

## **Long Term Results of Secondary Prevention of Diabetic Foot Syndrome with Soft-soled Shoes**

**Background and Aims:** We developed a cost-saving alternative to handmade orthopaedic shoes in secondary prevention after acute diabetic foot syndrome: the 'Cologne Module Shoe'. This was achieved by using as far as possible prefabricated components and computer aided design (CAD)-technique. The soft soles are prefabricated in different sizes, variable heights of the heel and diverse hardness degrees of the polyurethane foam of the sole. The shape of the bootleg is adapted by CAD-technique. The insoles are made of 3 layers of foam of different hardness, which are assembled together after scanning the foot with a mechanical scanner, correcting by hand and milling automatically. No rigid sole or corrective variations in thickness or hardness of the insole were used in this version. Industrially produced shoes with rigid soles were demonstrated by former studies to be effective in reducing the recurrence of foot ulcers. In this study we intended to examine the effectiveness of the customized 'Cologne Module Shoe' with soft sole in secondary prevention after an acute diabetic foot syndrome in patients without major deformities after 4 years.

**Materials and Methods:** Between 1.1.2001 and 31.12.2002 214 patients treated in a Diabetic Foot Centre received their protective footwear from an orthopaedic shoemaker located within the reach of the patient's residences. 158 of these had no major deformity (for example Charcot foot Sanders 3-5) and received the soft-soled Module Shoe. A random sample of 30 of these patients was selected at the end of 2002 and followed by personal examination. Data recruitment was concluded in January 2006 with structured telephone interviews with the general practitioners and the patients.

**Results:** Patients were 67,1 (SD 8,0) years old, the median diabetes duration was 17,7 (SD 10,4) years, 20 were men, 2 type 1 and 28 type 2 diabetics, in 19 cases the risk was neuropathic and in 11 cases angioneuropathic. Median follow up was 1.500 days (SD 169 days). 5 patients deceased during the study. 8 of all patients had new ulcers due to several causes (footcare s.o.), which induced one major and one minor amputation. One vascular occlusion without the possibility of revascularisation led to one adjunctive major amputation without preceding ulceration.

**Conclusion:** 'Cologne Module Shoes' with soft soles may contribute to reduce the recurrence of ulcers (28 % in 4 years) within the secondary prevention of diabetic foot syndrome in patients without major deformities.