Dear Editor,

We want to thank the editorial board for giving us the opportunity to address the reviewer's recommendations. All points in the reviewer's comments have been addressed in the manuscript and revisions in the manuscript-R1 were highlighted in blue. Please also see the attachment of response to reviewer's comments.

We would like to submit the revised version for your consideration to be published soon.

Yours sincerely,

Hongxin Zheng

The study is sound and well structured. However, there are some necessary changed and amendments need to be made before considering for publication.

Abstract

1. You need to write a little more information about the characteristics of your sample, in the methods section (you need to briefly mention the age ranges or mean and standard deviation.

Response：Thank you for your comments. We added more information in the Method part of Abstract as followed:

"Eighteen patients (age 58.89±8.25 years) with mild-to-moderate knee OA were recruited in these randomized controlled trials (RCT) study. "

2. - you need to mention what the control received.

Response：Thank you for your comments. We added more information about control received in the Method part of Abstract as followed:

"The patients in the LBPP group performed an LBPP walking training program for 30 min/session/day, six days/week for two weeks *whereas the patients in the Control group performed walking on the ground for the same amount.*

3. Results section in abstract: please write down the value of the outcome measures you selected in the results.

Response：Thank you for your comments. We added more information about the value of the outcome in the Results part of Abstract as followed:

"The Western Ontario and McMaster Universities Arthritis index (WOMAC) and Visual Analog Scale (VAS) scores in both LBPP group and control group were found decreased significantly at the post-treatment point than the pre-treatment point

(LBPP:70.25±13.93vs.40.50±11.86;3.88±0.99 vs.1.63±0.52; Control: 69.20±8.88 vs. 48.10±8.67;3.80±0.79 vs. 2.60±0.70; P < 0.001). Moreover, compared with control group，the LBPP group showed more improvements in walking speed (P=0.007), stride length(P=0.037), and knee range of motion (ROM) (P=0.048) during walking, which represented more improvement in walking ability."

4. in conclusion line 76: you mention clinical improvement which is a little bit unrelated to the findings, so I suggest deleting it as there is no indication of significant clinical Improvement in comparison to the conventional group.

Response：*Thank you for your comments. We deleted this finding as reviewer's suggested.*

5. Also overall, I suggest consistency in using either conventional group or control group

Response：*Thank you for your comments. We used "control group" thought out the manuscript as you suggested .*

The introduction

6. Please adjust the numbering of the references according to the first appearance as in line 88, the first reference cited is 11.

Response：*Thank you for your comments. We corrected the order of references.*

7. The aim of the study stated that to investigate the biomechanical effects, whereas, you also used and investigate the subjective clinical assessment. Please amend the aim of the study to be compatible with the results reported.

Response：*Thank you for your comments. We added the clinical aim as reviewer's suggestion.*

"the purpose of our RCT study was to investigate the biomechanical effects and the subjective clinical assessment of LBPP treadmill walking exercise when compared with conventional therapy in mild to moderate knee OA patients. "

8. Please write down the hypothesis.

Response: Thank you for your comments. We added the hypothesis in the manuscript R1 as followed:

"We hypothesized that both LBPP training and the conventional training could improve the clinical symptoms and gait parameters of knee osteoarthritis, but the LBPP group might have more significant effect."

Methods

9. Line 124; what MMSE stands for. Please write down the full spelling of any acronyms on first use.

Response：*Thank you for your comments. We added the full spelling for MMSE as followed:*

"mini-mental state examination (MMSE) "

10. Line 126, unstable vital signs including spirit is not clear. Also I suggest using the medical terms for elevated heart rate such as tachycardia, high blood pressure……

Response：Thank you for your comments. We added more explanation as followed:

"unstable vital signs(i.e., high blood pressure and tachycardia)**, "**

11. In line 152-153 please specify how blood pressure and heart rate was monitored with which device. Also what are the basis of using these number as a cut off points

Response：Thank you for your comments. We added more explanation as followed:

"Before the LBPP walking training, the physiotherapist checked the patient's blood pressure (BP) and heart rate (HR) using electronic blood pressure monitor (Omron-U10L, Omron Healthcare Co., Ltd.,China) to make sure the patient..."

12. Line 157 about the control group, what type of ground was used for walking, was it indoor or outdoor? More information about the treatment received by the control group is needed. Also please add whether the participants in LBPP where using hand rails of the treadmill or not. And whether the control group where allowed to use any assistive device during walking

Response：Thank you for your comments. We added more explanation as followed:

"The patients were allowed to using hand rails during LBPP treadmill training to help them keep balance. "

"Control group (conventional treatment group) performed walking on the indoor ground in self-selected speed for 30 min/session/day，six days/week for two weeks. Each walking session consisted of 5-minwalking and 5-min seated rest for 3 cycles. Moreover, during walking, the physical therapist guided the patient to keep the range of motion of knee joint as 0-15° to make heel fully contact the ground. The patients were allowed to use any assistive device (i.e., canes, crutches,and walker) during walking to help them keep balance. "

13. Additionally, add the timing of the sessions, were all at the same time or not. During the session were the control and expiremental group using the same venue.

Response：Thank you for your comments. We added the explanation as followed.

"Each group (LBPP Group and Control Group) understood 12 sessions for total amount using the same venue. "

14. In the assessment part, was any of the devices mentioned require calibration before use, if yes please mention and specify.

Response:Thank you for your comments. We added more explanation as followed:

"When the patient stood into the LBPP treadmill, the calculation would be run automatically before training stared. "

"Calibration of the gait analysis system was performed by the designated lab member every week to make sure data acquisition accurate."

15. Where is the calculation of the sample size, please report the power of the sample size used for this study.

Response. Thank you for your comments. We added more explanation as followed:

"To calculate the statistical power, we set the standardized difference of the primary outcome(gait velocity) to be equal to 0.2, and the dropout rate to be equal to 20%. So , the sample size for each group should be more than nine."

16. Also I suggest, adding a heading with outcome measures where you can specify and describe what are the outcome measures and give an explanation for each one of then. For example, walking ability is mentioned many times, but how was it measured is unknown? Is the velocity?

Response: Thank you for your comments. We added more explanation as followed:

"The primary outcomes were gait parameters, which were used to evaluate gait performance /walking ability. The second outcomes were clinical assessment scales,which were used to represent symptom improvement."

Results

17. **in table 1 please report the height and weight of the participant of each group.**

Response, thank you for your comments. We added the height and weight information and the P values in Table 1.

Table 1 The baseline characteristics of recruited patients.

Characteristic	LBPP group (n=8)	Control group (n=10)	*P* value
Age (years)	59.63±8.40	58.30±8.54	0.746
Sex (male/female)	3/7	2/6	1.000
Height (cm)	162.25±5.23	162.80±5.12	0.825
Weight (kg)	61.25±4.57	61.11±6.07	0.958
BMI (k / ²)	23.24±0.85	23.02±1.27	0.178

Discussion

18. in line 256 you mentioned that LBPP had better walking ability, how this conclusion was made when all the biomechanical parameters where not significantly different between the two group

Response：Thank you for your comments.

We found significantly higher gait velocity, bigger stride length and more knee flex-extension in post-Lbbp training than post-conventional group based on Table 3. And we also added explanation "Moreover, more improvements in the LBPP group when compared with Conventional group with respect to higher walking speed, bigger stride length, and greater knee ROM during walking post-LBPP training represented improved walking ability."

19. in the discussion I suggest highlighting the clinical implication of the study and whether the result of the study support use of this technique and whether is it cost effective in comparison to conventional method.

Response: Thank you for your comments. We added more explanations based on reviewer's suggests.

"Our study results the LBPP assistant intervention for knee OA patients may also reduce the burden of the physical therapist and increase cost-effectiveness than conventional training " .

20. Also some highlight about other similar approached can be added like some studies where they used aquatic training to reduce the bodyweight and how does it compare to the findings of the current study.

Response: Thank you for your comments. We added more information based on reviewer's suggestions in discussion part.

"In addition aquatic therapy research has proved the short-term benefits for patients with knee OA, but the high requirement of equipment limited the application. "

21. The conclusion is slightly biased toward the LBPP. Whereas, in the study's findings the conventional treatment was also efficient.

Response: Thank you for your comments. We wrote the conclusion part based on reviewer's suggestions as followed.

"The result of our RCT study showed that the LBPP group has a greater effect on improving gait parameters than the conventional group, although there was no significant advantage in clinical assessment. This finding indicates that LBPP treadmill exercise training could be considered an effective approach for alleviating pain symptoms and improving lower extremity locomotion in mild to moderate knee OA patients. "

22. The consort statement need to be corrected as the pages mentioned for the points in consort list are not correct.

 Response, than you for your comment.We renumbered the CONSORT statement.