

International Journal of Sport Studies for Health

Journal Homepage



Comparison of Motor Planning in the Cerebral Cortex During Gait Initiation Between Athletes with Chronic Ankle Instability and Healthy Individuals

Mohammad. Yousefi^{1*}, Behnam. Solgi¹, Mohsen. Mohammadnia Ahmadi², Ali. Seghatoleslami², Shaghayegh. Zivari¹

¹ Department of Sport Biomechanics, Faculty of Sport Sciences, University of Birjand, Birjand, Iran

² Department of Sport Sciences, Faculty of Sport Sciences, University of Birjand, Birjand, Iran

* Corresponding author email address: m.yousefi@birjand.ac.ir

E d i t o r	R e v i e w e r s
Karim Chamari ¹ Tunisian Research Laboratory “Sports Performance Optimization” National Center of Medicine and Sciences in Sports (CNMSS), Tunis, Tunisia pademil@hotmail.com	Reviewer 1: Zahra Naghsh ¹ Associate Professor, Department of Psychology, University of Tehran, Tehran, Iran. Email: z.naghsh@ut.ac.ir Reviewer 2: Yaghob Badriazarin ¹ Associate Professor of Sport Sciences, Tabriz University, Tabriz, Iran. Email: badriazarin@tbzmed.ac.ir

1. Round 1

1.1 Reviewer 1

Reviewer:

In “despite evolving theories, there is still no consensus on the exact mechanisms underlying CAI,” please specify or summarize the key competing theories to ground the reader in the scientific controversy.

The sentence “It has been further suggested that those with CAI display reduced COP displacement...” introduces a topic shift. Consider integrating this idea earlier when discussing APA and sensorimotor disruption to preserve narrative flow.

Please elaborate on artifact rejection methods (e.g., independent component analysis, eye movement filtering). EEG is highly susceptible to noise, especially in movement-based tasks.

While the tables are informative, the text should include effect sizes for each significant difference (e.g., Cohen’s d), particularly for neurophysiological data, where small differences may or may not be meaningful.

The sentence “channels FC3, FCz, and FC4 are located at the junction...” would be improved by specifying these regions anatomically (e.g., “premotor cortex”), enhancing neuroanatomical relevance.

The discussion of non-significant beta and gamma differences is currently limited. Include a brief explanation or hypothesis in the results section (e.g., “possibly due to low cognitive demand of the GI task”).

Author revised the manuscript and uploaded the updated document.

1.2 Reviewer 2

Reviewer:

The sentence “EEG enables time-frequency analysis to explore motor planning processes” would benefit from a short example of what this analysis reveals about cortical control (e.g., “such as increased theta power in attention-demanding tasks”).

In the sentence “Twenty-six male participants...,” consider justifying the exclusion of female participants or clarifying whether the results generalize to all athletes.

The explanation of the gait initiation task lacks detail on why a “single-step” GI was chosen over more complex patterns (e.g., multi-step). Explain the neurophysiological justification behind this simplification.

In the description of FFT analysis, the manuscript should specify the length of the epoch (e.g., “500 ms before movement onset”), as time-window length impacts frequency resolution.

The sentence “These findings indicate that cortical motor planning during gait initiation is significantly altered...” needs a qualifier such as “in male athletes” or “in this sample” to avoid overgeneralizing.

Consider comparing CAI EEG patterns directly with what is known about EEG activity during GI in healthy athletes. This contrast is currently underdeveloped.

The conclusion “... underscores the need to address central mechanisms” could be expanded by suggesting specific interventions (e.g., neurofeedback, cognitive-motor dual-task training).

Author revised the manuscript and uploaded the updated document.

2. Revised

Editor’s decision after revisions: Accepted.

Editor in Chief’s decision: Accepted.