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Alterations in Ground Reaction Force Frequency Content During Walking and Running in Recreational Runners with a History of COVID-19 Compared to Healthy Controls

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E d i t o r	R e v i e w e r s
<p>Helmi Ben Saad¹ University of Sousse, Farhat HACHED Hospital, Sousse, Tunisia helmi.bensaad@rns.tn</p>	<p>Reviewer 1: Zahra Yousefi¹ Assistant Professor, Department of Psychology, Khorasgan Branch, Islamic Azad University, Isfahan, Iran. Email: yousefi1393@khuisf.ac.ir</p> <p>Reviewer 2: Seyed Mohammad Hosseini¹ Assistant Professor, Department of Health and Rehabilitation in Sports, Shahid Beheshti University, Tehran, Iran. Email: moh_hosseini@sbu.ac.ir</p>

1. Round 1

1.1 Reviewer 1

Reviewer:

The sentence “Individuals infected by COVID-19 often show a plethora of symptoms at cardiorespiratory (3) and the central nervous system level (4)” should be revised to clarify whether these are acute or long-term symptoms. A clearer temporal delineation would improve contextualization of GRF implications.

The use of hospitalization duration (15–23 days) as a severity proxy may be misleading. Provide objective clinical severity indices (e.g., oxygen saturation, ICU admission) if available.

The speed for walking and running was measured using a chronometer, which is prone to error and inter-trial variability. Please justify this method and discuss potential limitations regarding COM speed accuracy on the force plate.

The filtering cutoff of 20 Hz is justified by residual analysis, but no cutoff graphs or data validation are shown. Please include residual plots or a supplementary figure to validate this choice.

The reported height SD for the COVID group (85) appears to be a typographical error and should be corrected—likely meant to be 8.5.

The sentence “As detailed in Table 2. No statistically significant differences were observed between groups...” is fragmented. Please revise to: “As detailed in Table 2, no statistically significant differences were observed between groups for other variables.”

The phrase “This causes a prolonged duration of the compound muscle action potential...” attributes causality without a citation. Add a supporting reference or rephrase as an association.

The conclusion “COVID-19 disease could possibly affect ground reaction force frequency content while gait” is vague. Replace “while gait” with “during walking and running tasks” for scientific precision.

Author revised the manuscript and uploaded the updated document.

1.2 Reviewer 2

Reviewer:

The authors state that “No previous studies have examined the frequency domain of the GRFs during both walking and running...”—however, this claim requires a more comprehensive review of related literature. Consider citing relevant work on gait analysis in post-viral fatigue or post-acute COVID-19 syndrome for completeness.

The hypothesis is stated as “three dimensional GRFs frequency content were greater...”—this is grammatically incorrect and conceptually vague. Consider revising to: “The frequency content and number of essential harmonics in all three GRF components would be significantly altered in COVID-19 individuals compared to healthy controls.”

The authors note “...may be lead to greater essential number of harmonics...”—this is grammatically incorrect. Revise to “...may lead to a greater essential number of harmonics...”.

The discussion of “sagittal plane movements” and their influence on GRF frequency lacks clarity. Consider including a schematic or referencing specific studies to support this biomechanical rationale.

The authors state that “anatomic components with higher oscillatory frequencies...may not be used...”. This interpretation is speculative. Consider tempering the claim or suggesting it as a hypothesis for future work.

Author revised the manuscript and uploaded the updated document.

2. Revised

Editor’s decision after revisions: Accepted.

Editor in Chief’s decision: Accepted.