

## Analysis of kinetic parameters using the Miomotion System in patients after Tibial Nonunion treatment

Piotr Morasiewicz

University of Opole, Poland

### Abstract

**Statement of the Problem:** Analysis of the outcome of the Ilizarov method treatment of tibial nonunion shows functional deficits in the lower limbs of some patients. Biomechanical gait parameters are an important measure for assessing musculoskeletal disorder treatment aiming to restore normal gait. The purpose of our study was to compare the kinematic parameters in patients with tibial nonunion treated using the Ilizarov method and those in a control group of healthy volunteers.

**Methodology & Theoretical Orientation:** The study population consisted of 23 patients (age  $54.9 \pm 16.4$  year) who were treated for tibial nonunion using the Ilizarov method, as well as 22 healthy adult controls (age  $52.7 \pm 10.6$  years). Kinematic parameters were measured using a Noraxon Myo MOTION System. We measured hip flexion and abduction, knee flexion, ankle dorsiflexion, inversion, and abduction during a walk.

**Findings:** Our analysis showed significant differences between the operated limb in patients and the nondominant limb in controls in the following parameters: hip flexion range, hip abduction range, and knee flexion range. There were no significant differences in the knee flexion range between the patients' operated limbs and the controls' nondominant limbs. Our evaluation of the kinematic parameters of the ankle joint demonstrated significant differences between the patients' operated limbs and the controls' nondominant limbs in the ankle dorsiflexion range, ankle inversion range and ankle abduction range. There were also significant differences in the ankle dorsiflexion range and ankle abduction range between the patients' nonoperated limbs and the controls' dominant limbs.

**Conclusion & Significance:** Tibial nonunion treatment using the Ilizarov method does not ensure complete normalization of kinematic parameters assessed 24–48 months following the completion of treatment and rehabilitation.

### Biography

Piotr Morasiewicz is Head of the Department of Orthopedic and Traumatologic Surgery in Opole University. Author of several dozen publications, author of several dozen conference reports. He conducts research in the field of Pediatric Orthopedics, Ilizarov methods and biomechanics of the musculoskeletal system.



14<sup>th</sup> International Conference on Osteoporosis, Arthritis and Musculoskeletal Disorders, Dubai, UAE | December 06-07, 2021

**Citation:** Piotr Morasiewicz, *Analysis of kinetic parameters using the Miomotion System in patients after Tibial Nonunion treatment*, Osteoporosis 2021, 14<sup>th</sup> International Conference on Osteoporosis, Arthritis and Musculoskeletal Disorders, Dubai, UAE, December 06-07, 2021