Reviewer’s report

Title: Controlled, cross-sectional, multi-center study of physical capacity and associated factors in women with fibromyalgia.

Version: 0 Date: 14 Dec 2017

Reviewer: Ellen Marie Bardal

Reviewer's report:
The authors aim to assess to which degree physical capacity is reduced in women with fibromyalgia compared to healthy controls. Further, they want to investigate if physical capacity is associated with age, symptom duration, walking ability, activity limitations and BMI in women with FM. The FM group and healthy group are matched on age and education level. Both groups performed 3 different isometric strength tests and a 6MWT. Additionally, disease-related and activity-related information were reported subjectively. They found reduced muscle strength and walking ability in the FM group compared to the healthy group. They found that muscle strength in the FM group was statistical significant, but relatively weekly correlated with symptom duration and walking ability. They explain their results with reduced physical activity level and suggest that interventions should be targeted to prevent reduction in muscle strength. In general, this paper is built on a nice dataset which might provide valuable background information for future interventions in the FM group. However, there are numerous issues that need to be addressed before the paper is considered for publication.

General comments:
It is unclear whether you wish to investigate muscle strength or physical capacity. In some aspects of the paper physical capacity and muscle strength are used as synonyms, while in other parts of the paper walking ability is included in the term. You need to clarify what you mean by physical capacity and use it consistently throughout the paper.

Here are some examples:
The first aim of the study is to investigate to what degree physical capacity is reduced in women with fibromyalgia. In the introduction physical capacity is defined as "…..aerobic capacity,
muscle strength, flexibility and balance". However only muscle strength is further presented in the introduction. And in the result section strength and endurance is presented as aerobic capacity. The second aim is to "….investigate whether physical capacity is associated with age, symptom duration, walking ability, activity limitations and Body Mass Index (BMI) in women with FM." Walking ability is evaluated by a 6MWT. In the method section it is stated that "…The 6MWT is considered a useful representation of physical capacity and endurance in daily life". According to this aim you want to look at the association between physical capacity and physical capacity….

Effect of physical activity level
In the introduction it is suggested that the reduced physical activity level might contribute to reduced muscle strength in women with FM (P6 :L2). You also try to explain your result with reduced activity (P15, L12). Physical activity level is reported in the present study, but only descriptively. You make repeated assumptions about the role of physical activity level, without doing the proper analysis. Since physical activity level data is available, it should be controlled for when comparing physical capacity between FM and healthy women.

Language
The language is at times a bit cumbersome. I recommend that you arrange for your manuscript to be evaluated by someone with English as their native language.

Specific comments:
Introduction:
1. The introduction is quite wordy and should be written more efficiently. Example: (P5L21-23)
   "…Physical capacity refers to aerobic capacity, muscle strength, flexibility and balance and influences the ability to manage tasks of everyday living [11]. One aspect of physical capacity is muscle strength…".
2. Your presentation of the literature on muscle strength in FM is one-sided. You should also mention that there are studies finding normal muscle strength in the FM population.
3. I find that the 3rd paragraph on page 6 (L19-36) does not contribute to the story you trying to tell in the introduction. For instance, as sarcopenia is often related to frailty and the elderly population, I think that including sarcopenia in this present study is redundant.

Methods:
1. In the methods you report that potential participants were excluded if they had other concomitant diseases. As the FM populations often have several health related problems, you might have a biased sample. If you excluded specific diseases (e.g. cardiovascular diseases, cancers…. ) please specify in the text. Further, what were the exclusion criteria for the healthy women?
2. Your matching procedure is unclear.
3. The paragraph on "Measures of physical capacity" (P9) is very long and quite repetitive. This should be written more efficiently.
4. At page 10, line 2: please specify the length of the walkway.
5. Please justify the choice of including both mean (SD) and median(min:max) in your descriptive statistics.

Results
1. See general comments…Effect of physical activity
2. Reporting of activity limitations. There is an inconsistency between the method and result section regarding assessment of activity limitations. In the methods it is stated that activity limitations was assessed by SF-36, while in table 1 FIQ score is reported.
3. Why do you choose to report Isometric elbow-flexion force in kg, while the other strength outcomes are in N? Force is also measured in N (not kg), and it would read better if all strength variables were represented in the same unit.

Discussion
1. See general comments
2. The information in first paragraph of page 15 is already stated in the introduction
3. In the 4th paragraph at page 16 (L.51-) you compare your healthy group with reference data. I think it would be more interesting to compare your FM group with the reference data.
4. You continue your discussion in the conclusion. Please keep the conclusion short and concise.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.
No

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.
Yes

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.
Yes

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.
Not relevant to this manuscript

**Quality of written English**
Please indicate the quality of language in the manuscript:
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