



## Corrigendum

## Corrigendum to “Local neuromuscular characteristics associated with patellofemoral pain: A systematic review and meta-analysis” [Clinical Biomechanics 90 (2021) 105509]

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The authors would like to apologise for any inconvenience caused for the below corrections.

In this paper (Alsaleh et al. 2021), the authors have pooled data of Biceps Femoris and Vastus Lateralis activity in a triple-hop test (Fig. 4, page 10). However, it has latterly become apparent to us that the phases in which muscle activity were analysed were not consistently at the start of the third hop. Moreover, they differed to a point that we think it is sound to remove the meta-analysis of these outcomes, although both used the single-leg triple-hop test:

- Bley et al. (2014) analysed muscle activity in the window between initiation of the first jump (of triple-hop) until leaving the force plate.
- Kalytczak et al. (2016) analysed the muscle activity before and during the stance phase of the first landing of the triple-hop test.

As a result, multiple parts of the manuscript require amendment and we suggest they should be removed:

- The plots figure (Fig. 4, page 10).
- Multiple phrases and paragraphs should be removed:
  - o **A sentence in the abstract:**  
“and higher biceps femoris mean excitation amplitudes (0.55 [0.06, 1.04]) in single-leg triple-hop test”.
  - o **Last paragraph in page 3:**  
“During SLTHT (Fig. 4), moderate evidence (1 HQ and 1 MQ) of small effect indicates higher BF mean excitation amplitudes during

propulsion phase of the 3rd hop. Evidence is conflicting regarding VL mean excitation amplitude.”

- o **A sentence in 1st paragraph, page 11:**  
“higher BF mean amplitudes”.
- o **The 3rd paragraph in page 11:**  
“For the findings regarding the BF muscle, 2 studies (Bley et al., 2014; Kalytczak et al., 2016) investigated the muscle’s excitation, during SLTHT, and presented significant pooled effect suggesting higher BF mean excitation amplitudes to be associated with PFP. Single leg hops require higher demands on the knee joint (Willson and Davis, 2008), and a higher muscle activity might indicate that higher demands were needed to stabilise the knee, especially when manifesting in an antagonist knee muscle (Solomonow et al., 1987). Interestingly, VL mean excitation amplitude in the same task was investigated by both studies, but did not present a significant pooled effect, further confirming the importance of choosing the best method of detection for these neuromuscular deficits. Moreover, future research is recommended to investigate the co-contraction requirements within PFP patients. Overall, higher BF mean excitation amplitudes during SLTHT is associated with PFP”.
- o **A sentence in 2nd paragraph, page 12:**  
“higher mean excitation amplitude of BF during propulsion of the 3rd hop during SLTHT”
- o **A sentence in the conclusion paragraph, page 13:**  
“Furthermore, a higher mean amplitude of BF was present in PFP during SLTHT”.

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Electromyographic Activity Domain ( <i>Functional Tasks</i> )																			
Muscles Tasks	VM	VL	RF	BF	ST	GRA SAR POP	TFL	Gast. M	Gast. L	VM	VL	RF	BF	ST	GRA SAR POP	TFL	Gast. M	Gast. L	
Total Excitation <b>Timing</b> investigations										Total Excitation <b>Amplitude</b> Investigations									
Stepping and stair negotiation	④⑤①	③⑤①							①										
Squatting and leg presses	②②①	②②①	①①	①						③⑦②	③⑥①	①②②	①①	①①				①	①
Jumping tasks	①	①								①①	②③		①③						
balance during standing	①①	①①	①							②①	①①	①							
Gait (walking)	②	②								①	①	①							
Gait (running)	②	②								①	①	①							
Meta-analysis results ( <b>Timing</b> investigations)										Meta-analysis results ( <b>Amplitude</b> investigations)									
Stepping and stair negotiation	EO ↔	EO ↔								MEA	MEA								
	ED									MEA-R ↔									
	EO-R ↑																		
Squatting and leg presses										MEA	MEA (VL) ↔								
Single-leg triple-hop test																			
Pooled effect	↑↓	↕	↔																
	Small effect	Medium effect	No difference																
									Study numbers	Example: ④⑤① 4 HQ, 5 MQ and 1 LQ studies investigated VM timing EMG in stepping and stair negotiation			Evidence Level	Strong evidence	Moderate evidence	Conflicting evidence	No pooled data		

Modifications:

o **Table 5, the meta-analysis gap map, page 9:**

The cell showing the result of the meta-analysis of single-leg triple-hop test within excitation amplitudes investigations should be empty. The modified version is attached below:

After dismantling the mentioned plots, this systematic review presents limited evidence of a higher mean excitation amplitude of Biceps femoris and Vastus lateralis in pre-stance and stance phases at end of first hop (Kalytczak et al. 2016), and very limited evidence of a higher

mean excitation amplitude of Vastus lateralis during initiation (propulsion phase) of first hop (Bley et al. 2014) in single-leg triple-hop test. Therefore, this warrants further investigation into electromyographic deficits of hamstrings during jumping tasks in people with PFP. The gap map shows a clearer gap within local neuromuscular investigations in patellofemoral pain, with predominant focus on the medial and lateral Vasti muscles within available literature.

As we focused on the results of pooled effects from multiple studies, the reader is encouraged to interpret these outcomes of single studies in similar manner to the supplementary file that was submitted at the time the paper was published.