

## Point-by-point response letter to the Editor and the reviewer's comments

Editor comments for R2 have been added in green

[Manuscript ID: peerj-106600]

Thank you very much for taking the time to review this manuscript. Please find the detailed responses below and the corresponding revisions/corrections highlighted in the re-submitted files.

### Editor comments (Maurice Mohr)

While I see the effort behind this study, there are important issues, which at the current stage do not allow publication of this article.

The reviewers have outline some important issues within your original submission, most notably:

### Author responses:

The study's authors thank the editor and the reviewers for their invaluable comments, which raised the quality of the manuscript. The study's author addressed all issues and concerns with their utmost capabilities.

**Comment 1:** The cited literature is not up-to-date. There is a 2018 consensus statement on current recommendations to treat PFP: Collins, N. J., (2018). British Journal of Sports Medicine, 52(18), 1170–1178. Please update the entire manuscript and refer to recent literature on this topic. There is a challenge by reviewer 3, that the investigations is missing novelty. While PeerJ does not judge submissions based on novelty, the rationale of your study must be described within the framework of current literature.

**Response:** The study author updated the entire manuscript with recent literature on the corresponding topics. They also updated the suggested topic in line with the referenced study [Page:5].

Additionally, the authors described the study rationale within the current literature framework, as suggested [Pages: 5-6].

**Comment 2:** Strength testing: More information on the testing device is needed to judge reliability and validity. The device cannot be found online by searching for the information provided in the text. Please rely on published reliability and validity estimates if available.

**Response:** The device we used in this study has already been tested and validated by the company, as the company representative reported to the hospital administration. However, a recently published study from 2021 highlighted that the IND IsoDyno Isokinetic Dynamometer, when operated following the software-guided procedures of the ISOMOVE Tecnobody system (IsoMove Isokinetic Dynamometer, Tecnobody, Italy), demonstrated high reliability. The study reported strong interclass correlation coefficients (ICCs) and small standard errors of measurement (SEMs; SEM flexion=14.3, SEM extension=17.3), supported by Bland-Altman plots. These results confirm the device's precision and consistency for measuring knee joint angular peak torque flexion and extension. Therefore, we could not personally measure its reliability and validity.

**Reference.** Mahapure, Shubhankar S., et al. "Validity of the IND IsoDyno isokinetic dynamometer maximum peak angular torque measure for right knee joint flexion and extension movement." *Indian Journal of Health Sciences and Biomedical Research* 14.1 (2021): 90-95.

Editor comment: Thank you for providing this reference. However, this reference does not provide any evidence on the reliability of this measurement. Please remove the statement in the text, that this study demonstrates reliability.

**Comment 3:** Please also address the following issues:

**Comment 1)** What is the unit of measurement of your strength test? This is unclear and I have concerns about a 50% increase in quadriceps strength (!!) in a 6-week training period. E.g. group 1 increases from a value of 109 to 154 from baseline to post-intervention. Comparable studies have shown strength gains of ~ 10% (e.g. <https://pmc.ncbi.nlm.nih.gov/articles/PMC5095944/>). How is

this possible? Connected to this: there is inconsistency in the text about the training frequency (5x in Line 253 vs. 3x in Line 262). Please clarify.

**Response:** The strength measurement unit is Newton's meter (Nm). There may be a possibility of increments in strength by 50% because of the following reasons:

1. The current study focused on increasing the maximum voluntary isometric contraction of the quadriceps (Knee extensors) by correcting the patellar alignment using an MVIC with a patellar taping program. However, the indicated study compared the improvement in hip pain and function and isometric strength of knee and hip extensors between males and females using a hip/core or knee rehabilitation program.
2. The current study assessed using a digital device programmed to measure isometric angular peak torque (Nm), while the indicated study measured the isometric strength (% body weight) using a hand-held dynamometer.
3. If patellar alignment is encountered due to quadriceps muscle weakness and there is no pathology in the patellofemoral joint, then it is pronounced that the angular peak torque will be achieved to normal once the patellar malalignment is corrected by using MVIC combined with patellar taping program, that ultimately results in reduction of pain and improvement of muscle strength, as supported by a previous study (Ref. list: Alonazi A et al. 2021; Hasan S et al., 2022)
4. Another study reported by Robinson RL Nee RJ et al. (2007) demonstrated that muscular strength increased by double compared to the indicated study by Bolgla LA (2016).

(Ref. Robinson RL Nee RJ et al. (2007). Analysis of hip strength in females seeking physical therapy treatment for unilateral patellofemoral pain syndrome. J Orthop Sports Phys Ther. 2007;37(5):232-238. [\[DOI\]](#) [\[PubMed\]](#) [\[Google Scholar\]](#)[\[Ref list\]](#))

1. Therefore, the chances to improve by 50% is possible and comparing the current study results with the indicated study is unconvinced.
2. The study author has reviewed the text and clarified details to ensure consistency, which has been updated in both Line 253 and Line 262. (Page:12-13)

**Comment 2):** It is interesting that no drop-outs were reported. This seems unlikely for a group of sixty participants. Did everyone complete the study? Furthermore, the adherence to training is unknown. Therefore, the validity of the study is impossible to judge at this point. Critical questions

remain: How "blinded" was the placebo group really? Most people may guess that a non-rigid tape will not have an effect. Did the placebo group actually achieve the same training frequency compared to the experimental group? How can the assistant physiotherapists who recorded the data be blinded to group allocation (Line 160)? I am sure, the different tapes will be obvious to them.

**Response:** The study author agrees with the reviewer's supposition that no drop-out is unlikely for a group of sixty participants. No, not everyone completed the study. Out of 60 participants, 4 from experimental group 1 and 3 from the control group 2 did not complete the study for various reasons, totalling seven who dropped out. They left the study before reaching to the initial two weeks of the study. The study author included their data in the analysis by adding values equal to the outcomes means of the rest of the participants, which did not affect the outcomes analysis. Therefore, I did not point it out when reporting the results. The study's author updated the missing participant numbers in the CONSORT flow diagram in Figure 1 and explained in the text per the reviewer's intended [Page:8-9].

Editor comment: It is unacceptable to make up missing values in the statistical analysis. It will affect the analysis outcomes if you add participants with identical values at pre- and post-measurements. After drop out and using the statistical methods presented, the only option is to remove the dropped-out individuals from the study. In addition, the whole manuscript is wrongly reporting that the final analyses were based on  $n = 60$  participants. After removing the dropped-out participants, please correct the final sample size everywhere in the manuscript.

The participants were patients suffering from patellofemoral pain syndrome. They sought the best possible treatment but did not know the type of tape and its effects. Therefore, there was a chance of being blinded while participating in the study.

Yes, the placebo group achieved the same training frequency as the experimental group. The only difference was that the control group did not receive the actual patellar taping compared to the experimental group.

Editor comment: Please report the training frequency per group in the manuscript.

In this study setup, the junior physiotherapists who recorded the outcome measures were blinded to group allocation but not to the idea of the study. They were provided information that a study would be conducted here, and you would have to take the measurements of the outcomes according to the given data sheet. Before assigning this task, they were instructed that they were not supposed to ask more about the study and that their task was to take the participants' assessment only. Therefore, it is possible to make the assessor blind to the study.

**Comment 3):** Statistical analysis: In randomized controlled studies, it is standard of practice to either use analysis of co-variance (ANCOVA) with the baseline value as covariate or analysis of variance (ANOVA) (see e.g.

here <https://www.sciencedirect.com/science/article/pii/S0895435606000813?via%3Dihub>).

Please explain why you chose to only analyze within-group changes and between-group differences at the post-measurement.

**Response:** The study authors agree with the reviewer's explanation regarding using ANCOVA and ANOVA. However, we opted for the non-parametric test based on the data distribution, which was not homogenous across the groups. For a robust analysis, the non-parametric tests are employed to observe the intervention's effects on the outcomes within each group across different time points and between the groups at different time points. Therefore, we opted for non-parametric tests. Within-group analysis was employed to observe the intervention effects across two-time points, i.e., between baseline and 6 weeks post-intervention. Between-group analysis was

employed to observe the intervention effects between the groups post-intervention, assuming that the randomization process normalizes the differences between the groups at baseline, as suggested by previous studies.

Editor comment: It is OK to revert to non-parametric tests if the underlying data are not normally-distributed. However, your statistical analyses do not support the statement that the taping + strength intervention showed “more improvements” compared to “placebo taping + strength”. In your setting, the only way to statistically support this statement would be to calculate the pre-to-post change in the outcome variables within each patient and then conduct a Mann-Whitney Test to provide evidence that the pre-to-post changes are larger in Group 1 compared to Group 2. I suggest to implement this analysis in the manuscript.

In addition: The effect size analysis in Table 4 is not discussed anywhere in the manuscript besides an unclear statement in line 313. How was Cohen’s  $d$  calculated here? I am concerned that these calculations are wrong because Cohen’s  $d$  seems too high. It seems the authors determined the SD of the Group1-Group2 difference by simply subtracting the Group 1 SD from the Group 2 SD, which is wrong and will lead to wrong Cohen’s  $d$  estimates.

**Comment 4):** Apart from the content: Such randomized-controlled studies require extensive effort in recruitment, data collection, and analysis. Would it be appropriate to acknowledge supporters in the Acknowledgements section or by inclusion of additional authors?

**Response:** The study author acknowledged the additional authors who contributed to any part of the study procedures, including recruitment, group allocation, data collection, data analysis, and data interpretations, per the reviewer's suggestion (see acknowledgement section).

!!!Thank you again!!!

**Point-by-point response letter to the Editor and the reviewer's comments**

**[Manuscript ID: peerj-106600]**

Thank you very much for taking the time to review this manuscript. Please find the detailed responses below and the corresponding revisions/corrections highlighted in the re-submitted files.

**Reviewer: Ghousia Shahid**

*Additional comments*

**Comments:** A graphical depiction of the trajectory of pain scores (NPRS) and functional measures (AKPS, SLTH) is missing. providing this for both groups across the study period would greatly enhance the reader's understanding of the intervention effects.

**Response:** A graphical depiction of the trajectory of pain scores (NPRS) and functional measures (AKPS, SLTH) has been added in the revised manuscript, as suggested [Pages: 16-17].

Figure 4, 5, and 6: showing mean values for NPRS, AKPS, and SLTH at baseline and post-intervention for both groups.

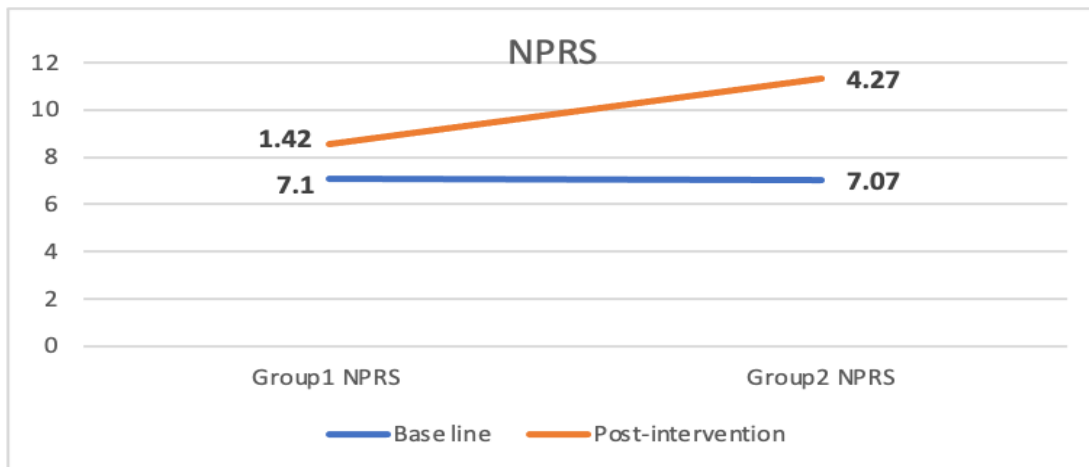


Figure 4

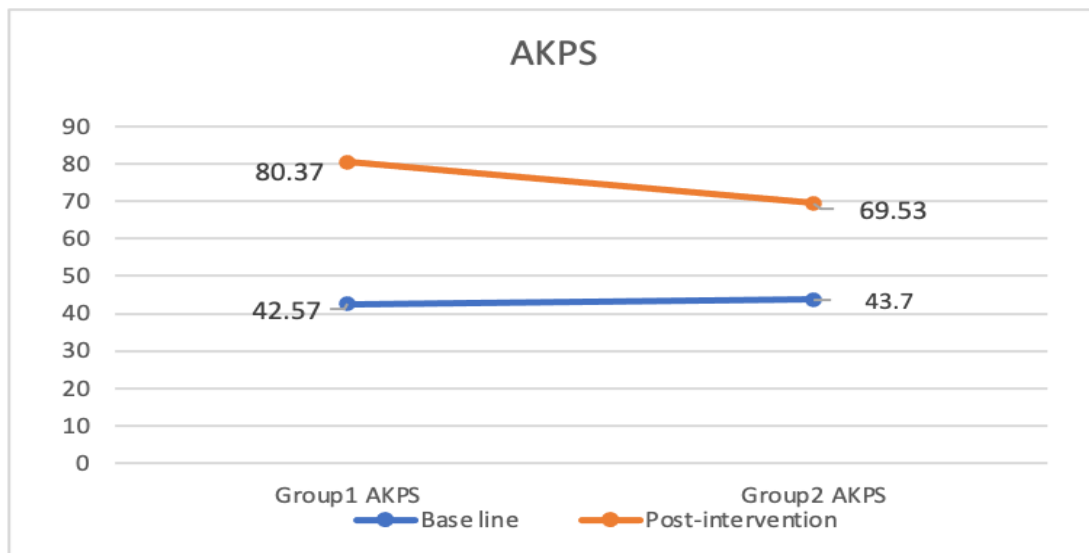


Figure 5

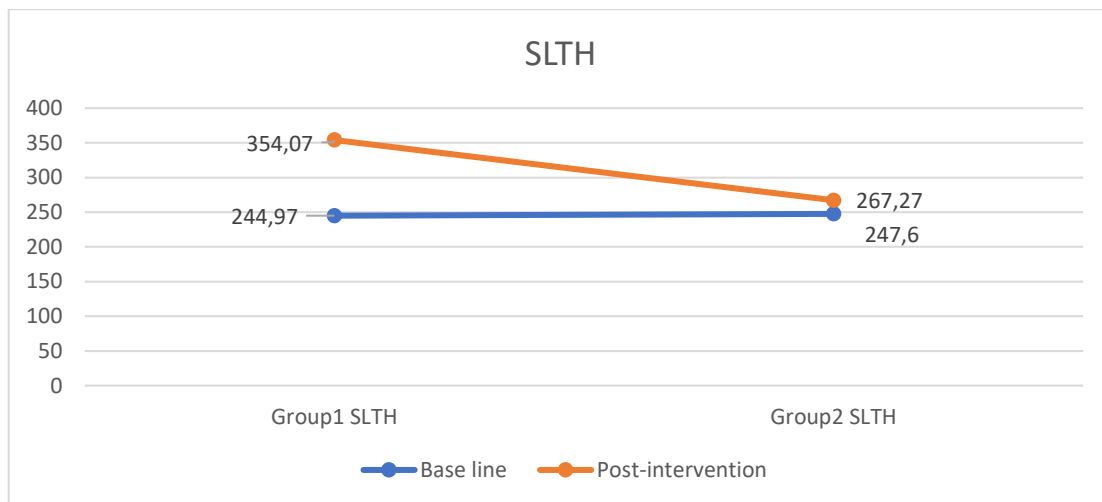


Figure 6

**Response:** We agree that graphical depictions of pain scores (NPRS) and functional measures (AKPS, SLTH) would enhance understanding of the intervention's effects. In the Results section, we have included line graphs showing mean values for NPRS, AKPS, and SLTH at baseline and post-intervention for both groups. These graphs illustrate trends and differences in intervention effects for both groups across the study period (pre- and post-intervention).(Page:16.)

Editor comment: Thanks for adding the graphs but the figures are of poor quality and need to be improved. It is standard to place the time points (baseline vs. post-intervention) on to the x-axis and use two different lines to show the two groups. Units of measurement need to be added. Figure 4 (NPRS) is clearly wrong and does not represent

the data described in the Tables. Error bars should be added. For a complete picture of the outcome variables, the isometric strength outcome should be added as a figure.

**Comments:** The validity and reliability of the ISOMOVE dynamometer for measuring quadriceps strength in PFPS patients require more thorough documentation.

**Response:** The revised manuscript indicates thorough documentation of the ISOMOVE dynamometer for measuring quadriceps strength in PFPS patients, with a supported reference.

**Comments:** The control of extraneous variables, such as participants' activity levels, pain medication use, and concurrent treatments, requires more attention to strengthen the study's internal validity.

**Response:** As suggested, the author added regarding control of extraneous variables to strengthen the study's internal validity. Page:8

**!!!Thank you again!!!**

### **Point-by-point response letter to the Editor and the reviewer's comments**

**[Manuscript ID: peerj-106600]**

Thank you very much for taking the time to review this manuscript. Please find the detailed responses below and the corresponding revisions/corrections highlighted in the re-submitted files.

#### **Reviewer 2: Comments**

Basic reporting

**Comments:** The introduction section should start with the definition and scope of the problem given in line 60 and then the prevalence section should be given. The sentence given in lines 69 and 72 may be connected to the previous paragraph.

In 2018, the iPFERN published a consensus document concerning PFP management that specified a hip- and knee-focused exercise regimen to be the approach with the highest level of evidence regarding its effectiveness (Collins NJ, Barton CJ, van Middelkoop M, et al. 2018 consensus statement on exercise therapy and physical interventions (orthoses, taping and manual therapy) to treat patellofemoral pain: recommendations from the 5th international patellofemoral pain research retreat, gold coast, Australia, 2017. Br J Sports Med. 2018; 52(18): 1170-1178. doi:10.1136/bjsports2018099397). Additionally, Songur et al. also reported the alignment changes in PFS and the effects of different banding on this alignment with MRI findings (Songur et al. The effects of different Taping methods on Patellofemoral alignment, pain and function in individuals with Patellofemoral pain: a randomized controlled trial. PM R 2023;16:474–84. doi:10.1002/pmrj.13067). Taking these into account, the introduction should be revised with more up-to-date sources.

**Response:**

Thank you for your valuable feedback. We have revised the Introduction section to align with your suggestion. The section begins with the definition and scope of Patellofemoral Pain Syndrome (PFPS) as outlined in line 60, establishing a clear context for the problem. The details of the prevalence, which highlight the magnitude of PFPS globally and regionally, are presented immediately after this [Pages:3-4].

**Comments:** “Performance” in line 122 and after should be written with lower case and the expression in parentheses should be deleted.

**Response:** The indicated word was corrected as written in lowercase, and the expression in parentheses has been deleted.

**Comments:** The phrase "patella taping" on line 119 and onwards should be written as "patellar taping".

**Response:** The phrase "patella taping" on line 119 and onwards is revised to "patellar taping" throughout the manuscript.

**Comments:** Data regarding the findings in lines 176-178 should be given in the results section

**Response:** As suggested, the indicated data from lines 176–178 has been deleted.

**Comments:** *Experimental design*

After the hypothesis of the study, predictions about the possible outcomes of the study should be written and the purpose of the study should be given. In sentences written about the possible benefits of the study, it is not correct to start the sentences with "study's findings" (lines 125-129).

**Response:** The section has been revised to include predictions about the possible outcomes of the study based on the hypothesis. Additionally, the purpose of the study has been clearly articulated. The phrasing beginning with "the study's findings" in lines 125–129 has also been corrected [Pages:6].

**Comments:** References must be given for each method used in the "Materials and methods" section. It should be noted that the Arabic version of the "Kujala Anterior Knee Pain Scale" was used, which is valid and reliable.

It should be explained why the hip adduction exercises in line 268 are being performed.

**Response:** References for each method used in the "Materials and Methods" section have been added to ensure clarity. Additionally, the manuscript explicitly noted that the Arabic version of the "Kujala Anterior Knee Pain Scale," which is both valid and reliable, was utilized in the study. Hip adduction exercises in line 268 are being performed to address muscle imbalances and weakness in the hip adductors, which are critical for stabilizing the pelvis and maintaining lower limb alignment. Strengthening the hip adductors helps reduce stress on the patellofemoral joint, supports improved biomechanics during functional movements, and alleviates pain in individuals with patellofemoral pain syndrome. This explanation has been added to the manuscript for clarity.

**Comments:** Although the demographic values and first measurement results of the participants in both groups given in Table 1 are very close to each other and the statistical comparison results are similar ( $p > 0.05$ ), it is not correct to state that the groups are not homogeneous according to only one normality test. For this reason, I recommend that other normality tests be performed and a decision be made and statistical analyses be performed according to the new results.

**Response:** The study author used another normality test- The Shapiro-Wilk test to ensure the distribution of the data across the groups. The test revealed significant differences for all the variables except SLTH ( $P=.104$ ), indicating that the all-outcome variables, except SLTH, were not normally distributed. Based on the data, the study author employed a nonparametric test to analyze the outcome differences within and between the groups. Please see other tests for normality in the table below.

| Tests of Normality |                                 |    |                   |              |    |      |
|--------------------|---------------------------------|----|-------------------|--------------|----|------|
|                    | Kolmogorov-Smirnov <sup>a</sup> |    |                   | Shapiro-Wilk |    |      |
|                    | Statistic                       | df | Sig.              | Statistic    | df | Sig. |
| Age                | .208                            | 60 | .000              | .885         | 60 | .000 |
| Height             | .190                            | 60 | .000              | .905         | 60 | .000 |
| Weight             | .176                            | 60 | .000              | .932         | 60 | .002 |
| BMI                | .126                            | 60 | .019              | .936         | 60 | .004 |
| VAS_Pr             | .189                            | 60 | .000              | .923         | 60 | .001 |
| STN_Pr             | .126                            | 60 | .019              | .961         | 60 | .051 |
| SLTH_Pr            | .074                            | 60 | .200 <sup>*</sup> | .967         | 60 | .104 |
| AKPS_Pr            | .149                            | 60 | .002              | .940         | 60 | .005 |

\*. This is a lower bound of the true significance.  
a. Lilliefors Significance Correction

**Comments:** The sentence in lines 311-313 should be written as “Wilcoxon Signed Rank Test for within-group comparison revealed a significant improvement ( $p<.05$ ) for all the outcomes scores within each group when post intervention scores were compared with baseline scores.”

**Response:** The sentence in lines 311-313 has been revised: “Wilcoxon Signed Rank Test for within-group comparison revealed a significant improvement ( $p<0.05$ ) for all the outcome scores within each group when post-intervention scores were compared with baseline scores.

**Comments:** Correct the table number in line 319. All tables should be arranged in accordance with the current template of the journal.

**Response:** The table number in line 319 has been corrected. Additionally, all tables have been rearranged and formatted according to the journal's current template.

**Comments:** There is no need for the word "however" in line 336.

The "groups" expression on line 338 should be used in singular.

**Response:** The word "however" in line 336 has been removed. Additionally, the expression "groups" on line 338 has been corrected to the singular form of "group".

**Comments:** There should be parentheses before the references on line 343.

**Response:** Parentheses have been added before the references on line 343.

**Comments:** More recent literature should be used in the discussion section. The findings of this current study should be interpreted. Too much general information content should not be included.

After the strengths of this study are given, limitations should be given.

Spelling errors (capitalization) and citation style in the references should be reviewed (e.g. line 492)

**Response:** The study author has updated the discussion section to incorporate more recent and relevant studies, a clear discussion of its limitations, as suggested.

I have carefully reviewed the manuscript for spelling and capitalization errors. Additionally, the citation style has been corrected, including the specific issue noted in Line 492.

**Comments:** Congratulations on your work. The last paragraph of the introduction should clearly state which gap in the literature this study fills, and in the discussion section, the findings from the study should be interpreted and their relationship with the hypothesis of the study should be explained.

**Response:** Thank you for your feedback and kind words. The last paragraph of the introduction has been revised to explicitly highlight the gap in the literature that this study addresses. The discussion section has also been updated to provide a detailed interpretation of the findings and their relationship to the study's hypothesis. These changes aim to strengthen the clarity and impact of the manuscript.

!!!Thank you again!!!

### **Point-by-point response letter to the Editor and the reviewer's comments**

**[Manuscript ID: peerj-106600]**

Thank you very much for taking the time to review this manuscript. Please find the detailed responses below and the corresponding revisions/corrections highlighted in the re-submitted files.

Reviewer: Swapnil Ramteke

*Basic reporting*

no comment

**Comments:** *Experimental design*

The Knowledge Gap which the author is trying to address is not a Gap at all. There are many quality existing studies including systematic reviews and consensus statements which have already addressed and proved these gaps.

**Response:** The study author thanks the reviewer for insightful comments regarding the justification of the study to fill the knowledge gap. I added the paragraph as suggested. (see the highlighted last paragraph of the Introduction, Page no:7-8).

**Comments:** *Validity of the findings*

The study is well-framed though it doesn't appear to be novel in present as already RCTs addressing these issues are conducted in past.

**Response:** Now, the study author added one paragraph to justify the need for this study and highlighted its novelty. (Page no:5-6)

*Additional comments*

**Comments:** The study appears to be great work, however, there are some observations: The PFPS and Chondromalacia are different entities, Inclusion and exclusion criteria nowhere mentions about it. Clarity about it is required.

**Response:** The study author agrees with the reviewer's comments and corrects them as suggested in introduction and Inclusion and exclusion criteria. (Deleted the word 'Chondromalacia'. I

**Comments:** why only Isometric Hip Adduction Exercise:

**Response:** To ensure smooth and effective patellar tracking during dynamic activities, it is essential to support proper femoral alignment, force distribution, and pelvic stability. Therefore, hip adduction and abduction exercises have been included in managing PFPS.

**Comments:** were included when Hip Abduction Exercises were found to be superior in PFPS

**Response:** Both abduction and adduction exercises were performed in this study but mistakenly not explained in the manuscript. Now, it is added to the manuscript as the reviewer intended. (See Page No:14)

**note** The reviewer has attached an annotated manuscript to this review.

Response: Thank you for providing an annotated manuscript as part of your review. I greatly appreciate your time and effort in providing detailed feedback. The study author has reviewed and addressed each comment of the annotated manuscript.

**!!!Thank you again!!!**