

# Compliance with the guidelines for acute ankle sprain for physiotherapists is moderate in the Netherlands: an observational study

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**Question:** What is the compliance with guidelines for acute ankle sprain for physiotherapists? **Design:** Survey of random sample of physiotherapists. **Participants:** 400 physiotherapists working in extramural health care in the Netherlands. **Outcome measures:** Questions covered attitude towards guidelines in general, familiarity with the guidelines for acute ankle sprain, compliance with the guidelines, advantages and disadvantages of the guidelines, and factors relating to compliance with the guidelines. **Results:** The majority of the physiotherapists were familiar with the content of the guidelines to some degree and 66% applied it to more than half of their patients with acute ankle sprain. The recommendations to determine both the prognosis and the necessity of treatment by using the function score were the least followed. Some physiotherapists thought the function score was not completely clear, which may have been a barrier for implementation. Factors relating positively to compliance were a positive attitude towards guidelines in general, and having colleagues who implemented the guidelines for acute ankle sprain. **Conclusion:** Although compliance with the guidelines for acute ankle sprain was fair/moderate, compliance may be enhanced by improving clarity of the function score, including it in the short version and improving the attitude of physiotherapists towards guidelines in general. [Leemrijse CJ, Plas GM, Hofhuis H, van den Ende CHM (2006) Compliance with the guidelines for acute ankle sprain for physiotherapists is moderate in the Netherlands: an observational study. *Australian Journal of Physiotherapy* 52: 293–298]

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## Introduction

In the Netherlands, about 60 000 patients a year are treated by physiotherapists for acute ankle sprain, which is defined as a traumatic injury to the lateral capsular ligament of the ankle (ie, the anterior talofibular ligament, the anterior calcaneofibular ligament, and the posterior talofibular ligament) (Bie et al 2003). Clinical practice guidelines for physiotherapists were developed under supervision of the Royal Dutch Society for Physiotherapy (Bie et al 2003). The extensive version of the guidelines covers the diagnosis of and physiotherapy intervention for acute ankle sprain based on evidence from randomised clinical trials and clinical consensus. The main recommendations are also presented schematically in a short version of the guidelines.

Implementation of the guidelines for acute ankle sprain requires that a patient has been referred by a general practitioner or medical specialist with data supporting a diagnosis of injury to the lateral capsular ligament of the ankle. The goal of physiotherapy diagnosis is to ascertain whether intervention according to the guidelines is appropriate. A function score (Appendix 1) determines the severity of pain, dynamic stability, burden, swelling, and walking pattern; intervention is recommended if the score is less than 40. The accuracy of the function score in predicting recovery after two or four weeks varies from 81% to 97% (Bie et al 1997); however, calculation of the function score is included only in the extensive version of the guidelines. Individual recommendations include avoiding passive stress tests for determining the exact location and severity of the

injury, avoiding electrophysical modalities and applying a brace or tape if swelling is sufficiently decreased.

Development of guidelines does not ensure their use in practice (Grimshaw et al 1995, Littlejohns et al 1999). Guidelines should be clear, easy to use in practice, and compatible with usual routines (Burgers et al 2003). Furthermore, potential users must see the advantage of using guidelines. Barriers to implementation can be at the level of the patient (eg, patient's expectations), the individual professional (eg, clinical uncertainty, inability to appraise evidence), the health care team (eg, usual routines), or the organisation (eg, workload) (Grol et al 2003, Steenkiste et al 2004). Moreover, compliance with guidelines will depend largely on the way they are implemented. Dissemination of printed educational materials alone appears to have only a small impact on practice, and additional active interventions such as educational meetings, interactive workshops, audits, and feedback may have increased benefits (Bekkering et al 2003, Bekkering 2004, Bekkering et al 2005, Grimshaw et al 1995, Grimshaw et al 2001, Jamtvedt et al 2003, O'Brien et al 2001).

To implement the guidelines for acute ankle sprain, a combination of passive and active strategies was used. The guidelines were sent to all members of the Society together with promotion materials, and papers that had been published in professional journals. The promotion materials consisted of four forms; a guide for consultation with the general practitioner, a guide for peer review, a knowledge test, and a form to fill in the function score. In addition,

an annual continuing education course was developed and presentations, lectures and workshops were given at physiotherapy colleges, and (inter)national congresses and conferences. So far, little research has been done into the compliance with guidelines developed for physiotherapists. Therefore, the present study was conducted to investigate the extent to which physiotherapists comply with guidelines for acute ankle sprain.

## Method

**Design** A questionnaire was sent by mail to a random sample of physiotherapists in the Netherlands. Questions covered sociodemographic information such as gender, age, years of experience as a physiotherapist, and membership of the Royal Dutch Society for Physiotherapy. Questions also covered attitude towards guidelines in general, familiarity and compliance with the guidelines for acute ankle sprain, advantages and disadvantages of the guidelines, and factors relating to compliance with the guidelines. Questions were presented in a closed format. Physiotherapists who did not return the written questionnaire were briefly interviewed by telephone about sociodemographic information, and their familiarity and compliance with the guidelines. (See Appendix 2 on the eAddendum for the complete questionnaires) Questions about attitude towards guidelines in general, advantages and disadvantages of the guidelines, and factors relating to compliance with the guidelines were not asked in the telephone interview. According to the Dutch 'Regulations on medical research involving human subjects', ethical approval is necessary only for medical research in which persons are subjected to treatment or are required to behave in a certain manner. Since this was not the case for this study, ethical approval was not gained.

**Participants** Four hundred physiotherapists, stratified for age and sex, were extracted from a database of 12 965 physiotherapists working in extramural healthcare in the Netherlands. In order to assess the representativeness of these physiotherapists, they were compared with national data in terms of sex, age, years of experience, place of practice (private practice, hospital, nursing home, etc), and location (Kenens and Hingstman 2004).

**Measurement of attitude towards guidelines in general** Ten statements (Grol et al 1994) were used to measure the attitude of the participants towards guidelines in general. Participants were asked to respond to statements such as 'Guidelines are important to get physiotherapists working along the same lines'. Agreement was scored on a five-point Likert scale varying from strongly disagree (-2) to strongly agree (+2).

**Measurement of familiarity with the guidelines** Participants were asked if they were aware of the existence of the guidelines for acute ankle sprain. Those aware of their existence were asked whether they treated patients with acute ankle sprain and, if so, were they familiar with the content of the guidelines.

**Measurement of compliance with the guidelines** Participants familiar with the content of the guidelines were asked to what extent they treated their patients according to the guidelines, using a six-point-scale (never, < 10% of the patients, 10–50%, 50–90%, > 90%, always). They were also asked how often they used the extensive or the short version of the guidelines and whether they treated their patients according to individual recommendations in the guidelines.

**Table 1.** Number (%) of characteristics, familiarity, and compliance with the guidelines for acute ankle sprain of 332 mail and phone respondents.

Sociodemographic characteristics	
Male:female	169 (51):163 (49)
Age, mean	43
Membership of Society	295 (89)
Familiarity with the guidelines	
Aware of the existence of the guidelines	319 (96)
Treating patients with acute ankle sprain	230 (69)
Familiar with the content of the guidelines (n = 230)	214 (93)
Compliance with the guidelines (ie, % of patients treated according to the guidelines) (n = 214)	
< 10%	34 (16)
10–50%	39 (18)
50–90%	75 (35)
> 90%	66 (31)

**Measurement of advantages and disadvantages of the guidelines** Participants were asked the advantages and disadvantages of using the guidelines by agreeing or disagreeing with 4–5 statements.

**Measurement of factors related to compliance with the guidelines** Participants were asked which educational activities they had participated in to become familiar with the guidelines. Furthermore, their opinion was asked about the overall clarity and the specific clarity of some aspects of the guidelines. To measure social influence, they were asked whether they knew colleagues using the guidelines.

**Data analysis** Principal component analysis was used to analyse whether the scores on the statements regarding attitude towards guidelines represented one factor. In addition, Cronbach's alpha was calculated as a measure of internal consistency of the scale for attitude. For every respondent, the mean of the 10 statements was calculated and since they were scored from -2 (strongly negative) to 2 (strongly positive), attitude towards guidelines in general was dichotomised as positive (mean score > 0) or negative (mean score ≤ 0).

The relationship between the factors and compliance with the guidelines was determined using Spearman's correlation coefficient for the continuous variables and Pearson's Chi-square for the dichotomous variables. Compliance with the guidelines was dichotomised as compliance (treatment according to the guidelines for ≥ 50% of patients with acute ankle sprain) or non-compliance (treatment according to the guidelines for < 50% of patients with acute ankle sprain).

Multivariate logistic regression analysis (forward inclusion) was performed to determine the relative influence of age, sex, years of experience, membership of the Society, number of patients with acute ankle sprain treated, attitude towards guidelines in general, educational activities undertaken, perceived clarity of the guidelines, and social influence

**Table 2.** Attitudes (number (%)\*) of 229 mail respondents towards guidelines in general.

Attitude	Strongly agree	Partly agree, partly disagree	Strongly disagree
Guidelines should not become obligatory	141 (63)	60 (27)	24 (10)
Guidelines get physiotherapists working along the same lines	164 (72)	44 (20)	19 (8)
Guidelines give a basis for daily work	132 (58)	62 (27)	33 (15)
Guidelines force the physiotherapist into a straightjacket	88 (39)	82 (36)	58 (25)
Guidelines contribute to the guarantee of quality of care	124 (54)	72 (32)	32 (14)
Patients are too different for uniform guidelines to be used	111 (49)	83 (37)	32 (14)
Guidelines are the responsibility of the professional group	142 (63)	62 (27)	22 (10)
The Society has the competence to set guidelines	116 (51)	62 (28)	47 (21)
Guidelines contribute to working efficiently and cost effectively	94 (42)	86 (38)	45 (20)
Guidelines are seldom feasible in local situations	42 (19)	93 (42)	85 (39)

\*number of respondents does not always add up to 229 due to missing data

(ie, knowledge of colleagues using the guidelines) on compliance with the guidelines. Participation in educational activities was dichotomised into no (none) or yes (one or more). The criterion to enter the analysis was set at  $p < 0.05$ . The OR (95% CI) of the variables of the successful model were calculated.

## Results

**Characteristics of the participants** The response to the written questionnaire after six weeks and one reminder was 240 out of 400 (60%). Eleven questionnaires were returned because the address was unknown or the physiotherapist was no longer practising, resulting in 229 (57%) completed written questionnaires. Of the 160 physiotherapists who did not return the written questionnaire, 103 were briefly interviewed by telephone about sociodemographic items, and their familiarity and compliance with the guidelines. This increased the response for those questions to 332 out of 400 (83%). There was no significant difference between these 332 respondents and all physiotherapists working extramurally in the Netherlands for sex, age, years of experience, place of practice, and location. There were also no significant differences between mail respondents and phone respondents in sex, age, and membership of the Society (Table 1).

**Attitude towards guidelines in general** Factor analysis showed a clustering of the statements for attitude towards guidelines in general. The statement 'Guidelines should not become obligatory' was left out of the analysis because it had a low factor loading (0.28), leaving nine statements to determine a score for attitude towards guidelines in general. The first factor explained 49% of the variance. Internal consistency of the scale was 0.89 (Cronbach's alpha).

The mean attitude of 229 mail respondents towards guidelines in general was 0.3 on a scale  $-2$  to  $+2$ , which is slightly positive. Overall, 158 respondents (69%) had a positive attitude while 71 (31%) had a negative attitude towards guidelines in general. The majority of respondents were in favour of guidelines to get physiotherapists working along the same line and thought that guidelines are a responsibility of the profession (Table 2). Furthermore, most of the respondents were of the opinion that guidelines are a

basis for their daily work and contribute to the guarantee of quality of care. However, the majority of respondents thought that guidelines should not become obligatory and almost half were of the opinion that guidelines cannot be used because of heterogeneity of patients.

**Familiarity with the guidelines** Of the 332 mail and phone respondents, 319 (96%) were aware of the existence of the guidelines for acute ankle sprain (Table 1). Of those 319, 230 respondents (69%) treated patients with acute ankle sprain. Of those 230, 79 respondents (34%) were completely familiar with the content of the guidelines while 135 (59%) knew the content a little. Overall, 214 (64%) were treating patients with acute ankle sprain and had at least some knowledge of the content of the guidelines.

**Compliance with the guidelines** Of the 214 mail and phone respondents familiar with the guidelines and treating patients with acute ankle sprain, 141 (66%) applied the guidelines to more than half of their patients (Table 1).

Of the 151 mail respondents familiar with the guidelines and treating patients with acute ankle sprain, 69 (46%) always used the short version of the guidelines, while 23 (15%) always used the extensive version. More than half thought the extensive version was too long and only moderately well organised. Of the individual guideline recommendations, determining the expected time for recovery using the function score, and treating patients with a function score of less than 40 points were the least followed (Table 3). In contrast, the recommendation to tape or apply a brace after reduction of swelling was followed most.

**Advantages and disadvantages of the guidelines** Of the 151 mail respondents familiar with the guidelines and treating patients with acute ankle sprain, the majority consider national agreement on the treatment of acute ankle sprain the major advantage of using the guidelines. In contrast, one-third thought that using the guidelines left too little space for individual professional contribution and a quarter thought that it was time consuming.

**Factors related to compliance with the guidelines** In the 151 mail respondents familiar with the guidelines and treating patients with acute ankle sprain, compliance with

**Table 3.** Number (%)\* of 151 mail respondents familiar with the guidelines and treating patients with acute ankle sprain complying with individual recommendations in the guidelines, and their perceptions of the advantages and disadvantages of using the guidelines.

	Yes	Sometimes	No
Compliance with individual recommendations			
No passive stress tests for determining exact location and severity	83 (56)	49 (33)	17 (11)
Determining prognosis from the function score	49 (33)	45 (30)	54 (37)
Intervention if function score $\leq$ 40	66 (46)	50 (35)	28 (19)
Avoiding electrophysical modalities	81 (55)	42 (28)	25 (17)
Applying tape/brace if swelling is sufficiently decreased	108 (73)	27 (18)	14 (9)
Advantages of using the guidelines			
Provides national agreement on treatment	97 (65)		
Guarantees quality of care	53 (36)		
Provide clear recommendations	43 (29)		
None	24 (16)		
Disadvantages of using the guidelines			
Leaves little opportunity for individual contribution	50 (34)		
Time consuming	37 (25)		
Do not agree with all given recommendations	28 (19)		
Recommendations incompatible with own professional activities	16 (11)		
None	36 (25)		

\*number of respondents does not always add up to 151 due to missing data

the guidelines (ie, respondents applying the guidelines to more than half of their patients) was associated with a positive attitude towards guidelines in general ( $p < 0.001$ ), participation in educational activities ( $p = 0.05$ ), the perceived overall clarity of the guidelines ( $p = 0.02$ ), and knowledge of colleagues using the guidelines ( $p < 0.001$ ) (Table 4).

Of the 151 mail respondents familiar with the guidelines and treating patients with acute ankle sprain, 121 respondents (81%) did not think that specific education was needed to understand the guidelines even though 124 (82%) participated in educational activities. Seventy-one respondents (47%) had discussed the guidelines in a peer review group and 70 (46%) with colleagues at work. Twenty-one respondents (14%) attended a workshop. There was no significant relationship between the various kinds of activities and compliance with the guidelines. However, compliance was associated with the number of activities undertaken ( $r_s = 0.27$ ,  $p = 0.001$ ). In addition, 109 respondents (72%) thought the guidelines were completely clear, 39 (26%) thought that they were not so clear, and 3 (2%) thought they were not clear at all. Fifty-four respondents (36%) thought that the specific recommendation to determine the prognosis by using the function score was unclear. Furthermore, 81 (54%) thought that it was not clear when deviation from the guidelines is allowed. Finally, 112 (74%) knew colleagues who used the guidelines.

Logistic regression analysis revealed that attitude towards guidelines in general (OR = 11.6, 95% CI 4.5 to 29.8) and knowledge of colleagues using the guidelines (OR = 2.4, 95% CI 1.0 to 5.8) contributed significantly to compliance with the guidelines. Age, sex, years of experience, membership of the society, working with colleagues, and number of patients with acute ankle sprain were not included in the analysis, since these factors showed no significant (bivariate) relation to compliance.

## Discussion

In this study, most physiotherapists working in extramural care in the Netherlands had a positive attitude towards guidelines in general and thought that guidelines were important in providing nationally-accepted standards of health care. These results are consistent with other studies that have documented positive attitudes towards guidelines among clinicians and general practitioners (Burgers et al 2003, Creedon 2005, Watkins et al 1999).

The majority of the physiotherapists knew the content of the guidelines for acute ankle sprain to some degree and 65% applied them to more than half of their patients. However, only a minority applied it to almost all patients. Compliance with individual guideline recommendations was analysed to provide insight into which individual recommendations appeal least. The recommendations to use the function score to determine (i) the prognosis of the injury and (ii) the need for intervention were the least followed. This may be because the function score was considered not to be very clear by most respondents (Grol et al 1998), which in turn may be because it is only explained in the less frequently-used extensive version of the guidelines. It is, however, also possible that respondents have specific reasons for deviating from these two recommendations. At the time this study was conducted, the Dutch health insurance system always funded physiotherapy intervention after referral by a physician. (Since the study the Dutch insurance system has changed and currently patients have to take out specific insurance for physiotherapeutic treatment.) As a consequence, patients expected to be treated and withholding intervention for mild injuries might evoke negative reactions. In addition, withholding intervention requires a psychological shift by physiotherapists, since they are trained to treat patients. There are also arguments justifying intervention for patients with mild injuries, eg, when the load bearing capacity of the ankle is less than the load delivered during work or sport.

**Table 4.** Number (%) of 151 mail respondents familiar with the guidelines and treating patients with acute ankle sprain for factors related to compliance with the guidelines for acute ankle sprains.

	Compliance*	Non-compliance**
Attitude towards guidelines in general		
Positive (n = 113)	90 (80)	23 (20)
Negative (n = 38)	8 (21)	30 (79)
Participation in educational activities		
No (n = 27)	13 (48)	4 (52)
Yes (n = 123)	85 (69)	38 (31)
Perception of overall clarity of the guidelines		
Completely clear (n = 108)	77 (71)	31 (29)
Not completely clear (n = 42)	20 (48)	22 (52)
Knowledge of colleagues using the guidelines		
Yes (n = 103)	78 (76)	25 (24)
No (n = 48)	20 (42)	8 (58)

\* respondents treating > 50% of patients according to the guidelines \*\* respondents treating ≤ 50% of patients according to the guidelines

Although the reasons for deviating from the guidelines were not investigated directly, the perceived disadvantages of the guidelines give some insight into the reasons for non-compliance. The fact that 19% of the physiotherapists disagreed with some of the recommendations and another 11% thought some recommendations incompatible with their professional activities may explain why not all the physiotherapists used the guidelines for most of their patients. Other barriers to implementation might be because one-third of the physiotherapists thought that working according to the guidelines leaves little opportunity for individual contribution, and one-quarter felt that it is time consuming. This is rather surprising since the guidelines state explicitly that physiotherapists must use their judgment to decide when to deviate from the recommendations. However, since physiotherapists indicated that it is unclear when deviation from the guidelines is allowed, this needs clarification.

This study also revealed factors which enhanced implementation. A positive attitude towards guidelines in general, and social influence, were the factors most associated with compliance with the guidelines, which corresponds with results from an earlier study (Hofhuis 2002). A positive attitude may reflect readiness to change existing practice (Moulding et al 1999) while colleagues may convince each other of the relevance of using guidelines. Participation in educational activities did not significantly contribute to the compliance with the guidelines, although it is known that interactive workshops can change professional

practice (O'Brien et al 2001). However, the physiotherapists in this study declared that education was not absolutely necessary to use the guidelines and only 14% attended a workshop. Similarly, perceived clarity of the guidelines did not contribute significantly to the compliance with the guidelines.

As in all research, this study has some limitations. First, it was conducted with a small sample of physiotherapists. However, they were found to be representative of the total group of therapists working extramurally in the Netherlands. Second, data consisted of self-reported behaviour and, therefore, socially-desirable answers might have been given. However, our results correspond with those of Swinkels et al (2005), who showed that physiotherapists followed the guidelines for low back pain a small majority of the time. In their study, a bias towards socially-desirable answers was unlikely, since participating therapists were unaware that registered information about the health care process was used to measure compliance with the guidelines for low back pain. Third, this study used a closed format questionnaire which limits the exploration of reasons for non-compliance.

However, 100% compliance with guidelines should not be the goal since there may be valid reasons for deviating from the recommendations. Qualitative research into the reasons physiotherapists do not follow guidelines is needed in order to improve compliance with guidelines and consequently to enhance the quality of care provided by physiotherapists. This research should focus on the relation between patient characteristics and compliance, since half of the respondents stated that patients are too different for the guidelines to be applied. Heterogeneity of patients might explain why intervention according to guidelines does not always improve health outcomes (Warrol et al 1997).

In conclusion, this study is the first to investigate compliance with the guidelines for acute ankle sprain among a random sample of physiotherapists in the Netherlands. It was found that a majority of physiotherapists comply at least partially with the guidelines, providing their patients with the best care according to international evidence. Compliance with the guidelines might be enhanced by improving the attitude of physiotherapists towards guidelines in general since 31% of them had a negative attitude, relating to a lower compliance. Strategies for improving attitude towards guidelines in general should be based on examination of reasons for a negative attitude. Furthermore, improving clarity of the function score and including it in the short version could also enhance compliance. Additionally, interactive education about the application of the function score is needed (O'Brien et al 2001).

**eAddenda** Appendix 2 is available in full at [www.physiotherapy.asn.au/AJP](http://www.physiotherapy.asn.au/AJP)

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**Note** Since this paper was accepted for publication the Royal Dutch Society for Physiotherapy has initiated revision of the Guidelines for Ankle Sprain. An important change is that the guidelines for acute and chronic ankle sprain will be combined. A further change is that the guidelines will reflect the changed conditions for physiotherapy practice now that direct access has been introduced.

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**Appendix 1.** Scoring system for obtaining function scores to assess the severity of acute ankle sprains (Bie et al 1997, Bie et al 2003).

Pain	
–none	35
–during or after sports	30
–while running on a non-level surface	25
–while running on a level surface	20
–while walking on a non-level surface	15
–while walking on a level surface	10
–when putting weight on the injured foot	5
–constant pain at rest	0
Dynamic stability	
–never	25
–occasionally	20
–frequently during sports	15
–occasionally during normal daily activities	10
–frequently during normal daily activities	5
–at each step	0
Weight bearing capacity	
–can hop on the injured leg	20
–can stand on the toes of the injured leg	15
–can stand on the injured leg	10
–can stand on the injured leg	10
–can stand on both legs	5
–cannot bear any weight	0
Swelling	
–no swelling	10
–slight swelling	6
–mild swelling	3
–severe swelling	0
Gait	
–can run	10
–can walk properly	6
–walks with a minor limb	3
–walks with a severe limb	0
Total	