

Patient compliance and effect of orthopaedic shoes

A. B. PHILIPSEN, N. ELLITSGAARD, M. R. KROGSGAARD and S. SONNE-HOLM

Department of Orthopaedic Surgery, University Hospital in Hvidovre, Hvidovre, Denmark

Abstract

Orthopaedic shoes are individually handmade after a prescription from an orthopaedic surgeon, hence relatively expensive. Bad compliance is mentioned in the literature but not investigated. In order to evaluate patient compliance and the effect of orthopaedic shoes, 85 patients who were prescribed orthopaedic shoes at the authors' department during a 3 year period received a questionnaire concerning relief of symptoms and daily use of the shoes. The answers from 74 patients were correlated to the prescription procedure and the degree of medical follow-up.

Only 60 of 74 patients used their shoes. Some 51 patients had some benefit while 23 had no effect or even worse symptoms. Some patients even used their shoes despite no symptomatic relief. However, patients who felt they were well informed about the purpose and function of their shoes had more benefit than the rest. Only 12 patients of the 74 were checked by the orthopaedic surgeon after delivery of the shoes.

In conclusion the authors believe there is a great need for information to be given to the patients about the functions and limitations of orthopaedic shoes and that every patient should be offered a control check-up by the surgeon. Further investigations of the effect of orthopaedic shoes should be carried out to optimise the use of these expensive devices.

Introduction

Orthopaedic shoes are individually made which makes them expensive. If the shoes are uncomfortable or do not have the desired

subjective effect, minor corrections are possible after the shoes are manufactured. McDermott *et al.* (1987) found that response to shoe modifications often varied among patients with the same foot deformities and Brodsky *et al.* (1988) emphasised the lack of literature dealing with objective evaluation of inserts for orthopaedic shoes.

Patient compliance with prescribed regimens is well investigated in chronic diseases such as diabetes (Friedman, 1988). Bad patient compliance with orthopaedic shoes is mentioned by several authors (Wickstrom and Williams, 1970; McDermott *et al.*, 1987; Hollingshead, 1991; Sauvain *et al.*, 1991) but no literature was found investigating this problem.

The aim of this study was to evaluate the compliance and effect of orthopaedic shoes.

Patients and methods

All patients (in total 100, 30 males and 70 females) who were prescribed orthopaedic shoes in the authors' department, during the period of 1.1.90 – 31.12.92, were included in the investigation. At the time of the inquiry 15 were dead, thus 85 patients received a questionnaire concerning relief of symptoms (defined in 5 degrees ranging from total relief of symptoms to worsening), and daily use of the shoes (every day, occasionally, never). These questions, were correlated to disease and other circumstances in connection with the prescription and manufacturing.

Information about the doctor's prescriptions was taken from the hospital files and prescription forms. Information about the manufacturing of the shoes was taken from the orthopaedic shoemaker's files. The value of the written prescriptions was assessed as detailed, fair or with no details. Median age of the 85

All correspondence to be addressed to Anders Boye Philipsen, Godthåbsvej 36, 4300 Holbæk, Denmark. Tel: (+45) 59444078.

Table 1. Effect and use of orthopaedic shoes. The value of factors that could increase the effect of orthopaedic shoes.

| Effect | | Use of shoes | | Prior experience | | Written prescription | | | Control by surg. | | Information ^a | |
|------------|-----------|--------------|--------|------------------|-----|----------------------|------|------|------------------|-----------|--------------------------|--------------|
| | | Use | No use | No | Yes | Detailed | Fair | None | + control | - control | Informed | Not informed |
| Benefit | Excellent | 10 | | | | | | | | | | |
| | Good | 38 | 50 | 1 | 30 | 20 | 30 | 15 | 6 | 6 | 43 | 35 |
| | some | 3 | | | | | | | | | | 10 |
| No benefit | None | 3 | | | | | | | | | | |
| | Worsening | 20 | 10 | 13 | 17 | 7 | 15 | 6 | 2 | 6 | 19 | 5 |
| No. | | 74 | 60 | 14 | 47 | 27 | 45 | 21 | 8 | 12 | 62 | 40 |

p-value

(Fisher) 0.25

(chi-square test for trend) 1.0

(Fisher) 0.33

(Fisher) <0.01

^a 8 patients did not answer this question

patients who were still alive was 64 (percentiles: 55-84) years.

Distribution of disease was: 44 rheumatoid arthritis, 10 diabetes, 10 arthrosis, 7 traumatic deformity, and 14 with other diseases.

Some 74 patients returned the questionnaire. Only 5 patients were still working, 64 were on a pension, 2 were on sickness benefit, and 3 had unknown working status.

The time between prescription and delivery was less than 2 months in 19 cases, 2-5 months in 42 cases, longer than 5 months in 11 cases and not specified in 2 cases.

For comparison of relief of symptoms/effect of shoes with other parameters, Fishers test was used. Answers concerning the main questions were divided into 2 groups (Table 1):

1. Patients using the shoes to some degree and patients with some benefit from the use, versus
2. no use/relief at all.

A significance level of $p < 0.05$ was chosen. The value written prescriptions was tested by use of chi-square test for trend.

Results

In all 51 patients had some benefit from the

use of shoes. In 23, the shoes had no effect or even made symptoms worse (Table 1).

Some 42 patients used the shoes every day, 18 used them intermittently and 14 never. Two (2) patients used their shoes although they gave no relief. Eight (8) used their shoes even though they made symptoms from the feet worse (Table 1).

The 3 most frequent complaints were heaviness of the shoes, the lack of style of the shoes and pain when using them. Thirteen (13) patients reported that ulcers developed during the use of the shoes (Table 2).

Applying a rocker-sole, a forefoot pad and a heel were the 3 most common modifications (Fig. 1). Comparing the 3 most common modifications with the effect of shoes only change of the heel for unequal length of legs was significantly bad in outcome according to the patients' answers ($p = 0.03$). Twenty-seven (27) patients who were experienced with orthopaedic shoes did not have better compliance than 47 patients with a first time prescription ($p = 0.25$) (Table 1).

A detailed written prescription did not result in a better function of the shoe ($\text{Chi}^2 = 0.306$, $p = 1.0$) (Table 1).

Only 12 of the 74 patients were controlled by

Table 2. Seventy-four (74) patients complaints of orthopaedic shoes.

| | No complaint | Too heavy | Pain from shoes | Bad look | Developing of ulcer | Difficult handling | Other complaints |
|-----------------|--------------|-----------|-----------------|----------|---------------------|--------------------|------------------|
| No. of patients | 23 | 27 | 21 | 17 | 13 | 9 | 11 |

26/74 patients had 2 complaints or more

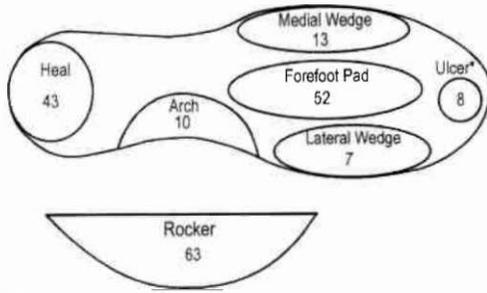


Fig. 1. Total number and location of modifications on 74 pairs of orthopaedic shoes. Each modification is related to 1 pair of shoes without regards to different build up or right and left shoe.

*Modification to relieve direct pressure on a foot ulcer.

the orthopaedic surgeon after the shoes were delivered. These patients did not have a better effect from the shoes ($p=0.33$) (Table 1).

Patients who felt informed about the purpose and function of the shoes had a better result from them ($p<0.01$) (Table 1).

Discussion

The majority of patients in this material had rheumatoid arthritis and were on pension. Younger, working patients would probably make other demands on orthopaedic shoes. Two thirds of the patients had some result from the shoes justifying the prescription. The fact that 13 patients were using badly functioning shoes, indicates that they are in a great need of further evaluation by the orthopaedic surgeon, even though the 12 patients that were checked in this study, did not benefit significantly from this (Table 1).

The span of time before the shoe is finally tested, and the problems with emphasising to the patient the need for reattendance (Armstrong *et al.*, 1990) can explain some of the problem. A note from the orthopaedic shoemaker to the surgeon when the shoes are finished followed by a call for a check-up visit, would probably be the easiest and most important contribution to better functioning shoes and better compliance especially when the patients are given information about the purpose and function of the shoes and realistic expectations.

Complaints about the weight and appearance of orthopaedic shoes are well known (Wickstrom and Williams, 1970). Computing techniques and new materials have been

developed to design more modern and light styles. Some degree of pain must be expected among some of these patients with serious chronic diseases even with well manufactured shoes. Ulcers developing during the use of the shoes should not be accepted. As several of these patients have diabetic neuropathy, the high incidence of ulcers among the patients in this series stresses the need for check-up consultations several times after the shoes are delivered. In some cases the written prescription was discussed with the orthopaedic shoemaker during a weekly meeting at the hospital. This could add necessary information to a non-detailed prescription. The surprising fact that shoes made from a detailed written prescription did not produce a better result than shoes made from very short, non-detailed prescription could indicate difficulties for the orthopaedic shoemaker in implementing the surgeons theoretical prescriptions for the shoes.

Applying orthopaedic shoes as an orthopaedic treatment is chiefly a matter of experience and skill (Chen and Lord, 1995). The theoretical considerations for proper fit of shoes and selection of the specific modifications have been discussed in several papers (Brodsky *et al.*, 1988; Cracchiolo, 1979; Janisse, 1992; Wickstrom and Williams, 1970). It is suggested that the modifications, if possible, should be tested before the shoe last is made, and the use of a generic shoe is suggested as an adjunct to decision-making and as a predictor of patient compliance (McDermott *et al.*, 1987; Chen and Lord, 1995).

In conclusion there was a need for better information to patients about the purpose, function and limitations of the shoes. Every patient should be checked not only by the orthopaedic shoemaker, but also by the surgeon after the shoes have been in use for a while.

Further investigations of the effect of modifications on orthopaedic shoes should be carried out to optimise the use of these expensive devices.

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