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# Long-term physical, psychological and social consequences of a fracture of the ankle

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*The long-term physical, psychological and social outcomes of 68 patients with an ankle fracture were investigated by using a postal questionnaire 6 years after injury. Patients were treated at a level I Trauma Centre between January 1989 and December 1989. Where applicable, the outcomes were compared with the outcomes of severely injured patients who were investigated previously. Physically, the patients were suffering from problems in the extremities and the spine. Surprisingly, half of them (52 per cent) had psychological complaints due to the initial injury. Eighty-nine per cent of the patients returned to work. This result seems to be only slightly better than the return to work in severely injured patients (74 per cent). Those with an ankle fracture needed less time to return to work (3 months versus 13 months in the severely injured patients). Further social changes (marital status, leisure activities) were mostly found in the severely injured patients. Patients with an ankle fracture as well as severely injured patients are affected by long-term consequences. The differences between the two groups are not as pronounced as is generally assumed. Probably, the consequences of 'lesser' injuries are frequently disregarded, whereas severely injured patients are doing better than expected. © 1998 Elsevier Science Ltd. All rights reserved.*

'lesser' injury (an ankle fracture). Where possible, comparisons with the long-term outcome of severely injured patients who were investigated previously are made<sup>5</sup>.

## Methods

All consecutive patients who sustained a fracture of the ankle and who were treated at the University Hospital Groningen (UHG) between 1 January 1989 and 31 December 1989, were included. Only patients of 16 years of age and older were considered for the study. All types of ankle fracture were included. The primary diagnosis was confirmed by reviewing the optimal X-rays. Patients were excluded if they had any further injuries that could have interfered with the outcome. Further exclusion criteria concerned mental retardation, severe psychiatric disorders or insufficient command of the Dutch language. The subsequent methods used to carry out this study were identical to the study design described previously<sup>5</sup>.

## Results

### Study population

The mean age of the 105 patients with a fracture of the ankle was 40 years (range 16–89 years). The majority were males ( $n = 64$ , 61 per cent). The injury had mostly been sustained during sporting activities ( $n = 25$ , 24 per cent) or in traffic ( $n = 19$ , 18 per cent). The ankle fractures were predominantly fracture dislocations ( $n = 45$ , 43 per cent) (Weber B type, with or without a fracture of the medial malleolus or the malleolus tertius). None of the patients died during hospitalization, but 12 (11 per cent) died during the follow-up period. Four of the 93 survivors did not meet the inclusion criteria. Another two patients could not be traced. The remaining 87 patients received a questionnaire. Their age and sex were similar to the age and sex of the original study

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## Introduction

The long-term consequences of injuries are a topic of increasing importance. One might expect the outcome of severely injured patients to be poorer than that of patients who sustain a 'lesser' injury. How far the long-term outcome of injured patients is influenced by the severity of the initial injuries is unclear. Since it is known that the outcome of the majority of severely injured patients is good<sup>1–4</sup>, it is interesting to what extent the outcome of patients with a less severe injury differs from the outcome of severely injured patients. The purpose of this study is to reveal the long-term physical, psychological and social consequences of a group of patients with a

population (mean age 38 years (NS), 62 per cent male (NS)). The response rate was 78 per cent ( $n = 68$ ).

### Physical status

After injury, 41 (60 per cent) of the patients with an ankle fracture reported one or more physical problems (see *Figure 1*). Compared with the pre-injury situation, there was a statistically significant increase in the number of patients with complaints of the extremities and the spine ( $P = 0.00$  and  $P = 0.00$ , respectively). Nine (13 per cent) stated that their current physical distress was caused by the initial damage. The subjective general health was good (mean VAS score 73, SD 25) and patients did not suffer much pain (mean VAS score 14, SD 22).

### Psychological status

Thirty-four (52 per cent) of the patients reported one or more psychological complaints due to the initial injuries. Fatigue was the most common complaint after injury (35 per cent of cases) (see *Table 1*). Further complaints concerned slowness (22 per cent) and memory impairments (21 per cent). These complaints were all attributed to the initial injury.

### Social status

**Employment status.** Before injury, 28 (41 per cent) of the patients were employed. Twenty-five (89 per cent) of them returned to work an average of 3 months after injury (range 0–12 months). Two of them had changed their occupation because they were unable to resume their former jobs. Six years after injury, 21 out of these 25 patients (84 per cent) were still employed. A total of 3 (11 per cent) patients were unable to return to work due to the conse-

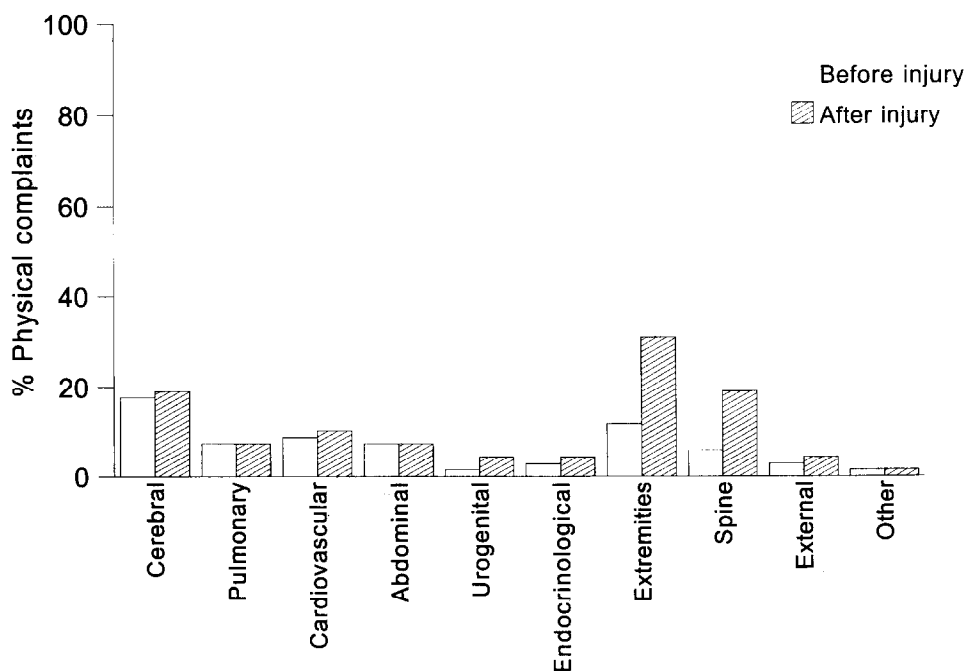
quences of the ankle fracture and depended for their income on disability benefits.

**Marital status.** Although there was an increase in the proportion of married patients before and after injury (35 versus 46 per cent, respectively), this was not influenced by the injury but probably a consequence of the patients being young and mostly unmarried at the time of injury.

**Leisure activities.** The consequences of the ankle fracture had an effect on the main leisure activities of 13 (19 per cent) of the patients. Of those pursuing a sporting activity, 32 per cent (9/28) indicated that they had changed or no longer pursued their favourite sporting activity because of the consequences of the initial injury.

### Discussion

The severity of an injury is one of the parameters determining the outcome of an injury<sup>6,7</sup>. To what extent the severity of an injury affects the outcome is rather unclear. Such an impact will also depend on the body area involved, multiplicity of injuries and the side-effects of the injury or of the treatment. This study aims to reveal the outcomes of a 'lesser' injury (a fracture of the ankle). The long-term consequences of the injury are studied in particular. Since the study design is identical to an investigation after the long-term outcome of severely injured patients, similarities between the severely injured patients and those with an ankle fracture are revealed. We



**Figure 1.** Distribution of physical complaints in body areas before and after injury ( $n = 68$ ).

**Table I.** Percentage of psychological complaints (6 years after injury) due to the initial injury ( $n = 68$ )

	Percentage
Cognitive problems	
Fatigue	35
Slowness	22
Memory	21
Word-finding	19
Learning	10
Concentration	7
Planning	7
Behavioural problems	
Irritable	10
Impulsive	10
Emotional problems	
Anxiety	16
Depressed	15
Sleep disturbances	6

acknowledge, however, that the two groups should not be compared directly.

An increase of physical complaints after injury was found in the extremities and the spine. These complaints can either be attributed to the consequences of the initial injury or to the natural course of life. It is interesting, however, that the pattern of physical complaints in the patients with a 'lesser' injury (a fracture of the ankle) is similar to that of the severely injured patients (cerebral complaints excepted)<sup>5</sup>. A further resemblance to severely injured patients concerned the self-reported present state of general health: the mean VAS-scores of the two study populations were comparable (73 versus 75, respectively)<sup>5</sup>. This finding may either imply that the severity of the physical problems in both groups is relatively small or that patients do not assess their general health on physical aspects alone, but also seem to consider other conditions to be important (for example, psychological health and social well-being).

We are aware of the fact that our observations would be stronger when compared with a 'healthy' population who did not sustain an injury. Furthermore, the outcomes of patients with an ankle fracture probably differ from those with other 'lesser' injuries, like minor head injuries. We chose those with an ankle fracture because we assumed that this population could function as a reference group for psychological and social effects and for most of the physical effects (complaints of the extremities excepted). The current results, especially the psychological results, surprised us and confirmed the need for a controlled prospective study.

The patients with an ankle fracture mentioned considerable psychological problems due to the initial injury. This finding has not been described previously after such a long period of follow-up in patients who have sustained a 'lesser' injury. The fact that the incident occurred 6 years before data collection might imply that long-term psychological

problems are not only a matter of concern after severe injuries, but also after 'lesser' injuries. Although these findings might be explained by the consequences of the initial incident itself, they may also have been influenced by other 'life events'. Nevertheless, such results indicate that psychological aspects must not be disregarded in the treatment of injured victims, even in those who sustain an apparently somatic 'lesser' injury.

Those with an ankle fracture needed less time to return to work in comparison with the severely injured patients (3 months and 13 months after injury, respectively). Ultimately, however, there were no major differences between the proportions of the two groups who returned to work (89 versus 74 per cent, respectively). Surprisingly, the proportions of patients who had to change their occupation or who received disability benefits due to the consequences of the injury did not differ much between the two groups. Further social outcome, expressed in the proportion of broken marriages, was influenced by severe injuries, but not by the ankle fracture. The latter did not apply to the proportions of patients who were unable to follow their previous leisure activities (sporting activities in particular): both groups were affected by the injuries sustained, the severely injured more than those with an ankle fracture.

In conclusion, not only the above mentioned social outcomes, but also the physical and psychological outcomes of the severely injured patients are generally more unfavourable than the outcomes of the patients with an ankle fracture. However, our results make clear that the outcomes of 'lesser' injuries may be more serious than we tend to assume and that severe injuries may lead to better outcomes than we perhaps expected. As a consequence, those treating patients with 'lesser' injuries should be on the alert for uncommon side-effects, such as psychological disorders, and those treating severely injured patients should not be too pessimistic regarding the long-term outcomes of these patients.

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