Reviewer's report

Title: Habitual exercise with dietary milk fat globule membrane supplementation improves skeletal muscle performance in healthy adults: a randomized double-blind, placebo-controlled, crossover trial

Version: 1
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Reviewer: Korry J Hintze

Reviewer's report:

The manuscript entitled “Habitual exercise with dietary milk fat globule membrane supplementation improves skeletal muscle performance in healthy adults: a randomized double-blind, placebo-controlled, crossover trial” by Soga et al., describes a double-blind crossover study to determine the efficacy of supplemental MFGM on muscle performance. The authors reported that supplemental MFGM coupled with a 4 week training program increased muscle strength and motor unit recruitment compared to a milk powder control.

Major Issues

The background section is unfocused and needs to be rewritten. The authors highlight problems with muscle wasting and myelination loss in elderly populations despite the fact that the participants in this study were healthy adults under the age of 50. Moreover, the section describing the effects of milk ingestion and resistance training is also not relevant to the current study as concentrations of MFGM are very low in milk.

The authors need to provide a rationale why 1g of MFGM was chosen for the supplemental dose.

The MFGM and milk powder composition description would be more appropriate as a table.

Can the authors provide a rationale or a reference for the leg extension strength and surface electromyography tests? Are these validated protocols?

The authors need to report if there was a difference in baseline between the experimental periods. If the subjects were previously untrained they may have had higher baseline muscle strength in the final experimental period because of the training effect from the first period. Even though the study is a crossover, it would be important to know if there is an experimental period effect.

Much like the background, much of the discussion centers around mechanisms unique to the elderly. The study population was not elderly so the discussion should be framed towards mechanisms relevant to the study population.

Minor Issues
Line 34- Awkwardly written sentence
Line 80- Awkwardly written sentence
Line 124- Change 'comprised' to 'consisted of'
Line 166- Awkwardly written sentence
Line 197- Can the authors explain "nervous system development"

Table legends need to be more descriptive and should stand alone without looking elsewhere in the manuscript.

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests