interviewing is very helpful. We have taken this excellent advice and included a paragraph relating to motivational interviewing both in the introduction (page 6/7) and highlighted the links between Self Determination Theory and motivational interviewing in the conclusion (Page 22/23).

The findings under ‘making activity normal’ draw to mind ‘social prescribing’ especially the reference to ‘outreach with schools and communities’. Later in the discussion, some reference to potential of social prescribing seems merited.

We thank the review for this comment – we agree that social prescribing is an important addition to the manuscript, and a section has been included in the discussion (Page 21/22).

A good range of quotations are offered but out of context as presented in Table 1. If permitted by journal convention, some quotes could be integrated into the text in findings section.

We agree and would prefer that the results are presented within the manuscript text. We will take the advice of the editor regarding whether or not we are permitted to make this change.

Discussion

The discussion does flow from the findings with a critical perspective e.g. the argument that PA should not be ‘medicalised’ is well made. I would like to see some perspective on motivational interviewing / brief interventions e.g. making every contact count’ and whether these strategies may be of value or ‘not’ based on evidence specific to PA and chronic conditions. Some reference to potential of social prescribing also would add value. The challenges young people face in interacting with peers could be highlighted e.g. Hughes M.et al wrote about this specific to asthma in terms of young people ‘accommodating Interruptions’ in their daily lives.

Thank you for this comment. We agree and have now included content relating to motivational interviewing and social prescribing in the discussion (pages 21-23).

Strengths and Limitations

Line 44 – reference to ‘behaviours’ does not seem appropriate. ; views only were explored.

Consider replacing both ‘clinical staff’ with ‘healthcare professionals’; also, be consistent with the terms used throughout (e.g.’ clinicians’ also noted in this section).

Thank you – we have removed the term behaviour from the discussion. In response to this, and a similar comment from reviewer 3, we have replaced the terms ‘clinical staff’ and ‘healthcare providers’ with the term ‘healthcare professionals’ throughout the manuscript (as also suggested by reviewer 1).

A major limitation is that views of adolescents were not sought – I do not think that recommendations for interventions etc. can be justified without hearing adolescents’ perspectives and what would work for them e.g. in overcoming barriers. The need for further research with adolescents is noted in the last sentence but it is not clear that the absence of their voice in this study is a limitation.

We agree entirely with this comment but there must be a ‘stepped process’ to understanding the problem. We believe that physical activity behaviour is best assessed by collecting data from a number of stakeholders, so that multiple perspectives can be explored. We are currently preparing another manuscript in which we do explore the perspectives of young people with CF, but to try to collapse too much information into one manuscript is just not possible, particularly from a qualitative approach. However, the guidelines developed by the Cystic Fibrosis Trust task healthcare professionals with increasing physical activity levels among people with CF; and healthcare professionals are responsible for promoting physical activity to a wide range of individuals on a daily basis. It is therefore crucial that the perspective of healthcare professionals, are explored. We believe that this data will complement the data presented by patients themselves. Indeed, the need to explore the views and opinions of all key stakeholders is widely recognised as being critical to the development of complex (behaviour change) interventions. We have now modified the text to make it clear that the current manuscript is based on the views of healthcare professionals and have emphasised the importance and necessity of obtaining data from more than one perspective on page 24-25 and highlighted the need for additional research with a range of stakeholders prior to interventions being developed (page 19 and 26).

Typographical Issues

Use of apostrophe for plural e.g. patient’ (vs patient’s) individual needs (abstract). Check use of apostrophe throughout text.

We have corrected our use of apostrophes throughout the manuscript.

Reviewer: 3

Reviewer Name: Anne Stephenson

Institution and Country: St. Michael's Adult CF Centre, Canada

Please leave your comments for the authors below

This is a qualitative study exploring the view of the clinical staff from CF multidisciplinary teams on physical activity promotion for adolescents with CF, including the strategies they have used and barriers they have encountered. The authors highlighted importance of targeting patient’s intrinsic motivation; and use the self-determination theory to support the idea. This is a well written manuscript; easy to read.

Thank you for your positive comments and time taken to review our manuscript.

Major comments:

1) It appears that authors recognised the physical activity and exercise are different entities (p.6 lines 24 and 54; p.15 line 31, 51; p.20 lines 21, 26) and authors intended to focus on “physical activity” specifically (p.7 lines 11, 18, 31, 36, 46 and others). However, from the quotes from participants it seems they treated physical activity and exercise interchangeably (in fact, most of the

quotes talked about exercise, except Table 1 quotes 9 and 11; Table 2 quote 3; Table 3 quote 3 – first sentence and quote 12; Table 4 quotes 1-5) and then the authors also talked about them interchangeably (p.11 lines 14, 23; p.12 lines 3; p.15 lines 43, 46). It is questionable if the results of this study are applicable to promotion of physical activity as well as exercise. The authors are recommended to clarify their definitions of physical activity and exercise; but to make to clear that they use the terms interchangeably. For example, p.12 lines 19, 43, when the intensities and duration are specified (i.e. referring to exercise), while the authors used the term “physical activity.”

Thank you for this comment. We agree that whilst we asked participants to discuss the approaches they use to promote physical activity, many referred to exercise in their responses. We have now included a sentence in the methods section (P11) to clarify this.

2) It is unclear what “resources” authors meant when talking about the resources for such an individualized approach were often lacking (p.12, line 53). Does it imply resources from the clinician, e.g. time, skill? Please clarify.

Thank you for this comment. We clarify that we are referring to both time and skill set of clinical staff (Page 16).

3) Since the study is based on expert opinions, it is important to provide information on the number of years of clinical experience participants have with adolescents with cystic fibrosis. Please provide this information.

Thank you for this comment. Whilst we agree this is a valid point, unfortunately we did not collect information on the number of years of clinical experience the participants had in order to maintain anonymity as much as possible, in hindsight it would have been better to collect this information. We have therefore added this as a limitation within the discussion on Page 24. However, we should emphasize that we do not use the phrase ‘expert’ regarding their opinions, we acknowledge that the health care professionals are becoming the experts in CF care, but how their experiences translate into their opinions regarding physical activity is of course part of the research question. We should not infer by default that they are therefore ‘experts’ in physical activity.

4) it was stated they were from across a large geographical area of the UK but there is no information about the span of this area or location beyond being in the UK. Can the authors provide more detailed information in this regard. It speaks to generalizability.

Thank you, a sentence has been added to clarify that the participants were recruited from 8 clinics across England and 2 clinics in Scotland. We are reluctant to provide information about the specific locations of each participant as this could mean that participants from smaller centres are identifiable (page 10).

5) The invitation to participate was sent out to all MDTs but the authors do not include how many individuals this included. What is the denominator of the sample?

As qualitative researchers, we do not attempt to suggest that our results are generalizable. We prefer to consider the transferability or applicability of our research. We believe we have presented sufficient data to allow readers to assess this. It is unclear how many participants received the invitation – as many people on the distribution list would have been in charge of forwarding the email to other relevant members of their teams. Whilst we acknowledge that the participation rate is important for quantitative research, we do not believe that it is appropriate for qualitative research[1, 2].

6) The authors are recommended to change to title of the manuscript to reflect that objectives of this study, i.e. exploring the strategies clinicians recommend to promote physical activity in adolescents with cystic fibrosis. The current title makes it sound as though it is the patients that are the subjects of the study rather than the clinicians.

Thank you for this suggestion. We have changed the title to better reflect the content of the manuscript. The title now reads “Enhancing Intrinsic Motivation for Physical Activity among Adolescents with Cystic Fibrosis: A Qualitative Study of the views of Healthcare Professionals”

7) I am struggling with the fact that this evaluation of the patients’ activity is from a third party (i.e. clinicians). It is not entirely clear how accurate the impressions of the MDT are of what the most effective strategies for exercise/PA would be for patients. Somehow it seems that asking the patients themselves would be much more relevant and applicable. Also, the sample size is very small so this limits the generalizability even more. Can the authors strengthen the argument that what the MDT thinks is actually relevant to the patients themselves? Furthermore, they need to consider editing some of the text to make it clear this is the opinion of clinicians and not patients. For example on page 19, lines 21-24, “By providing an additional perspective, we present a more complete picture of the challenges and issues likely to be faced by individuals with CF.” this statement sounds as though it is based on data from patients themselves. I would suggest that the authors re-word the sentences to make sure it is clear that this is based on the opinion of clinicians and not the patients directly.

Thank you very much for this comment. We believe that physical activity behaviour is best assessed by collecting data from a number of stakeholders, so that multiple perspectives can be explored. We are currently in the process of writing a manuscript in which the views of patients are presented. However, the guidelines developed by the Cystic Fibrosis Trust task healthcare professionals with increasing physical activity levels among people with CF[3]; and healthcare professionals are responsible for promoting physical activity to a wide range of individuals on a daily basis. It is therefore crucial that the perspective of healthcare professionals, are explored. We believe that this data will complement the data presented by patients themselves. Indeed, the need to explore the views and opinions of all key stakeholders is widely recognised as being critical to the development of complex (behaviour change) interventions [4-6]. We have now modified the text to make it clear that the current manuscript is based on the views of healthcare professionals and have emphasised the importance and necessity of obtaining data from more than one perspective on page 24-25.

As stated above, we do not make claims about the generalisability of our research as this is not an aim of qualitative research [1, 2, 7-9]. Whilst we accept that a sample size of 15 may be considered small for a quantitative study, qualitative research is more concerned with the quality and quantity of data produced; with each single interview generating a substantial amount of data [8-10]. It is common for qualitative studies to include less than 10 participants.

8) Some of the conclusions might be tempered slightly the study doesn't actually evaluate or prove that these opinions, if implemented, will actually change patients' behaviour. For example the statement on page 19 "…our findings highlight the need for clinical staff to focus on the enjoyment element of PA rather than its role in promoting health." The study hasn't actually shown that this will increase PA but rather it is the clinicians' opinion that it might. A study focused on evaluating this specifically is needed to make such conclusions.

Thank you for highlighting this. We agree entirely that qualitative research should not make claims about the effectiveness of strategies. We have modified the text to clarify that our research is exploratory, from which research exploring the effectiveness of such strategies should be undertaken (page 25-26).

9) Given the subjects were MDT members, I was expecting some discussion around barriers to promoting PA and exercise from the team members' perspective i.e. lack of knowledge, lack of time in clinic etc etc. It would add to the manuscript to include some of these issues because even if you have a program to implement that will increase PA in patients, it may be difficult to implement in a busy clinic due to time constraints etc. Suggestions around how to overcome such barriers would be useful.

Thank you for this comment. That this important issue has received considerable research attention (e.g., [11-14]). It was therefore not considered sufficiently novel to include here. We would like to direct the reviewer to these other papers.

Minor comments:

1) Spell out SRQR (p.8 line 14)

Thank you – we have now provided the full text for this.

2) Spell out MDTs (p.15 line 6) or add a bracket with the abbreviation after multidisciplinary teams on first line of the Abstract (p.2 line 6)

Thank you – we have now replaced the acronym with the full text.

3) Use abbreviation PA instead of physical activity (p.10 line 25; p.12 line 19)

Thank you for highlighting this. In response to a comment from reviewer 2, we have consistently used the term “physical activity” in full throughout the manuscript. We assume that reviewer 3 was highlighting the inconsistency in our use of the term. If however, the reviewer would prefer us to use the term PA, we will consider this change.

4) P.13 line 43 should read Quote 10 (instead of 11)

Thank you for highlighting this. We have now amended this typographical error.

5) P.13 lines 50-51 should read Quote 11 (instead of 12)

Thank you for highlighting this. We have now amended this typographical error.

6) P. 13 lines 56 should read Quote 12 (instead of 13)

Thank you for highlighting this. We have now amended this typographical error.

1. Mays, N. and C. Pope, Assessing quality in qualitative research. BMJ Open, 2000. 320.

2. Yardley, L., Dilemmas in qualitative health research. Psychology & Health, 2000. 15(2): p. 215-228.

3. Cystic Fibrosis Trust., Standards of care and good clinical practice for the physiotherapy management of cystic fibrosis. Third edition. 2017, The Cystic Fibrosis Trust.

4. Craig, P., et al., Developing and evaluating complex interventions: Reflections on the 2008 MRC guidance. International Journal of Nursing Studies, 2013. 50(5): p. 585-592.

5. Bartholomew, L., et al., Intervention mapping step 1: Needs assessment. Planning Health Promofion Programs: An Intervenfion Mapping Approach, 2011.

6. Moore, G., et al., Process evaluations of complex interventions: Medical Research Countil guidance BMJ Open, 2015. 350.

7. Krefting, L., Rigor in Qualitative Research: The Assessment of Trustworthiness. The American Journal of Occupational Therapy, 1991. 45(3).

8. Murphy, E., et al., Qualitative research methods in health technology assessment: a review of the literature. Health Technology Assessment (Winchester, England). 2(16): p. iii-ix.

9. Kuper, A., L. Lingard, and W. Levison, Critically appraising qualitative research. BMJ 2008. 336.

10. Miles, M.B., & Huberman, A.M, Qualitative Data Analysis: An expanded source book, 2nd edition 1994, Thousand Oaks: Sage Publications

11. Wilkes, D.L.S., J.E; Nguyen, T; Heale, L; Moola, F; Ratjen, F; Coates, A.L; Wells, G.D., Exercise and physical activity in children with cystic fibrosis Pediatric Respiritory Review, 2009. 10(3): p. 105-9.

12. Cooper, P.J. and P.P. Van Asperen, Randomised controlled study of in-hospital exercise training programs in children with cystic fibrosis. Pediatr Pulmonol, 2002. 33.

13. Denford S; MackIntosh K; McNarry M, B.A., Williams C, Promotion of physical activity for adolescents with cystic fibrosis: A qualitative study of UK multi-disciplinary cystic fibrosis teams. Physiotherapy 2019.

14. Tomlinson, O.S., J; Denford, S; Barker, A; Oades, P; Williams, C, Promotion of exercise in the management of cystic fibrosis – Summary of national meetings. European Journal for Person Centered Healthcare, 2018.

VERSION 2 – REVIEW

REVIEWER	Eileen Savage University College Cork Ireland
REVIEW RETURNED	22-Apr-2019

GENERAL COMMENTS	Enhancing Intrinsic Motivation for Physical Activity among Adolescents with Cystic Fibrosis: A Qualitative Study of the views of Healthcare Professionals Thank you for revising this interesting paper. The revisions have greatly strengthened the paper. Revised title much clearer now. This is an interesting paper focusing on the views of health professionals' regarding physical activity (PA) for individuals with cystic fibrosis (CF). Overall, a qualitative exploratory study is appropriate given that little exploration of healthcare professionals perspectives conducted to date. Abstract: Clear overall, strengthened by revisions Keywords: Include 'physical activity' rather than physical inactivity. Article summary: Revisions noted and acceptable Introduction: Self-determination theory is now introduced, focusing on motivation. This is a welcome revision since the first submission just mentioned motivation with little clarification on relevance to this study and physical activity behaviours. Overall, the introduction is much stronger now and also very interesting to read. Design: Revisions address my comments on first submission. PPI now explicit. Reads well and is clear.

	There is a need to include a comment on reflexivity e.g. how might the researchers influenced the data e.g. relating to their own professional backgrounds/other. Results Minor revisions noted. Reads well. Discussion. The addition of social prescribing makes for a very interesting read. The discuss ion does flow from the findings with a critical perspective e.g. the argument that PA should not be 'medicalised' is well made. I would like to see some perspective on motivational interviewing / brief interventions e.g. making every contact count' and whether these strategies may be of value or 'not' based on evidence specific to PA and chronic conditions. Some reference to potential of social prescribing also would add value. The challenges young people face in interacting with peers could be highlighted e.g. Hughes M.et al wrote about this specific to asthma in terms of young people 'accommodating Interruptions' in their daily lives. Strengths and Limitations The need for further research with adolescents is now much stronger in the revised manuscript.

REVIEWER	Anne Stephenson Canada
REVIEW RETURNED	08-Apr-2019

GENERAL COMMENTS	The authors have addressed this reviewer's comments adequately. The revisions have improved the manuscript.

VERSION 2 – AUTHOR RESPONSE

Reviewer: 3

Reviewer Name: Anne Stephenson

The authors have addressed this reviewer's comments adequately. The revisions have improved the manuscript.

Thank you very much for this comment and ongoing support.

Reviewer: 2

Reviewer Name: Eileen Savage

Enhancing Intrinsic Motivation for Physical Activity among Adolescents with Cystic Fibrosis: A Qualitative Study of the views of Healthcare Professionals

Thank you for revising this interesting paper. The revisions have greatly strengthened the paper.

Thank you for this comment and support. We agree that the support from the editor and reviewers has greatly strengthened our manuscript.

Revised title much clearer now.

This is an interesting paper focusing on the views of health professionals' regarding physical activity (PA) for individuals with cystic fibrosis (CF). Overall, a qualitative exploratory study is appropriate given that little exploration of healthcare professionals perspectives conducted to date.

Thank you for this positive review of the paper.

Abstract: Clear overall, strengthened by revisions

Thank you – we agree with the reviewer that the abstract is strengthened by the revisions.

Keywords: Include 'physical activity' rather than physical inactivity.

Thank you for this suggestion. Our decision to use the keyword "physical inactivity" rather than "physical activity" was based on our desire to increase the number of search terms that would identify the paper. As the title contains the term "physical activity" we wanted to avoid duplication of this term.

Article summary: Revisions noted and acceptable

Introduction: Self-determination theory is now introduced, focusing on motivation. This is a welcome revision since the first submission just mentioned motivation with little clarification on relevance to this study and physical activity behaviours. Overall, the introduction is much stronger now and also very interesting to read.

Design: Revisions address my comments on first submission. PPI now explicit. Reads well and is clear.

Thank you for these positive comments.

There is a need to include a comment on reflexivity e.g. how might the researchers influenced the data e.g. relating to their own professional backgrounds/other.

Thank you for this comment, we have now included a statement on page 21 stating that:

“The research team comprises of researchers from multiple disciplines and therefore variable experience in qualitative research. We acknowledge that our role in the research process will have influenced the direction of the research in terms of the questions we asked, our expectations and, at least in part, the interpretation of the data. Whilst the perspective brought to the design and analysis is largely psychological and may have been influenced by the lead author’s prior training in health psychology, every effort was made to enhance the trustworthiness of the present study. This included multiple coders (from multiple disciplines), the keeping of a reflective diary, and respondent validation. Findings were also triangulated with the existing literature and healthcare professionals were asked to validate our findings. It is, however, possible that researchers with different experiences and expectations may have reached different conclusions.”

Results   Minor revisions noted. Reads well.

Discussion. The addition of social prescribing makes for a very interesting read. The discuss ion does flow from the findings with a critical perspective e.g. the argument that PA should not be ‘medicalised’ is well made.

Thank you for this positive comment.

I would like to see some perspective on motivational interviewing / brief interventions e.g. making every contact count’ and whether these strategies may be of value or ‘not’ based on evidence specific to PA and chronic conditions.   Some reference to potential of social prescribing also would add value.

Thank you for this comment. We have now included a sentence on page 21 of the discussion stating:

““There is emerging evidence that social prescribing may lead to improvements in quality of life and emotional wellbeing. Indeed, social prescribing may be particularly relevant for young people with CF who are aiming to exercise for benefits that reach beyond lung function. Further research exploring the potential of social prescribing for increasing physical activity among young people with CF is therefore required…

The finding that clinicians are using self-determination theory and motivational interviewing, albeit unknowingly, to change physical activity behaviour strongly supports the development of an intervention underpinned by self determination theory. Moreover, incorporating elements of motivational interviewing may be effective in promoting physical activity for this audience. Existing research highlights the evidence for the effectiveness of interventions using motivational interviewing to promote physical activity among other clinical populations. Indeed, in the National Institute of Health and Care Excellence’s guidance for “making every contact count, they recommend that all healthcare professionals should be encouraged to deliver brief advice to motivate individuals for physical activity. It is therefore a potentially useful approach for motivating physical activity among people with CF."

The challenges young people face in interacting with peers could be highlighted e.g. Hughes M.et al wrote about this specific to asthma in terms of young people 'accommodating Interruptions' in their daily lives.

Thank you for this comment. We agree that this is a very interesting paper and very relevant to this work (and our ongoing work with adolescents with CF). We have now included the following paragraph on page 18:

"Whilst healthcare professionals may view some young people as lacking motivation for physical activity, previous qualitative research suggests that adolescents are often very active in managing their behaviours. Indeed, Hughes et al. highlighted the challenges faced by young people living with chronic conditions when attempting to live their lives, and how young people struggle to accommodate these interruptions. The role of moderating influences (e.g., parents and healthcare professionals) in supporting the young person to develop behaviours to manage their illness alongside their everyday life is highlighted, alongside the need to develop interventions tailored to the needs and circumstances of individuals."

Strengths and Limitations

The need for further research with adolescents is now much stronger in the revised manuscript.

Thank you. We appreciate the time taken to re-review our paper.