**Author’s response to reviews**

**Title:** Long-term members' use of fitness centers: a qualitative study

**Authors:**

Liv Riseth (liv.riseth@ntnu.no)

Torunn Nøst (torunn.h.nost@ntnu.no)

Tom Nilsen (tom.nilsen@ntnu.no)

Aslak Steinsbekk (aslak.steinsbekk@ntnu.no)

**Version:** 1  **Date:** 10 Jun 2018

**Author’s response to reviews:**

Structure on our response to the questions and comments from reviewers: Comments and questions from reviewers are copied into the document with highlighted font. Our changes to the document and some comments will be followed by a heading that is highlighted and underlined, if applicable, the line number will be in front of the changes made to the document.

Reviewer1:

Abstract

This study is quite novel and aims to understand the reasons why long-term users of fitness centers are physically active through these centres. The authors state that the rationale is that if people are committed and maintaining their physical activity for at least 2 years then we could learn about these people specifically. However the authors do not articulate how this information of 'maintainers' of physical activity through fitness centers could more broadly be applied within the physical activity context.

The following is added to the document:

L78: Long-term members are especially an interesting group as they might have found a way to use the fitness center to achieve their goals for physical activity at the fitness center over time.

L348: The factors identified in this study are based on experiences from long-term members who have chosen to continue as a member for an extended period and naturally are quite satisfied with the fitness center as an arena for physical activity. However, the factors identified are most likely quite similar for all members regardless of membership duration [26]. It is also possible
that the identified factors might provide knowledge of important factors generally to maintain physical activity over time.

Overall this is a well written paper.

I feel that the authors could expand in two main areas. Firstly, the introduction is very short, and the manuscript would benefit from further discussion of the previous literature. Secondly, I think that the authors could be broader in their recommendations, in the context of getting more people active through fitness centers.

The following is added to the document:

A longer introduction based on the comments from reviewer are added to the document. In the discussion we added some key things from the results, which had not been highlighted or discussed in a connected manner. The comments from the reviewer made us go through the results and reflect on how deeply we can go in relation to recommendations in the conclusion, this without attributing the results too much.

How could the findings of this study be used?

The following is added to the document:

L348: The factors identified in this study are based on experiences from long-term members who have chosen to continue as a member for an extended period and naturally are quite satisfied with the fitness center as an arena for physical activity. However, the factors identified are most likely quite similar for all members regardless of membership duration [26]. It is also possible that the identified factors might provide knowledge of important factors generally to maintain physical activity over time.

L378: In a public health perspective, the findings in this study points to commitment and having access to safe and easily accessible arenas for physical activity might be a driver for physical activity maintenance.

Further research is required to quantify the knowledge from this study, and it is also a need to measure effects of various interventions important for membership use and maintenance.

What is the rationale for definition of a long term member of 2 years?

The following is added to the abstract:

L109: who had been a paying member for more than two years continuously (to avoid the large proportion terminating their membership after the obligatory one-year contract)
What is the theoretical framework underpinning this investigation?

The following is added to the abstract:

There was no theoretical framework underpinning this investigation.

If word limits permit I suggest adding where and when this study was conducted into the Abstract.

The following is added to the abstract:

L30: long-term fitness center members in Trondheim, a city in Central Norway with approximately 190 000 inhabitants

I think the conclusion could be improved. Of course long-term users are going to think that the facilities are good and fulfilling their needs. I encourage the authors to think more broadly about recommendations. What learnings can be gained from this study to try and engage more people within fitness centres and/or get those new people to maintain their involvement?

The following is added to the abstract:

L43: Achieving desired health benefits and improving physical appearance was the main drivers for long-term members use of the fitness center. The fitness center was preferred due to the comforts of the facilities and the possibility to commit to specific exercise times and activities.

Introduction

- The Introduction is too short.

The following is added to the document:

A longer introduction based on the comments from reviewer are added to the document.

L49 The authors state a few of the barriers to participation in physical activity. These include, accessibility, weather and social support. There are many more barriers to participation and this should be acknowledged.

The following is added to the document:
and includes many different psychological components such as habits [12, 13], planning [14-16], perceived behavioral control [17], motivation [18], physical activity identity [17], personality [19], and self-efficacy [16, 17].

It is stated that there has been an increase in participation. Please show evidence of this, for example an increase from % to %.

The following is added to the document:

Statistics show a steady increase in attendance at private fitness centers in European countries and the number of members was 56.4 million at the end of 2016, which was an increase of 4.4% from the previous year [24].

What is meant by 'ordinary' members of fitness centers?

Therefore, it is important to gain in depth knowledge about ordinary members (paying a monthly membership fee) of fitness centers.

Is there any more research about use of facilities including age and/or gender breakdowns or frequency of use. The Introduction could benefit from a deeper discussion of the literature in this area and This section would benefit from greater discussion of the findings within these studies.

Specifically what are the findings that are different between settings (fitness centers compared to sports clubs)?

Former studies among fitness center members have focused on reasons to become a member and maintain [25, 26] and highlight motivational differences between fitness center and sports club members, e.g. sports club members are reported to be more motivated by competition, pleasure and social factors and being less concerned with appearance than fitness center members [21, 27, 28]. It has also been found that women report a slightly higher desire for wellness, well-trained body and weight loss than men and men report desire for improved physical fitness [22, 25, 27, 29, 30].

Although a large proportion of the population is member of a fitness center, research on exercise behavior of members in fitness centers is limited in quantity and quality [31]. Therefore, it is important to gain in depth knowledge of ordinary members (paying regular membership fee). Long-term members are especially an interesting group as they might have found a way to use
the fitness center to achieve their goals for physical activity at the fitness center over time. However, we have not found any studies focusing exclusively on long-term members.

Methods

L103 Please provide more information regarding the development of the questions. What theoretical perspectives/frameworks were used? Also provide more information regarding the literature that guided the discussions.

The following is added to the document:

There was no theoretical framework underpinning this investigation.

L129: An interview guide with open-ended questions was developed by the first author, based on former literature about fitness center use, goal achievement and motivation [26, 29, 31, 33, 34], as well as discussions among the authors and a research group three of the authors belongs to.

Results

L221 What is meant by ‘studying other participants’?

The following is added to the document:

L259: be in a group with others

It would have been useful to have some information on the cost of membership and/or classes etc? Are fitness centers conducive to wider population use or are they too expensive for some/many?

The following is added to the document:

L99: A membership in this fitness center chain has a cost of 350-550 NOK (35-50 EUR) a month and to become a member one has to sign a one-year contract. Where after one can terminate the contract 1 month after giving notice

Discussion
In general, the discussion highlights one main finding per paragraph, and then discusses how this result is reflected in other literature. I think the authors could go deeper and try to construct various themes together. For example, I took a couple of key things from the results, which are not discussed in a connected manner.

- People who were active at fitness centers still had barriers of time and energy, however, the commitment of classes and money assisted to overcome these barriers and remain committed.

- Social interactions was a benefit of participation and this was also linked to classes and coffee shops.

- There are differences of motivations to participate for those who are individual focused compared to those more group/class and socially focused.

As the reviewer points out, we have chosen to discuss one by one theme, although several of the themes may be seen and discussed in context. We still have chosen to discuss each topic separately. But comments from reviewer made us go through the results and reflect, which led to some changes and additions in the discussion. In particular, the feedback about the fitness centers responsibility in terms of overtraining and eating disorders led to reflection, discussions and literature searches. Since the Norwegian main enterprise federation for fitness centers has made guidelines for the fitness centers to deal with this, we chose to deepen the theme about appearance.

In the discussion we added some key things from the results, which had not been highlighted or discussed in a connected manner.

L320: Like pre-booking an activity, binding agreement with others or payment was said to be the pressure needed to visit the fitness center.

L328: Social interaction. Informants reported benefits from both social support from employees, group classes and other members, but also the possibility to be in a social setting.

L346: Safe and easily

What are the key learnings from this study that can help inform strategies to either maintain participation for those early adopters to fitness centers, or secondly get people active through fitness centers?

The following is added to the document:

L348: The factors identified in this study are based on experiences from long-term members who have chosen to continue as a member for an extended period and naturally are quite satisfied with the fitness center as an arena for physical activity. However, the factors identified are most likely quite similar for all members regardless of membership duration [26]. It is also possible
that the identified factors might provide knowledge of important factors generally to maintain physical activity over time.

L378: In a public health perspective, the findings in this study points to commitment and having access to safe and easily accessible arenas for physical activity might be a driver for physical activity maintenance.

Further research is required to quantify the knowledge from this study, and it is also a need to measure effects of various interventions important for membership use and maintenance.

L262 Less concerned that what/who?

L305: One study have found this to be the case, with members of sports clubs being less concerned with appearance than fitness center members [27].

L262-265 The authors point out that people in fitness centers were more focused on appearance than those playing sports. Could this be related to fitness centers being an individual activity (mainly) and sports clubs a team environment?

L267 I don't really think it is the fitness centers that need to be aware of people focusing on physical appearance? How would this help? Perhaps individuals who are focusing on appearance are more inclined to go to fitness centers however those who want competition, and/or team and social environment play sports.

The following is added to the document:

L309: It may be positive with focus on looks among fitness center members if it leads to a physically active lifestyle. However, for some the focus on appearance might lead to a negative attitude towards oneself and exaggerates the amount of exercise [40-42]. It is therefore reasonable to question whether fitness centers should focus on appearance when marketing and promoting activities at the fitness centers. In Norway the main enterprise federation for fitness centers encourage fitness centers to be aware of the risk of excessive exercise in relation to disordered eating among fitness center members.

Conclusion

It states that this study highlights how to get fitness center users 'more regularly physically active'? I'm not sure that I really agree with this as a conclusion. The study didn't investigate frequency of physical activity. Of course the long-term users would find the centers accessible and welcoming environments, that is why they are committed. The conclusion would be stronger if it highlighted clearer recommendations based upon these findings. What can be recommended to increase and maintain participation in physical activity through fitness centers?
L370: This study indicates that the main drivers for the use of fitness center for long-term members is to achieve desired health benefits and improve physical appearance. The prominent factors for using the fitness center was the comforts of the facilities, the ability to commit to exercise through fixed times for group activities, bookings, payments and training agreements. Female members also valued the fitness center as a safe place for physical activity. Still, being physical active to the degree oneself wants is challenging also for some long-term members.

In a public health perspective, the findings in this study points to commitment and having access to safe and easily accessible arenas for physical activity might be a driver for physical activity maintenance.

Further research is required to quantify the knowledge from this study, and it is also a need to measure effects of various interventions important for membership use and maintenance.

Reviewer 2:

The was a qualitative observational study exploring potential reasons for individuals maintaining long-term fitness club membership and potential predictors of commercial fitness center use. The authors suggest that the need for this information is that few studies have been done on "ordinary" fitness center members and it is important to explore what people see as the motives for maintaining membership and factors that may influence membership and use. This topic is of interest, however the size and rigor of the study suggest that it would be more suited to be reported as a pilot investigation.

The following is an explanation regarding study size:

This was a qualitative study and requirements of sample size in qualitative methods differs from quantitative research. Information power or saturation are often used as an indicator for number of participants needed in qualitative method. Although, in future research we recommend quantitative studies with a larger sample to measure the findings from this study.

Specific comments follow.

1. Participant selection: Their study sample seems like a convenience sample and not a true random sample. The authors report using 8 out of 12 fitness centers belonging to the 3T chain of establishments in Trondheim. They also report that there are 34,000 members of this club in the city. Their sample size was 21 individuals across 8 clubs. They did not provide demographic information about how well their sample represents the larger population of 34,000 members, or even the total number of members that have been active for >2 years. In addition, on line 90 it says that they "sought to get variation in gender, age and use of activities and frequency of
visits." Yet, on line 92 it says that participants who met the age and membership criteria were randomly selected, with no mention of recruitment to fill particular strata for gender, age, activities or visits. Thus, it is not clear what criteria were used in informant selection. Therefore, it is hard to conclude that their sample represents "ordinary" fitness center members. It would also be helpful to define what they mean by "ordinary".

The following is added to the document:

L437: Table 2 Demographic characteristics of informants and members at the fitness centers who have been continuous members for at least two years. * All paying members from November 2014 to November 2016 at 3T-Fitness center

L115: To recruit informants, first 24 members who met the inclusion criteria, were randomly selected from the membership register. These received a letter or an email with information about the study and a request to participate.

L120: To include experiences with these services, additionally eight informants

L77: Therefore, it is important to gain in depth knowledge of ordinary members (paying regular membership fee).

L109: The inclusion criteria were members older than 18 years who had been a paying member for more than two years continuously (to avoid the large proportion terminating their membership after the obligatory one-year contract) at one of the eight 3T- fitness centers in Trondheim. We sought to get variation in gender, age, use of activities and frequency of visits.

2. On line 103 it says an interview guide was developed in part based on literature, yet there is no literature cited pertaining to this design element.

The following is an explanation regarding study size:

L129: An interview guide with open-ended questions was developed by the first author, based on former literature about fitness center use, goal achievement and motivation [26, 29, 31, 33, 34], as well as discussions among the authors and a research group three of the authors belongs to.

3. The authors describe their STC process as a series of meetings designed to select meaning units that were then coded and sorted into groups. This process is not well described, e.g., by giving examples of meaning units, code groups, etc. Given the subjective nature of this work, it would be helpful for the reader to understand more about how the participant responses were coded and categorized. Also, what was the nature of the data that did not fit into theme areas? Were there responses that provided additional insight into members' motivations that were not included because they did not fit a thematic area?
The following is an explanation regarding STCs:

In Table 1 there is an illustration of the steps and examples of meaning units, code groups and final themes. Analytical choices were done using STC as an analytical tool. Data that did not fit into the final theme areas was not related to the aim. The responses that provided insight into what members ‘wanted to achieve with their membership and important factors for using the fitness center as a mean for physical activity was included. In order to assure this, the result was checked against transcripts at the end of the analysis.

L144: The STC process and how the participant responses were coded and categorized are illustrated in table 1.

4. On lines 129-133 the authors describe analyzing data from the first 13 participants and then modifying the process for the final eight, yet data from all 21 subjects was used in the final analysis. How was this handled analytically given that the data were collected using two different protocols or discussion guides?

The following is an explanation regarding analysis:

L162: This was done because analysing the data stepwise may contribute to systematic improvement of data collection, facilitate reflection and reduce number of informants needed [37, 39].

5. Was any attempt made to quantify the number of responses of the 21 people that fit into the theme or coded areas?, i.e., for any given response, how many of the 21 people mentioned it? It is difficult to interpret how important the responses are without some understanding of how frequently they were mentioned. Might they consider a frequency distribution chart of some type?

The following is an explanation regarding no attempt quantifying categories:

No, attempt to quantify the number of responses. However, we recommend this to be done in quantitative studies in future research.

L382: Further research is required to quantify the knowledge from this study, and it is also a need to measure effects of various interventions important for membership use and maintenance.

6. Since there is no control group for comparison (e.g., people who have not been members for >2 years) the factors identified may or may not be unique to individuals who are long term members of a fitness center. Given this, what can the authors conclude about what new insights come from this data that can be practically applied to improving physical activity in the
population? Their conclusions, although with limited data, seem straightforward, and it would be surprising if existing commercial fitness clubs were not already focusing their messaging on health, appearance and amenities that make clubs a good place to go for physical activity.

The following is added to the document:

L348: The factors identified in this study are based on experiences from long-term members who have chosen to continue as a member for an extended period and naturally are quite satisfied with the fitness center as an arena for physical activity. However, the factors identified are most likely quite similar for all members regardless of membership duration [26]. It is also possible that the identified factors might provide knowledge of important factors generally to maintain physical activity over time.

L370: This study indicates that the main drivers for the use of fitness center for long-term members is to achieve desired health benefits and improve physical appearance. The prominent factors for using the fitness center was the comforts of the facilities, the ability to commit to exercise through fixed times for group activities, bookings, payments and training agreements. Female members also valued the fitness center as a safe place for physical activity. Still, being physically active to the degree oneself wants is challenging also for some long-term members.

In a public health perspective, the findings in this study points to commitment and having access to safe and easily accessible arenas for physical activity might be a driver for physical activity maintenance.

Further research is required to quantify the knowledge from this study, and it is also a need to measure effects of various interventions important for membership use and maintenance.

7. Given the convenience population studied and the relatively small sample size, what would the authors suggest as further studies needed to better describe a representative population of long term users, add a comparison group, etc.?

L378: In a public health perspective, the findings in this study points to commitment and having access to safe and easily accessible arenas for physical activity might be a driver for physical activity maintenance.

Further research is required to quantify the knowledge from this study, and it is also a need to measure effects of various interventions important for membership use and maintenance.