



## The relationship between positive or negative phrasing and patients' coping with lateral epicondylitis

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**Background:** Research suggests that phrases with negative content can affect patients' response to medical procedures and how they cope with medical illnesses. We hypothesized that patients with lateral epicondylitis who describe their condition in positive phrases cope better than those who do not.

**Methods:** We prospectively followed up 91 patients with lateral epicondylitis for 12 months. The patients indicated their baseline coping status based on the Pain Catastrophizing Scale (PCS) and were discharged with a wait-and-see policy. During follow-up interviews, the patients described the nature of their condition in their own words and were then categorized into either positive or negative phrasing groups. We compared these two groups regarding current coping status and whether they had sought additional treatment. We also analyzed for the factors associated with these outcomes.

**Results:** There were no significant differences in baseline PCS scores between the two groups. At follow-up, patients in the positive phrasing group (n = 62) had significantly lower PCS scores and were less likely to seek additional treatment than those in the negative phrasing group (n = 29). Multivariable analyses showed that positive phrasing and low pain levels were independently associated with improvement in PCS scores and that negative phrasing and depression were independently associated with patients' seeking additional treatment.

**Conclusion:** Patients' positive phrasing about their condition are associated with improvement in their coping status and with less use of medical resources in the case of lateral epicondylitis. This study suggests that patients with more positive attitudes toward their illness cope and comply better when a wait-and-see treatment is recommended by their physicians.

**Level of evidence:** Level II, Prospective Cohort, Prognosis Study.

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**Keywords:** Lateral epicondylitis; positive phrase; coping

Coping, as an adaptive response to chronic illness, is defined as selecting and acting on the information derived from the individual's symptom recognition and interpretation.<sup>25,31</sup> A few studies have looked at the relationship

between coping and chronic illnesses such as rheumatoid arthritis, chronic obstructive pulmonary disease, cancer, and psychological disorders and found that patients who depend on maladaptive and ineffective pain coping strategies often become impaired by their pain and maintain an inactive lifestyle.<sup>1,18,31,40</sup>

Lateral epicondylitis is a common musculoskeletal disease characterized by lateral elbow pain.<sup>15,35</sup> Typically, its symptoms last for 6 to 24 months, but most patients recover within 1 year without any specific treatment.<sup>9,10,17,32</sup>

This study was approved by our institutional review board (IRB No. B-1305-204-107).

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Furthermore, studies have shown that although active intervention such as corticosteroid injections is effective for quick pain relief, it is associated with a poorer long-term prognosis than a wait-and-see approach.<sup>2,8,30</sup> Therefore, for most patients, a wait-and-see policy with adequate advice will suffice, and thus, encouraging patients to cope with their disease may be important.

Research suggests that the phrases used by health care providers affect patients' responses to medical procedures and how they cope with medical illnesses.<sup>16,39</sup> For example, the introduction of the term "repetitive strain injury" in Australia caused an epidemic of the condition and the medicalization of occupational hand use.<sup>28</sup> Moreover, Lang et al<sup>22</sup> reported that statements meant to warn the patient of possible pain or undesirable experiences resulted in greater pain and greater anxiety than in the absence of such warnings. These studies suggest that phrases with negative content can affect patients' beliefs about their medical complaint and their expectation of treatment. However, no study has been performed on how much positive phrasing is associated with the way patients cope with a particular condition.

In this study, we aimed to investigate whether patients with lateral epicondylitis who describe their condition in a positive manner cope better than those who do not.

## Materials and methods

### Patients

The institutional review board at our hospital approved the design and protocol of this study. Starting in November 2011, we prospectively enrolled 108 consecutive patients presenting with isolated lateral epicondylitis of less than 6 months' symptom duration. We excluded patients with concomitant shoulder or wrist tendinosis or nerve compression symptoms, as well as those with lateral epicondylitis of more than 6 months' symptom duration. We made the diagnosis of lateral epicondylitis based on all 3 of the following features: pain located at the lateral aspect of the elbow, point tenderness over the lateral epicondyle, and a positive provocation test with reproducible pain at the lateral elbow caused by resisted wrist extension with the elbow in full extension. For the enrolled patients, our primary treatment was a wait-and-see approach, with self-stretching exercises, use of a counterforce brace, and prescription of intermittent pain medication, as well as a follow-up examination after 4 weeks, even when some of the patients had already undergone some of these treatments before. All patients were routinely educated about the nature of their disorder. We described the condition, using positive phrases, as a temporary weakening of the tendon that usually runs its course in about 12 to 18 months and eventually disappears in most patients. When patients presented with advanced imaging studies that had already been obtained (2 with ultrasound and 4 with magnetic resonance imaging) and asked about the findings of degeneration or rupture, we described these conditions as reversible. At 4 weeks, patients were re-evaluated and were either discharged or scheduled to receive further treatment such as physical therapy,

corticosteroid injection, or surgery. We excluded 7 patients who had received further treatment from us, and we followed up the other 101 patients, who were discharged at the second visit, by telephone interview at 1 year after their initial examination. Ninety-one of these patients agreed to participate in the study and were analyzed. There were 41 men and 50 women with mean ages of 54.3 years (range, 26 to 82 years) and 53.5 years (range, 24 to 75 years), respectively.

### Baseline and follow-up survey

We conducted Pain Catastrophizing Scale (PCS) assessments as routine psychological evaluations for patients presenting with arm pain at our hand clinic at their first visit. The PCS is a reliable and valid measure of negative pain-related cognitions<sup>34</sup> and assessment of coping status.<sup>3,14,29,33</sup> It has 13 questions that are answered on a 4-point Likert scale, from "not at all" (0 points) to "all the time" (3 points). It assesses 3 factors: rumination, helplessness, and magnification. A total catastrophizing score is calculated by adding these 3 items. In addition, patients' baseline pain levels were evaluated by use of an 11-point rating scale ranging from 0 (no pain) to 10 (worst imaginable pain).<sup>42</sup>

One researcher called and interviewed all of the patients 12 months after their first visit. First, the patients were requested to describe the nature of their lateral arm pain in their own words and phrases. Those who described their condition using positive phrases, such as "weak" or "faded" tendon, "defect," or "temporary" or "reversible" condition, were categorized as the positive phrasing group, whereas those who explained their condition using any negative phrases, such as "damaged" or "degenerated" tendon, "tear," "rupture," or "permanent," were categorized as the negative phrasing group, based on studies regarding the emotional valence of words.<sup>4,39</sup> The phrasing used by the patients was recorded and later reviewed for categorization by two researchers, who were blinded to patient data or survey results. When the two researchers had a different opinion on the categorization, they discussed and decided how to categorize the patients. The Cohen  $\kappa$  coefficient for inter-rater reliability for categorization was 81%. Of the patients, 62 (68%) were categorized as the positive phrasing group and 29 (32%) were categorized as the negative phrasing group. Second, the interviewer requested the patients to answer the follow-up PCS questionnaires to evaluate the patients' coping status, which was the primary outcome of interest in this study.<sup>6,26,37</sup> Third, the interviewer asked whether the patients had sought additional treatment from anyone other than us, which was the secondary outcome of interest in this study. Lastly, the interviewer evaluated factors that may have potentially confounded the results of the PCS. Patients were asked about depressive symptoms with the Patient Health Questionnaire 2 (PHQ-2), which has been validated as a reliable depression screening tool.<sup>20,21,27,41</sup> The PHQ-2 score ranges from 0 to 6. We identified a PHQ-2 score of 3 as the optimum cutoff point for screening for depression in this study.<sup>20</sup> In addition, the patients' current pain intensity was evaluated using the 11-point rating scale.<sup>42</sup> Furthermore, the interviewer asked about the patients' educational status, whether they performed manual work or not, and the existence of comorbid conditions requiring the use of other medications (Table I). We chose these variables from previous studies that suggested that these factors were associated with coping style.<sup>19,43</sup>

**Table I** Comparison of positive and negative phrasing groups

Demographic variable	Positive phrasing group (n = 62)	Negative phrasing group (n = 29)	P value
Age (y)	53.0 (24 to 75)	55.7 (38 to 82)	.265
Gender	25 male and 37 female	16 male and 13 female	.185
PCS score at baseline	28.1 (2 to 52)	30.8 (4 to 48)	.374
PCS score at follow-up	12.7 (0 to 45)	20.8 (0 to 46)	.005*
	$P < .001^\dagger$	$P < .001^\dagger$	
Improvement in PCS score	15.3 (−1 to 49)	10.1 (−9 to 41)	.039
Additional treatment	11 (17.7%)	20 (69.0%)	<.001*
Pain level at baseline	5.9 (1 to 10)	7.0 (1 to 10)	.016*
Pain level at follow-up	3.0 (0 to 10)	4.8 (0 to 9)	.003*
Depression	9 (14.5%)	7 (24.1%)	.261
Education level	50 (80.6%)	17 (58.6%)	.026*
Manual work	24 (38.7%)	15 (51.7%)	.242
Comorbidity	10 (16.1%)	7 (24.1%)	.361

Continuous variables are presented as mean (range). Categorical variables are presented as number (percentage).

\* Statistically significant.

† Paired t tests for changes of the PCS score in each group.

## Analysis

The PCS scores in the positive and negative phrasing groups were compared, and whether patients sought additional treatment was compared between the two groups; we examined other confounding factors using the Student *t* test for continuous variables and  $\chi^2$  test for categorical variables. We analyzed changes in the PCS scores in each group using the paired *t* test.

For retrospective power analysis, we used the PCS scores as the primary outcome and attempted to determine a difference of 13 points between the groups, with an SD of 13 points in the overall patients, for an effect size of 1. Thus, the power analysis indicated that a sample size of 22 would provide 90% statistical power to detect an effect of this size between the two groups ( $\alpha = .05$ ,  $\beta = .2$ ) with use of the *t* test. Therefore, comparing the positive (n = 62) and negative (n = 29) phrasing groups met the statistical power requirements of this study.

We also performed multivariable analyses on factors associated with improvement in PCS scores and patients' seeking additional treatment. The dependent variable was either the difference between the baseline and follow-up PCS scores or having additional treatment, and the independent variables were age, gender, positive phrasing (yes/no), pain level, depression (yes [PHQ-2 score  $\geq 3$ ]/no), education (yes [equal to or higher than high school graduation]/no), manual work (yes/no), and comorbidity (yes/no). We used the Pearson correlation test to analyze associations between the variables, and variables with  $P \leq .1$  by univariable analysis, as well as other variables considered clinically meaningful, such as age, positive phrasing, and pain, were included as independent variables in the multivariable analysis, which we performed using the backward-elimination procedure.

## Results

### Comparison between positive and negative phrasing groups

There were no significant differences in baseline PCS scores between the positive and negative phrasing groups

( $P = .374$ ). At follow-up, however, the positive phrasing group had significantly lower PCS scores (better coping status) ( $P = .005$ ) and a larger improvement in the scores ( $P = .039$ ) than the negative phrasing group, although both groups showed improvement in the scores during the follow-up (Table I). In addition, patients in the positive phrasing group were less likely to have sought additional treatment than those in the negative phrasing group (17.7% vs 69.0%,  $P < .001$ ) (Table I).

When the two groups were compared for potential confounding factors, the positive phrasing group had lower levels of pain at baseline ( $P = .016$ ) and at follow-up ( $P = .003$ ) and had a higher education level ( $P = .026$ ). However, no significant differences between the two groups were found for the presence of depression ( $P = .261$ ), manual work ( $P = .242$ ), or comorbidity ( $P = .361$ ).

### Factors associated with improvement in coping status

On univariable analyses, we found a significant relationship between improvement in PCS scores and positive phrasing and lower baseline pain levels. Age, gender, follow-up pain level, depression, education level, manual work, and comorbidity were not found to be related to improvement in PCS scores. Multivariable analyses showed that positive phrasing and low baseline pain levels were independently associated with improvement in PCS scores (Table II).

### Factors associated with seeking additional treatment

Univariable analyses found a significant relationship between patients' seeking additional treatment and negative phrasing, baseline pain level, depression, and education level. Age, gender, follow-up pain level, manual work, and comorbidity were not found to be

**Table II** Factors associated with improvement in coping status

Variable	Coding	Univariable analysis		Multivariable analysis	
		<i>R</i>	<i>P</i> value	$\beta$	<i>P</i> value
Age	Years	-0.113	.287	-0.109	.279
Gender	Male/female (1/0)	-0.040	.705	0.055	.591
Positive phrasing	Yes/no (1/0)	0.217	.039*	0.297	.005*
Pain level at baseline	VAS (0 to 10)	0.244	.020*	0.318	.002*
Pain level at follow-up	VAS (0 to 10)	-0.136	.197		
Depression	Yes/no (1/0)	-0.098	.355		
Education	Yes/no (1/0)	0.079	.459		
Manual work	Yes/no (1/0)	-0.087	.412		
Comorbidity	Yes/no (1/0)	-0.142	.178		

VAS, visual analog scale.

\* Statistically significant.

**Table III** Factors associated with seeking additional treatment

Variable	Coding	Univariable analysis		Multivariable analysis	
		<i>R</i>	<i>P</i> value	Odds ratio (95% CI)	<i>P</i> value
Age	Years	0.170	.108		.230
Gender	Male/female (1/0)	-0.045	.671		.357
Negative phrasing	Yes/no (1/0)	0.504	<.001*	11.3 (3.2 to 39.4)	<.001*
Pain level at baseline	VAS (0 to 10)	0.264	.012*	1.3 (0.9 to 1.8)	.107*
Pain level at follow-up	VAS (0 to 10)	0.198	.060	1.2 (0.9 to 1.6)	.206
Depression	Yes/no (1/0)	0.277	.008*	5.4 (1.3 to 22.4)	.019*
Education	Yes/no (1/0)	-0.201	.056	0.5 (0.2 to 1.8)	.296
Manual work	Yes/no (1/0)	0.080	.449		
Comorbidity	Yes/no (1/0)	0.131	.214		

CI, confidence interval; VAS, visual analog scale.

\* Statistically significant.

related to additional treatment. Multivariable analyses showed that negative phrasing and depression were independently associated with seeking additional treatment (Table III).

## Discussion

This study shows that patients with lateral epicondylitis who describe their condition in positive phrases achieve a better coping status and are less likely to seek additional medical treatment than those who do not use positive phrases, independent of their pain levels. This finding suggests that patients who describe their medical condition using positive phrases have a more positive attitude toward their illness and thus cope and comply better with their physicians' recommendations.

This study showed that coping status can improve in patients with lateral epicondylitis, particularly in those using positive phrases to talk about their condition. Early theories of coping stated that an individual's ability to cope with stressors is determined by his or her personality, and

thus, coping style was seen as a stable trait, changing little across time or situations. However, later theorists proposed that coping is shaped by situational factors such as life circumstances and the nature of the particular problem, as well as by social and cultural influences.<sup>5,11</sup> Keefe et al<sup>18</sup> found that patients with rheumatoid arthritis showed a high degree of consistency in their level of catastrophizing over a 6-month period, whereas Stoilkova et al<sup>31</sup> reported that comprehensive pulmonary rehabilitation resulted in changes in coping styles of patients with chronic obstructive pulmonary disease.

In this study, patients in the positive phrasing group had significantly lower PCS scores and were less likely to seek additional treatment than those in the negative phrasing group. Studies have shown that words with negative emotional content can affect patients' beliefs about their medical complaint and their expectations of treatment and recovery.<sup>22,39</sup> A recent randomized controlled trial by Lang et al<sup>22</sup> showed that statements meant to warn patients about pain or undesirable experiences before a noxious stimulus predicted greater pain and anxiety compared with no statement. "Beliefs" are said to be the perceptual lens

through which we understand our environment and the situations we find ourselves in,<sup>12</sup> and “expectations” are a particular type of belief, a belief about the future. Recent studies report that expectations are also an important predictor of outcomes in patients undergoing joint replacement or rotator cuff repair.<sup>13,24</sup>

Previous studies suggest that coping status predicts the outcome,<sup>7,36</sup> and a few studies show that cognitive-behavioral interventions can reduce catastrophizing in patients with musculoskeletal pain and that reductions in catastrophizing are associated with decreases in pain and improvements in function.<sup>23,38</sup> Given that coping status can be improved in patients with lateral epicondylitis, further research is needed to determine whether cognitive-behavioral interventions designed to improve coping status can reduce pain and improve quality of life in patients with lateral epicondylitis, as well as whether positive phrasing can be one of the strategies used to affect patients’ cognition.

There are several limitations to consider in this study. First, although patients in the positive phrasing group had greater improvement in their coping status than the negative phrasing group, it is possible that the patients’ innate optimistic mindsets or their favorable clinical courses influenced their coping status. However, there were no differences in baseline coping status and the presence of depression between the two groups, and the association between the improvement in PCS scores and positive phrasing was independent of pain level in the multivariable analyses. Second, we used the PCS to assess the patients’ coping status. However, coping can be assessed from different aspects, such as the assessment of coping style.<sup>25,31</sup> Thus, the use of other instruments might have changed our results or shown other aspects of coping. Finally, this study was not a randomized trial comparing patients who were educated by positive phrasing and those who were not. Therefore, this study did not determine whether the patients’ positive phrasing was influenced by the physicians using positive statements in the consultations.

## Conclusions

This study found that patients’ positive phrasing about their condition is associated with improvement in their coping status and with less use of medical resources, independent of their pain levels, in the case of lateral epicondylitis. This study suggests that patients with more positive attitudes toward their illness cope and comply better when a wait-and-see treatment is recommended by their physicians. Further studies are necessary regarding whether this association exists in other conditions, as well as how much physicians’ positive statements can influence patients in shaping

the discussion more positively regarding their medical conditions.

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## Disclaimer

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