

# PATHOLOGICAL GAIT OF PATIENTS WITH MUSCULOSKELETAL INJURIES AFTER POLYTRAUMA

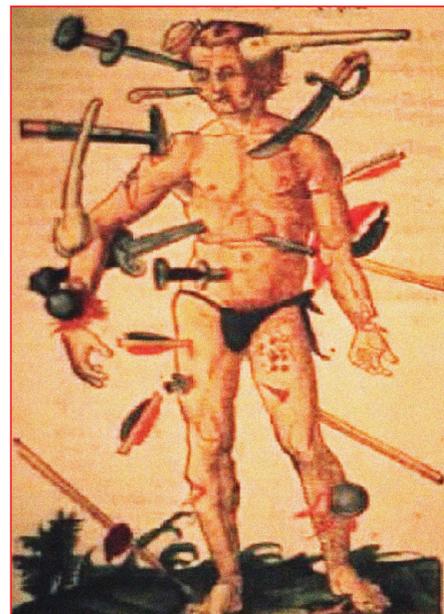
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## Introduction

The functional result of polytrauma patients is an important long-term process. To assess the functional result of polytrauma patients with musculoskeletal injuries, we used instrumented gait analysis. We analysed gait changes in these patients using the New Injury Severity Score.

## Materials and methods

A retrospective analysis of 154 polytrauma patients with musculoskeletal injuries treated in two Riga hospitals during 2008–2010 was made. The New Injury Severity Score and Injury Severity Score values for these patients were calculated. The scales of the severity of polytrauma with orthopaedic injuries and the severity of gait abnormalities were worked out. The evaluation of the functional recovery of 16 polytrauma patients with musculoskeletal injuries was performed in 8–13 months after polytrauma using instrumented gait analysis. In this study, we evaluated the kinematic parameters (motions in the pelvis and lower extremity joints in the sagittal plane) of the gait cycle.



## Knee motion during stride

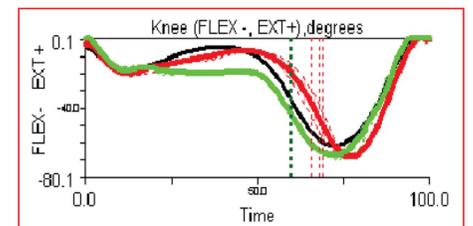


Figure 2

## Hip motion during stride

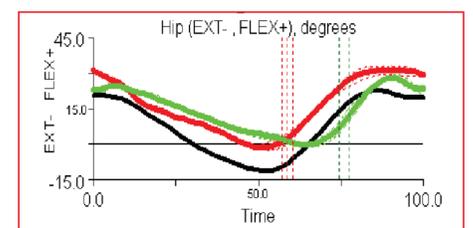


Figure 3

## Pelvis motion during stride

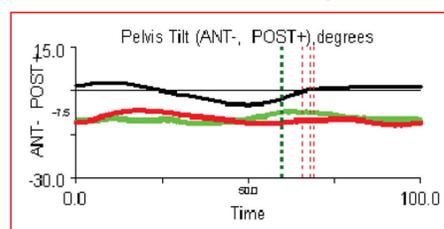


Figure 1

## Ankle motion during stride

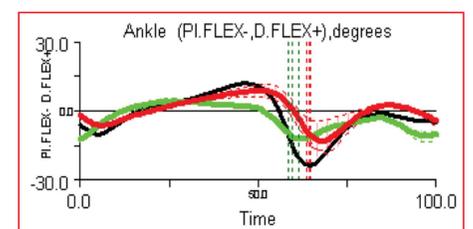


Figure 4

Normal motion range      Right side motion range      Left side motion range

## Results

12 patients had an increased anterior pelvic tilt, 3 patients an increased posterior pelvic tilt, 1 patient an asymmetric pelvic motion during the gait cycle. 7 patients had a limited extension in both hip joints, 3 patients a limited extension in the hip joint on the most seriously injured side, 1 patient an excessive extension in both hip joints, 5 patients a normal hip joint motion during the gait cycle. 8 patients had a persistent flexion in both knee joints, 3 patients a persistent flexion in the knee joint on the most seriously injured side, 2 patients an excessive extension on the most seriously injured side, 3 patients a normal knee joint motion during the gait cycle. 5 patients had a limited dorsiflexion in the ankle joint on the most seriously injured side, 2 patients a limited plantar flexion in both ankle joints, 3 patients a limited plantar flexion on the most seriously injured side, 6 patients a normal ankle joint motion during the gait cycle. The severity of gait abnormalities was compared with the severity of polytrauma. 13 patients had a correlation between the pathological gait changes and the NISS, 3 patients had no correlation between the pathological gait changes and the NISS.

## Discussion

Our study gives a preliminary indication that the pathological changes of gait correlate with the NISS in polytrauma patients with musculoskeletal injuries and a possibility to identify primary and secondary functional changes which cannot be diagnosed with clinical examination methods.

## REFERENCES

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