

# EFFECT OF A VALGISING KNEE JOINT ORTHOSIS IN THE THERAPY OF THE MEDIAL GONARTHROSIS

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## INTRODUCTION

Patients with bowleg usually develop a varus gonarthrosis in the medial compartment of the knee. Beside operation conservative therapy based on valgising orthoses or bandages becomes more and more common. However, it is still controversially discussed, whether there is a substantial benefit for the patients by these therapy forms. Although there are indications for the clinical effectiveness, these orthopedic aids are still not mentioned in the “Current Guidelines Orthopedy”. A reason could be that not yet enough objective measurable effect proofs are present. Substantial benefit for a patient can only be archived, if the biomechanics of gait is strongly influenced by the therapy. The Aim of this study was, therefore, the examination the effect of valgising orthoses or bandages on the biomechanics of gait of patients with varus gonarthrosis due to a varus position of the knee.

## METHODS

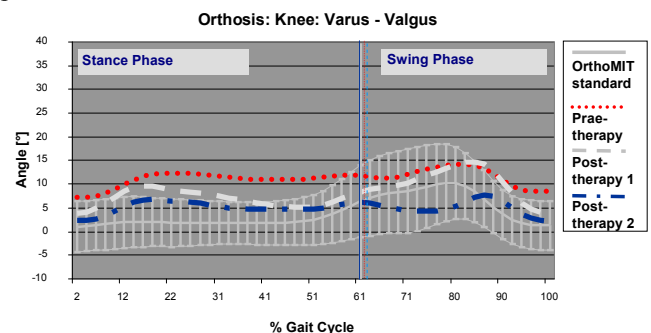
In the investigation 34 patients (9 women and 25 men) participated. The diagnosis medial gonarthrosis was placed by an orthopedics surgeon. The study design was a prospective, parallel-group, randomized clinical trial. Patients who had varus gonarthrosis were screened for eligibility. The criteria for exclusion included arthritides other than osteoarthritis, an operation on the knee within the previous six months, symptomatic disease of the hip, ankle, or foot, and a previous fracture of the tibia or femur. The patients were assigned randomly to one of three treatment groups: orthosis treatment, bandage treatment and control group.

The disease-specific quality of life was measured by the Western Ontario and McMaster University Osteoarthritis Index (WOMAC) and the Numeric Rating Scale (NRS). All patients underwent a clinical gait analysis. The kinematics of the movement was captured by an opto-electronic six-camera system (VICON 370) and joint angles were calculated with the VCM clinical manager. Gait has been analysed prior to treatment, after 8 weeks and 16 weeks of the treatment. Detected joint angles were compared to a norm of healthy gait cycles from 25 volunteers of same age and sex (OrthoMIT standard). The gait has been considered as pathologic when the joint angles exceeded the 95% confidence interval of the OrthoMIT norm.

## RESULTS AND DISCUSSION

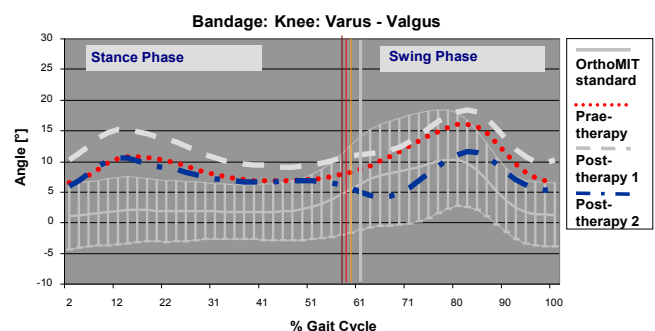
The orthosis group the showed an improvement of the functional performance in the varus-valgus axis of the knee already after 6 weeks of treatment becoming more considerable after 16 weeks (figure 1). Additionally, the

relation of stance to swing phase becomes more normalised. Referring to the ankle joint the study indicated also functional improvements in the orthosis group. However, most of the patients show an increasing impairment of the functional exposure in all axes of the hip joint of the ipsilateral side.



**Figure 1:** Gait report of an individual patient treated with an orthosis at the beginning, after 8 and after 16 weeks of treatment.

In the bandage group (figure 2) as well as in the control group, no functional improvement can be observed. A difference between men and women was not observed as significant. Finally, the functional situation of the patients does not correlate with the WOMAC but with the NRS.



**Figure 2:** Gait report of an individual patient treated with a bandage at the beginning, after 8 and after 16 weeks of treatment

## CONCLUSIONS

Patients with varus gonarthrosis treated with bandages did not benefit from the therapy. In the patients of the control group frequently degradation was observed due to the pain increase in the knee joint. Patients with varus gonarthrosis may benefit from use of a knee valgising orthosis. However, it remains to be seen which consequences emerge from the impairment of the functional performance of the ipsilateral hip.