Dear Prof. Chenglong Fu,

My apologies for the delay. It is my fault that I had missed this paper. I thought I had processed this review a while ago.

Review has been completed on your paper, JMR-19-1300 (Research Paper), A lower limb exoskeleton recycling energy from knee joint and ankle joint to assist push-off.

As you can see, one of the two reviewers had highlighted questions that he felt had not been adequately clarified. Upon reviewing them, they appear important for the clarify, even if it does not appear critical. Based on the detailed comments of the reviewers, I am recommending to the Journal Editor that your paper be considered for publication as a Research Paper in the Journal of Mechanisms and Robotics pending revision. My recommendation is: Revisions required.

Please proceed to revise your paper, addressing the reviewer comments, and submit a PDF of your revised paper to the site.

NOTE: Changes should be highlighted and clearly indicated in the revised PDF to facilitate review.

It is recommended that a PDF file (rebuttal) addressing the reviewer's comments be uploaded in addition to the revised paper. The rebuttal should clearly explain your revisions and reference the related reviewers' comments and the section/paragraph/figure/table that was revised.

Please be certain to follow the Author Guidelines provided, and ensure that all authors have digitally signed the transfer of copyright that is mandatory for publication to avoid delays.

Upon receipt and review of your revision, I will make another recommendation to the Journal Editor.

Please contact me with any further questions.

Revision Due: 12/17/2019

Sincerely,

Denny Oetomo Associate Editor, Journal of Mechanisms and Robotics

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Reviewer #1 Comments

Thank you for your revised work. Significant improvements have been made to the presentation of the work, which has made it easier to understand. However, I believe that there are still some areas which can and should be improved upon. Additionally, while the idea is of interest, there are still some questions about the implementation and the experiments performed which need to be further clarified or justified.

TECHNICAL COMMENTS AND SUGGESTIONS:

1) The choice of clutch times still needs to be better justified. You noted in your response that the time delays were determined 'empirically', but this is still not explained in the manuscript. Additionally, what does 'empirically' mean? How did you know you had a 'good' choice? You've also referenced a mechanical delay - why does this delay exist, and why was it not possible to characterise it?

2) Data for the left leg has been presented, which is appreciated. However, it is written in the text that "no significant differences were found among the three conditions for the left leg" - how was this evaluated?

3) How did you calculate the power without the upper body? Wouldn't movement of the torso result in changing of power?

4) Is a warm up period of "one or two minutes" sufficient to ensure that the subjects had adopted a consistent gait and one that is representative of consistent use?

PRESENTATION COMMENTS AND SUGGESTIONS

1) Whilst the addition of an expected results section is welcome - the following Results and Discussion section does could be more strongly related/linked to those expected outcomes. For example, 3.4.1 describes the forces in the ropes, but does not directly address the expected outcomes. I would suggest that this section could be further restructed by first presenting the results which address these expected outcomes, and then introducing supplementary material as a discussion.

2) Figure 10 and Figure 11 seem to be presenting different parts of the stride as 0%. Figure 10 shows has the start of each step in the swing phase, whereas Figure 11 starts the gait cycle in the stance phase. This is confusing for the reader.

3) Language still needs revising. There are numerous grammatical errors on the first page alone, and this continues reguarly throughout the paper. For example:

- Page 1, Column 2, Paragraph 1: "These exoskeletons do not directly provide external energy to human" -> "to the human user".

- Page 1, Column 2, Paragraph 3: "The spring in theory do not" -> "the spring in theory does not"

- Page 1, Column 2, Paragraph 3: "Energy storage and return is also a strategy utilized by human...." -> utilized by humans

4) The change to a stride frequency does make sense, although further alignment with the units would further ease the understanding of the work. The majority of the work refers to periods of the gait cycle in percentage (e.g. Figure 5 has the swing phase as the first 40% of the gait cycle). It would make sense to explain the clutch actuation timings (or desired timings) as the same.

5) There are still some statements which are unclear. For example, in 3.4.1, the statement "The average peak force in the knee rope (blue line) was 55/pm 6 N, indicating the spring was stretched to recycle energy from the knee joint in late swing." I am not sure how the level of the force indicates that energy was recycled?

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Reviewer #2 Comments

The authors have appropriately addressed my previous concerns.