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Dear Editor,

We wish to submit the manuscript entitled “Application of force and inertial sensors to monitor gait on legacy walkers” for publication in a special issue of the journal ACTA IMEKO. This paper is an extended version of the paper entitled “Application of force and inertial sensors to monitor the usage of walker assistive devices” presented in the 22nd IMEKO TC-4 Symposium that took place Iasi, Romania, last September.

The paper presents the *Andante*, our last proposal of a smart walker intended to monitor and analyze gait in real time. The measurement system is able to detect, classify and characterize steps, including estimates of balance, motor coordination, lift, travelled distance and azimuth. This information can be used by the physiotherapist to assess objectively the physical condition of the user and tune the rehabilitation therapy if needed. The prototype was easily mounted on a standard, legacy, four-leg walker with no loss of native functionality.

The major improvements over the conference paper are:

* The title of the manuscript was changed.
* The Introduction was improved with an in-depth description of the state-of-the-art and the addition of more references.
* The risk indexes were redefined. The indicators of Balance (B) and Motor Coordination (MC), equations (3) and (5) respectively, are now defined in positive terms, with 100% meaning the best value and 0% meaning the worst value.
* Figure 2 was changed to illustrate *all* the gait phases.
* The heart rate measurement channel is completely new (section 3.3).
* The conditioning of the force sensors was described in much more detail (section 3.4), including the challenge of reading 4 sensors using just 3 analog inputs.
* The database behind the *Andante* application is completely new (2nd column of page 4).
* The state machine that classifies steps is now represented by a GRAFCET-like diagram (figure 6), and is explained in a little more detail 8section 3.5.1).
* The thresholding of the state machine was clarified (equations (10) and (11)).
* Panel 4 was added to the *Andante* application. Now, the physiotherapist knows the metrics pf each step detected, including balance, motor coordination, lift, travelled distance and azimuth. All this information can be saved into the database.
* New experimental tests were done, namely the first test to evaluate the accuracy of COF measurements (table 1), and the third test to evaluate the evolution of a user after using *Andante* (table 3). The second test (associated to figure 8) was preserved.

In our opinion, these improvements justify a new publication. Thank you for receiving the manuscript and considering it for review. We appreciate your time and look forward to your response.

On behalf of the authors, I ask you to please address all correspondence concerning this manuscript to me at: [vviegas2@gmail.com](mailto:vviegas2@gmail.com).

Sincerely,

Vítor Viegas