



**6th International Conference on Nanotechnologies and Biomedical Engineering  
Proceedings of ICNBME-2023, September 20–23, 2023, Chisinau, Moldova  
Volume 2: Biomedical Engineering and New Technologies for Diagnosis, Treatment, and  
Rehabilitation**

## **Biomechanical Analysis of the Balance of the Human Body**

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[https://doi.org/10.1007/978-3-031-42782-4\\_10](https://doi.org/10.1007/978-3-031-42782-4_10)

### **Abstract**

This paper proposes a biomechanical analysis of the balance of the human body. The center of mass of the body directly influences the position of balance, respectively the stability of the whole body. In the case of a balance movement, this position changes causing an instability of the body, if the support area is exceeded. The area of stability represents the projection of the center of gravity and it changes depending on the movements that the human body performs. Certain occurrences require these types of movements repetitively, therefore the stability of that person changes during the action. Also certain health problems or medications can upset body balance. The paper proposes a biomechanical analysis mode for checking the balance by identifying the parameters of the stability area at the time of the body inclination and verifying the forces that appeared at that time. In order to extend the experiments, the paper propose in the end a simple structure for analysis by comparing the areas of stability in the controlled balance movement of the different segments of human body with the variations of the  $F_z$  force in the direction of the  $Oz$  axis. Human body stability is important to maintain the bipedal position, through a complex process (which involves central nervous system) and stabilizing the individual segments of the body.

*Keywords: biomechanical analysis, human body balance, human body stability*



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