Electronic Studies of Gait Disturbances
A New Method of Gait Examination in Patients with Arthrodesis of the Ankle and/or Subtalar Joint*

W. Pförringer, K. Matzen, and J. Hinterberger

Orthopädische Klinik und Poliklinik der Universität München (Direktor: Prof. Dr. A. N. Witt), Harlachinger Str. 51, D-8000 München 90, Federal Republic of Germany

Summary. A follow-up study on 160 patients with an arthrodesis of the ankle and/or subtalar joint has been made. Besides clinical and roentgenological examinations the gait of the patients was checked with a new electronic device. In addition we tested the pressure distribution underneath the sole of the affected foot and compared it to the contralateral side. This was found to be a valuable contribution to the examination methods used and can help to give a more objective judgement of the patients subjective complaints.

Fig. 1a and b. Electronic platform for three component measuring of forces underneath the human sole in walking. The side view shows the integrated load measuring device for definition of the pressure distribution underneath the sole in standing position

* Dedicated Prof. Dr. A. N. Witt on his 65th birthday

Fig. 2. Load distribution of a normal person. The characteristic double-peak of the vertical forces is shown very clearly. Horizontal-sagittal heel pressure and starting load of nearly the same height
Besides confirming known facts it was found that there were divergent results of electronic gait studies from examinations which are based on the usual clinical and X-ray studies. This may help to improve the patient’s gait by correcting mechanical aids or, in rare cases, indicating another operation.

One hundred sixty patients with an arthrodesis of the ankle and/or subtalar joint (operated from 1968 to 1978 at the Orthopedic Hospital of Munich) have now been reviewed in a follow-up study.

We recorded clinical and X-ray aspects, as well as studies of the gait. These examinations were performed with the use of an electronic platform for three component measuring, as well as with an integrated load measuring device for definition of the pressure distribution underneath the human sole.

Normally the results of an arthrodesis of the ankle or the subtalar joint, as far as the walking ability is concerned, are based on subjective criteria. Therefore