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ASSESSMENT OF A MICRO-KINESITHERAPIE TREATMENT ON 300 LOW BACK PAIN SUFFERERS

INTRODUCTION

At the Consensus lecture about physiotherapists treating low back pain sufferers, B. DESNUS concluded his speech as an expert saying, "Up to now we have not seen any study enabling us to assert with certainty the efficiency of a physiotherapeutic treatment in case of low back pain..." (j.).

The jury made the same observation: "The jury was struck by how rarely the diagnostic tests are authenticated, and how rarely what is done in physiotherapy is assessed in case of low back pain... The experts as well as the members of the jury were unanimous in considering the clinical research development in physiotherapy as not sufficient in our country (France)" (2).

Microkinesitherapie is one of the manual techniques used in physiotherapy. This is how we define it:

„The human body, as any living system, is conceived to adapt, defend itself and self-correct in case of traumatic, emotional, toxic, viral, microbic or environmental attacks. When the attack is stronger than

the possibilities of defence of the system, the vitality of the bodily tissue concerned is altered. This is a process of "memorisation" of the attack. The change in the tissular vitality can trigger various local or distant manifestations. MICROKINESITHERAPIE looks for imprints left by these attacks in the different tissues of the system, thanks to a specific manual micro-palpatory technique. Its action is to carry out a manual stimulation of the self-correcting mechanisms so as to avoid the degradation of the tissues and to reestablish their function."

Several other experiments and assessments have been carried out with microkinesitherapie in cases of functional colopathy, algoneurodystrophy, oesophagitis, sports accidents and handicapped workers (3), but nothing has been done yet about lower back pain.

The aim of this assessment is to measure the input of microkinesitherapie in treating lower-back pain. To achieve this, a questionnaire was used as part of a survey.

1 - METHOD

This assessment has been carried out in the context of liberal physiotherapy. Therefore, we had to imagine a protocole able to give a maximum of objectivity which could be used deontologically within the framework of the treatments proposed in liberal practices.

1.1 - Selection criterion for the technique used

Microkinesitherapie is particularly suitable for an assessment as it needs very few sessions, one being usually enough.

Indeed, in a double-blind experiment on functional colopathy, the second session did not improve the result of the first one (4), and we had exactly the same experience when assessing algoneurodystrophy (5). Moreover, it proved not to have any iatrogenic effect (6).

This single session used without any other treatment in physiotherapy enables us to assess the input specific to this technique.

1.2 - Selection criterion for the physiotherapists

To avoid assessing a therapist and not a technique, 35 liberal physiothera-



pists distributed over 21 French departments and Belgium took part in this assessment. They were all volunteers, and none of them was either disregarded or not selected. Each of them used the technique in their practice, carrying out a session of microkinesitherapie excluding any other treatment on the treated sufferer. Each therapist was identified with a letter of the alphabet according to the time of registration.

1.3 - Criterion for the questionnaire

The assessment questionnaire used was a French translation of "The Roland Morris Disability Questionnaire" (RMDQ). This questionnaire is recommended at the consensus conference where it is described as follows (7): "This test was authenticated in the context of ambulatory acute lower-back pain (n = 80). Its simplicity and its metrological qualities allow a wide use of it in contexts as different as epidemiological research in private hospitals, expert evaluation as well as clinical practising, for the individual assessment of patients (8). It takes about 5 minutes to complete the test, which has 24 statements. If the subject ticks YES for one statement, they get one point for the statement (otherwise, no point). The maximum score is therefore 24 points, and the minimum 0.

Leclaire and Call have proved that the Roland Morris questionnaire can discriminate two groups of low back pain sufferers with numerous degrees of clinical and electromyographical differences (n = 196)".

1.4 - Selection criterion for low back pain sufferers

Each physiotherapist offered the assessment to the first 10 patients who came to their practice for a

lower-back pathology. They did not include the patients being treated or those who were not volunteers to take part in the assessment or who could not complete the questionnaire.

No selection was done as for the kind of lower-back pain. The very severe ones requiring the patient's confinement to their bed were not considered of course, as it was for ambulatory patients. On the other hand, there was no selection between chronic and common lower-back pain.

The patient included continues the medical treatment prescribed by their physician if any. They promise not to take any other medicine, and not to have any other treatment (infiltration, manipulation, etc.) as long as the assessment is taking place, informing the physiotherapist if they do so, who then dismisses them from the assessment (annex 2): information to the patient.

Each patient is identified with a number, 1 to 10, which follows the key letter of the physiotherapist.

1.5 - Criterion for the number of questionnaires and the time interval between each one

Three identical RMDQ were proposed to the patients, numbered 1 to 3.

- The questionnaire 1 is to be completed on the day of the treatment. It assesses the functional disability of the patient before the treatment.

- The questionnaire 2 is to be completed on the evening of the second day after the treatment (D + 2), the day of the treatment being DO, to have a short term assessment. We chose D + 2 (forty eight hours later) to tally with a double blind assessment on oesophagitis

(3) showing a significant improvement of the group treated on D + 2, whereas there was only a slight improvement on D + 1. This comes from the technique used. Indeed, the aim of microkinesitherapie is to start up self-correcting mechanisms which are only clinically "clear" after about 24 hours.

- The questionnaire 3 is to be completed on the evening of the sixth day after the treatment (D + 6). This is to have an assessment on a longer term. The criterion of 6 days was selected so as not to postpone a treatment prescribed more than one week so as not to deprive the patient of care, if necessary, beyond this period. After 6 days, too many new factors can also intervene, which would not be taken into account in the assessment, but nevertheless can also have an influence on lower-back pain, such as a change in the patient's mood (different work, family or social context, or new lifestyle (food, activity, rest, etc.).

Each questionnaire is identified by the physiotherapist by adding the number of the patient (the same for the 3 questionnaires), and the days when the questionnaires 2 and 3 have to be completed.

Each questionnaire also has extra information given by the patient: their initials, age and sex, this to avoid confusions or mistakes between questionnaires and to check if the population recruited is suitable as a sample population of low back pain sufferers.

1.6 - Criterion for statistical analysis

1.6.1 - Initial data

The patients are treated with a session of microkinesitherapie for lower-



back pain. They complete the RMDQ made of 24 statements. The assessment of the symptoms is achieved 3 times in a period of one week. The variable "period" is therefore defined as follows :

Period = 1 (before the session), 2 (2 days after the session), 3 (6 days after the session).

1.6.2 - Dependent variables

1.6.2.1. - The gross variables

These are the statements or items which form the questionnaire. They are 24. For example, statement 1 : "Today, I stayed home nearly all the time because of my back". The answer to this statement before the session is noted Q1-1. The same statement, 2 days after the session, is noted Q2-1 (Q for questionnaire, 2 for the period, and 1 for the n! of the item).

1.6.2.2. - The calculated variables

The global rating of lower-back pain (GRL). The GRL corresponds to the total number of "Yes" out of the 24 items of the questionnaire. This is a rating of the functional disability linked to the back pain. The higher it is, the worse the effect of the back pain. As a convention, the GRL before the session is noted "GRL - 1".

1.6.2.3. - The rating per statement (RS)

The RS corresponds to the total number of Yes (RS Y) or the total number of No (RSN) for the statement considered for the whole population tested. For example, "RSN1-2 = 12" means that for the period 1 before the session, only 12 people out of the 235 ticked NO to statement 2. This rating enables us to follow more precisely the evolution of a symptom along the 3 periods.

1.6.3 - Hypotheses and statistical analyses

1.6.3.1.- 1° Hypothesis

A session of microkinesitherapie improves the functional disability of lower back pain on the whole. To check this hypothesis, a comparison between the averages of GRL according to the period will be carried out by analysing the variance.

1.6.3.2. -2° Hypothesis

A session of microkinesitherapie improves each symptom (explored by the 24 items of the questionnaire) of lower-back pain. To check this hypothesis, a test of CHI 2 will be carried out on the RS of each statement according to the period.

1.7 - Forming a control group

No control group was set up in the context of this assessment, to avoid opposing two techniques : microkinesitherapie versus classical physiotherapy, which is not the aim of this assessment. If it had been the case, we should also have defined what a physiotherapeutic treatment is, by defining the techniques used, when these techniques are numerous and often combined.

This comparison with other treatments could very well be done by gathering answers to identical questionnaires on identical periods, with people treated in reeducation centers for example, or in other physiotherapy practices with other techniques.

2 - THE ASSESSMENT

In September 1999, volunteers were called to take part in this assessment. As soon as we received their application, each volunteer physiotherapist received a file including the protocole, their identification letter and a sheet of paper to enter the list of the patients included (annex 3) as well as the 10 files including the questionnaires 1, 2 and 3, the 3 pre-addressed stamped envelopes and the information

to be given to the patients.

The assessment started in October 1999 and stopped in April 2000, so it lasted for a period of 7 months.

Each person coming for a back pain treatment was asked by the physiotherapist if they wanted to take part in this assessment. If Yes, the patient received the information, the three questionnaires, and the three stamped envelopes to be sent on the day when they were completed.

Sending them on the same day was meant to prevent the patient from remembering what they had ticked the last time, to guarantee a more objective response to the assessment of that day.

The patient does not know where it is sent to, to avoid pleasing answers for the therapist, who does not have access to the result of the questionnaire anyway. In the letter of information given to the patient, it is also indicated that if the person finds their pain worsened during this period, they can interrupt the assessment by consulting their physician and stop completing the next questionnaires, as we do not want to have harmful consequences for the patient.

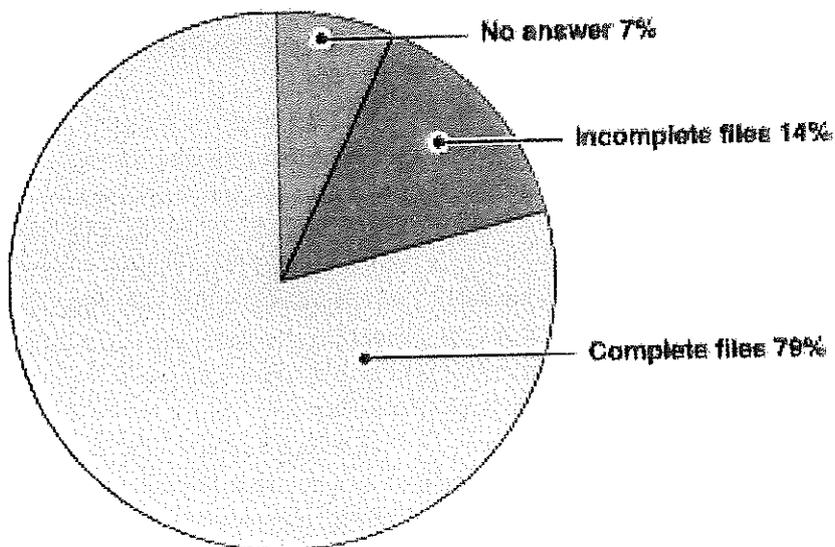
The questionnaires gathered are classified and sent to the statistician for analysis.

3 - RESULTS

3.1 - Number of patients included

35 physiotherapists took part in this assessment, 11 did not include 10 people. 300 files were handed out to the patients.

- 21 files were taken away by people who did not do anything, i.e. 7 %.
- 279 files came back with :
 - 42 incomplete files (1 or 2 questionnaires missing), i.e. 14 %;
 - 237 files that could be used (3 questionnaires), i.e. 79 %.



Graph 1: Distribution of the files

3.2 - Description of the sample

3.2.1 - Sex

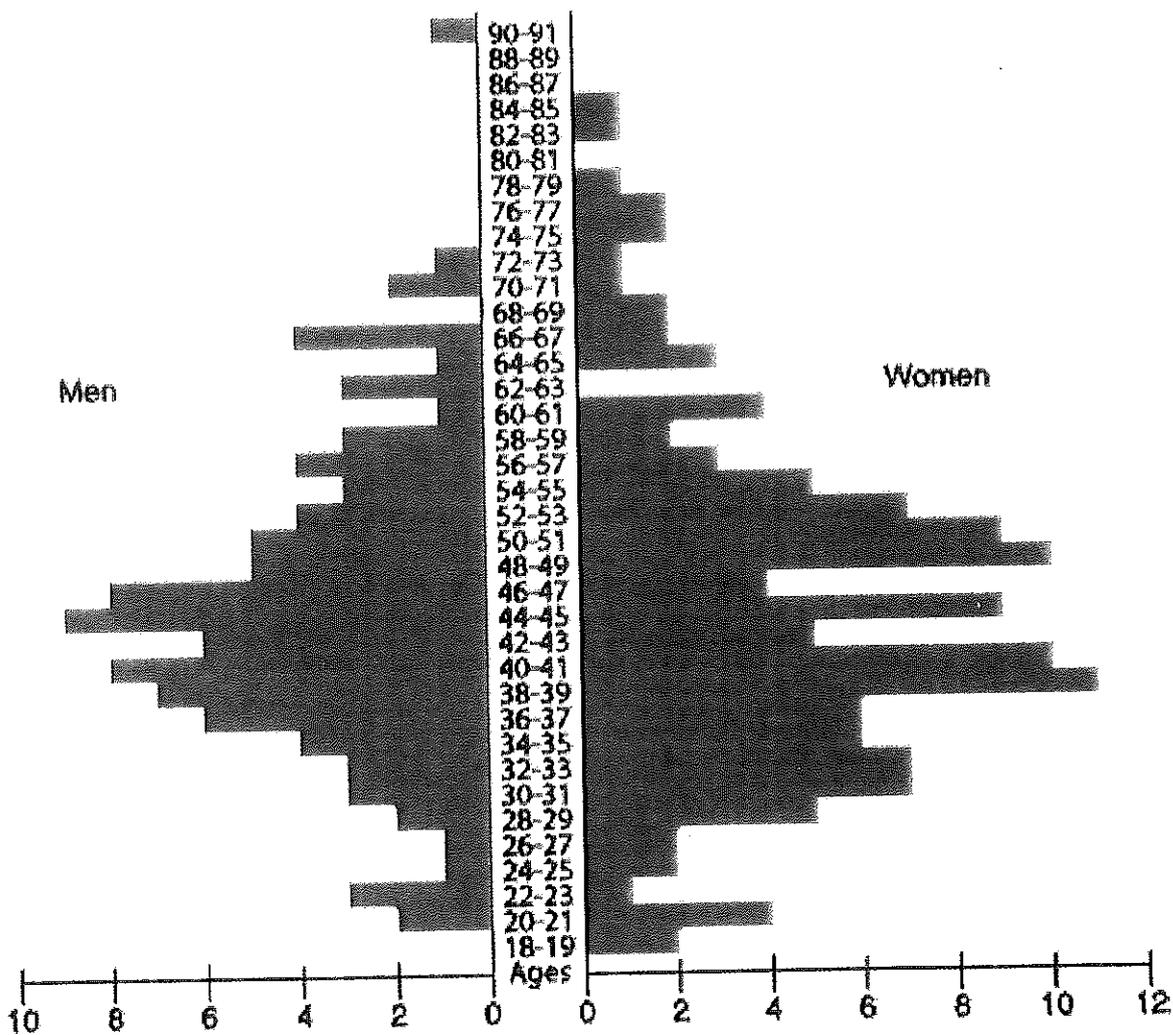
- 97 men, i.e. 42 % ;
- 134 women, i.e. 58 %.

These numbers tally with the usual statistics which mention that "sex" does not seem to be a discriminating variable, and that lower-back pain affects both men and women equally (5).

3.2.2 - Age

The average age is 44.8 years old : for men, it is around 45.2, for women, around 44.5. The age bracket is from 18 to 90 years old.

This average age is in accordance with a Finnish study carried out on a population of 8,000 people,



Graph 2 : Distribution of the low back pain sufferers'ages



3.3 - Type of lower-back pain

Thanks to the RMDQ, we can define the degree of functional disability resulting from lower-back pain, according to the number of Yes. (0 = no disability, 24 = maximal disability).

The number of boxes ticked for all the questionnaires 1 is of 2,632 for 237 included, i.e. an average of 11.11 (standard deviation = 5.8). This average is called : global rating of low back pain sufferers (GRL). The distribution is quite homogenous on the graph between the mild disabilities and the severe ones (graph 3).

3.4 - Effects of microkinesiotherapy

3.4.1 - 1° hypothesis

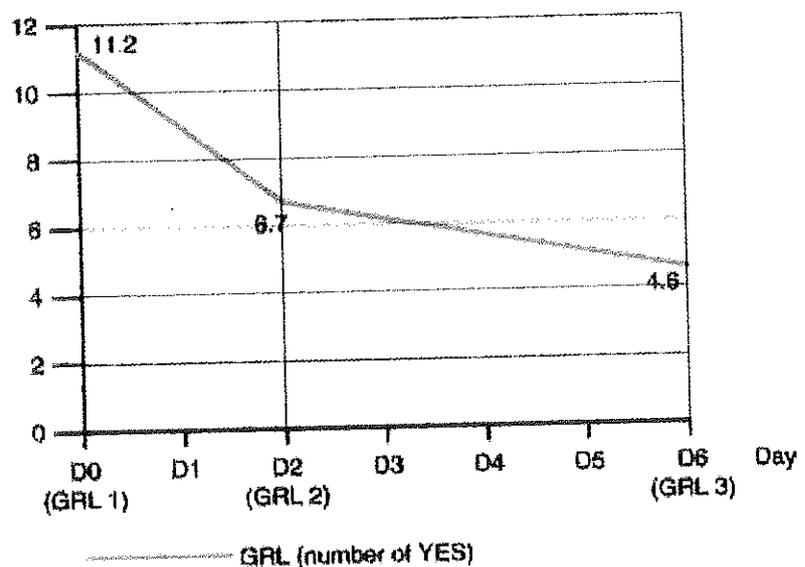
Study of the Global Rating of Lower-back pain.

3.4.1.1 - Comparing the averages

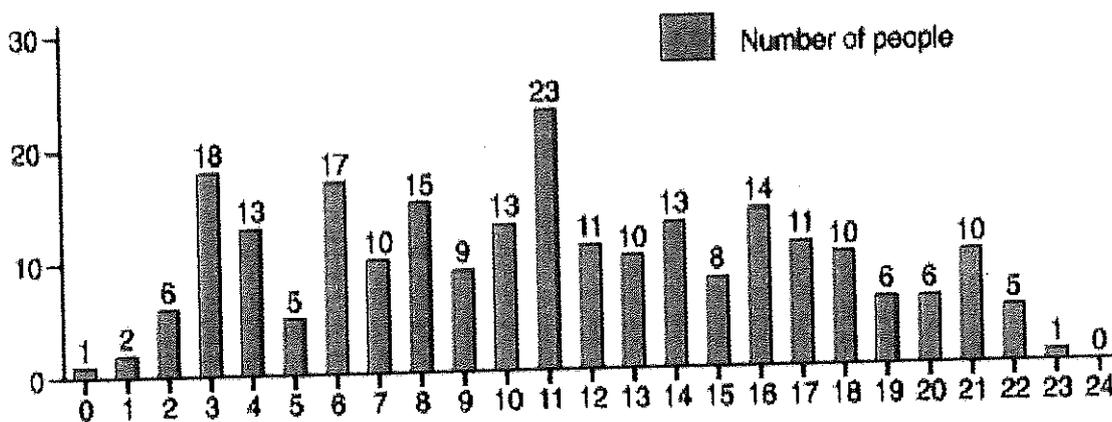
There is a significant difference ($F(2,468) = 198 ; P < 0,00001$) between the 3 questionnaires. The rate of disability is reduced after a microkinesiotherapy session and keeps going down on the 6th day.

Table 1 : Average and standard deviation of the GRL according to the period

| | GRL-1 | GRL-2 | GRL-3 |
|--------------------|-------|-------|-------|
| average | 11.2 | 6.7 | 4.4 |
| standard deviation | 5.8 | 5.7 | 5.4 |



Graph 4 : Line of the averages of GRL according to the period



Graph 3 : Distribution of the GRL according to the number of boxes ticked "yes" in the questionnaire 1



3.4.1.2 - Correlation between the rates

The 3 questionnaires are correlated 2 by 2 (Table 2).

There is a very strong correlation between the 2 ratings. These results mean that statistically, all the subjects are affected in the same way by the positive effect of the microkinesitherapie session in the following week.

3.4.2-2° hypothesis

Checking the rating per statement.

Note : to statement 1, 28.5 % of the subjects answered they had stayed home nearly all the time because of their back before the microkinesitherapie session.

Table 2 : Spearman Correlation Factor between the GRL of the different periods.

| Spearman Correlation Factor | | | | |
|-----------------------------|---------------|------------|------------|--------------|
| | N | R of | | |
| | Active People | Spearman | t (N - 2) | level p |
| GRL 1 GRL 2 | 237 | 0.56527251 | 10.4600143 | 3.0459E - 21 |
| GRL 1 GRL 3 | 237 | 0.32025552 | 5.16027355 | 5.2763E - 07 |
| GRL 2 GRL 3 | 237 | 0.65693563 | 13.3002605 | 2.0808E - 30 |

Table 3 : Frequency of apparition (in percentage) of the symptom explored for the statement considered (RS0/237)*100) according to the period.

| | S.1 | S.2 | S.3 | S.4 | S.5 | S.6 | S.7 | S.8 | S.9 | S.10 | S.11 | S.12 |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Period 1 | 28.5 | 68.1 | 59.6 | 31.9 | 40.9 | 34.9 | 62.1 | 36.2 | 50.6 | 44.3 | 62.6 | 57.4 |
| Period 2 | 16.2 | 44.7 | 31.1 | 19.1 | 23.8 | 23.8 | 38.7 | 23.8 | 29.8 | 26.8 | 42.6 | 26.4 |
| Period 3 | 11.9 | 34.0 | 20.4 | 13.6 | 14.9 | 14.9 | 23.8 | 12.3 | 17.0 | 16.6 | 28.9 | 17.4 |

| | S.13 | S.14 | S.15 | S.16 | S.17 | S.18 | S.19 | S.20 | S.21 | S.22 | S.23 | S.24 |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Period 1 | 74.5 | 69.8 | 14.5 | 63.8 | 41.7 | 58.3 | 5.1 | 23.4 | 72.6 | 43.8 | 61.7 | 10.2 |
| Period 2 | 41.7 | 40.9 | 6.0 | 39.1 | 26.4 | 28.1 | 1.7 | 15.3 | 61.3 | 19.1 | 33.6 | 7.2 |
| Period 3 | 31.1 | 28.9 | 4.3 | 28.5 | 20.0 | 20.4 | 2.6 | 10.6 | 40.4 | 9.8 | 18.3 | 3.8 |

All the symptoms explored in the questionnaire are significantly improved by a microkinesitherapie session (chi 2 for $p < 0.01$, $X^2 > 9.21$), except for the statements 19 and 24 (see table 4 annexed). These are symptoms of serious motor deficiency. However, we could wonder if the weakness of the chi 2 does not come from the limited number of people observed in these 2 statements only (which means that these 2 statements would be of little significance in our population as few subjects ticked Yes in the first questionnaire).

Notice that the statement 21 is the one which is most often still ticked in the questionnaire 3 "Today, because of my back, I avoided any heavy jobs around the house". It is more about the fear of a relapse than painful after-effects or a real handicap.

4 - DISCUSSION

We will study the evolution of lower-back pain as well as the percent-

age of change.

4.1 - Study of low back pain sufferers' global evolution

4.1.1 - Comparison of the GRL distribution

When we compare the initial GRL 1 distribution curves (graph 3) to the GRL 2 and GRL 3, we can see the beneficial effect of the session in another way (Graphs 6 and 7).

4.1.2 - Distribution per group

The RMDQ, which includes 24 statements, enables us to measure the

functional disability of a low back pain sufferer between a maximum value of 24 and a minimum of 0.

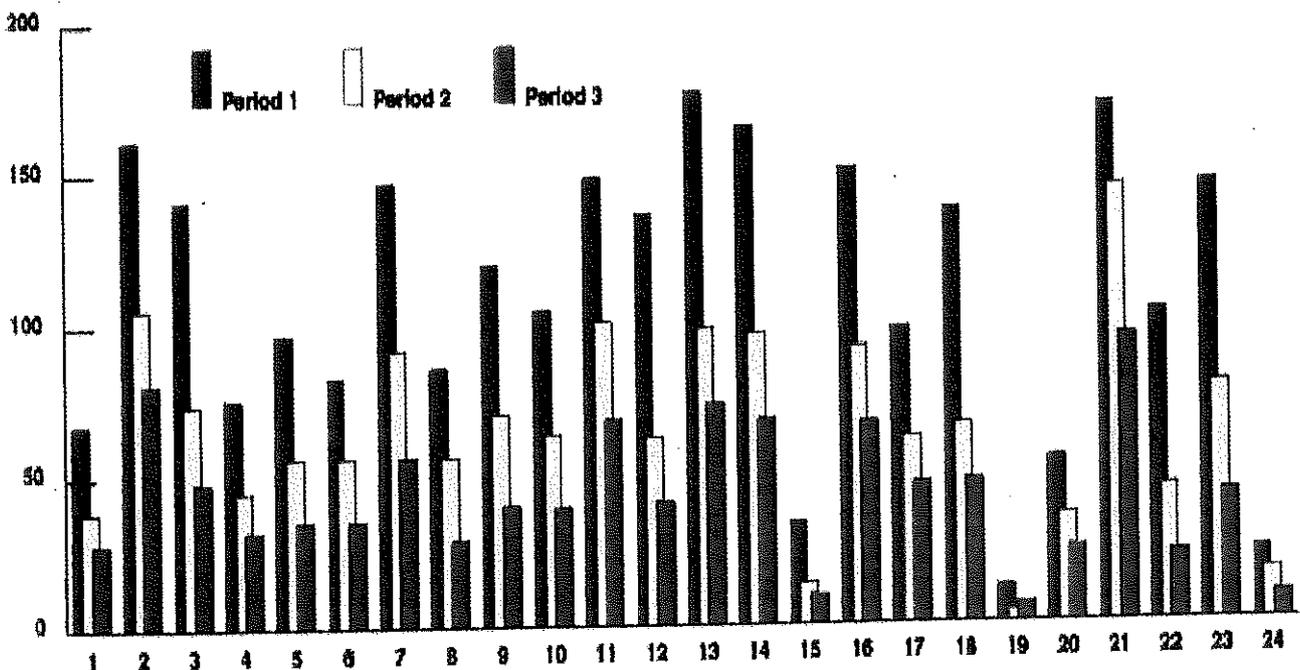
So the low back pain sufferers could be distributed over 3 groups :

- from 0 to 8 yes = mild lower-back pain ;
- from 9 to 16 yes = moderate lower-back pain ;
- from 17 to 24 yes = severe lower-back pain.

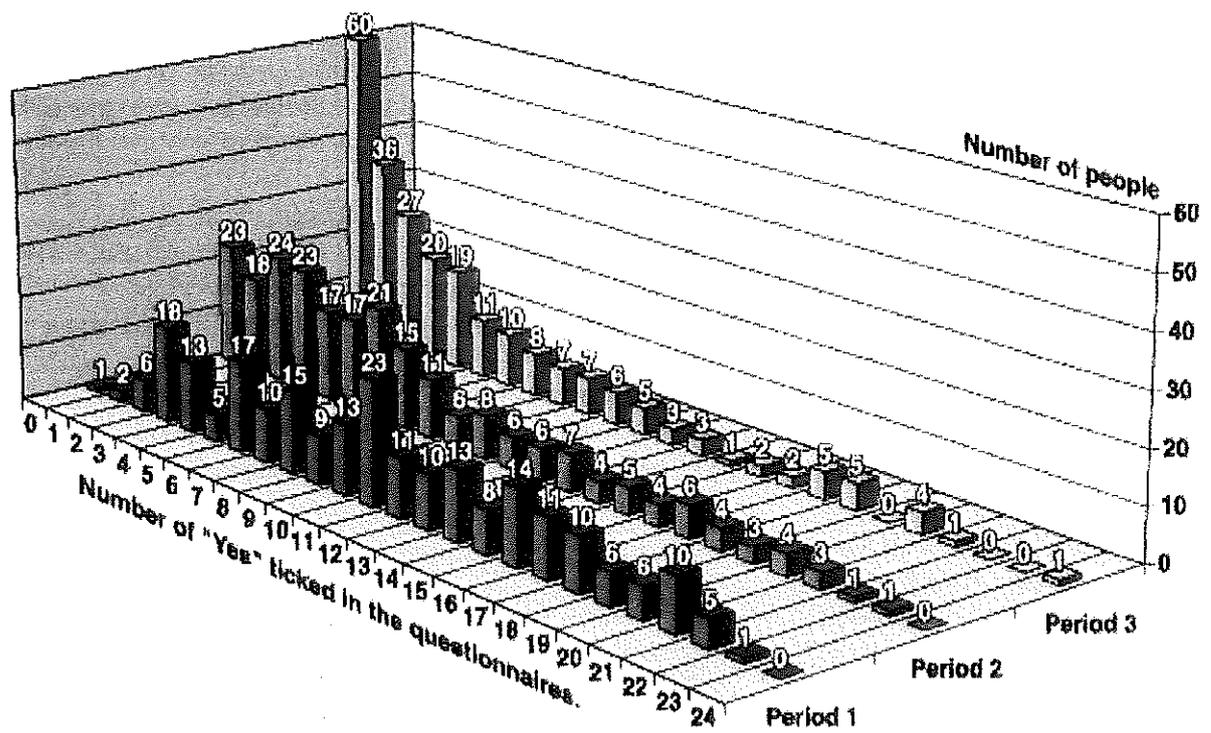
The evolution of the number of low back pain sufferers in the 3 groups can be followed in this table :

Table 4 : Distribution of the low back pain sufferers.

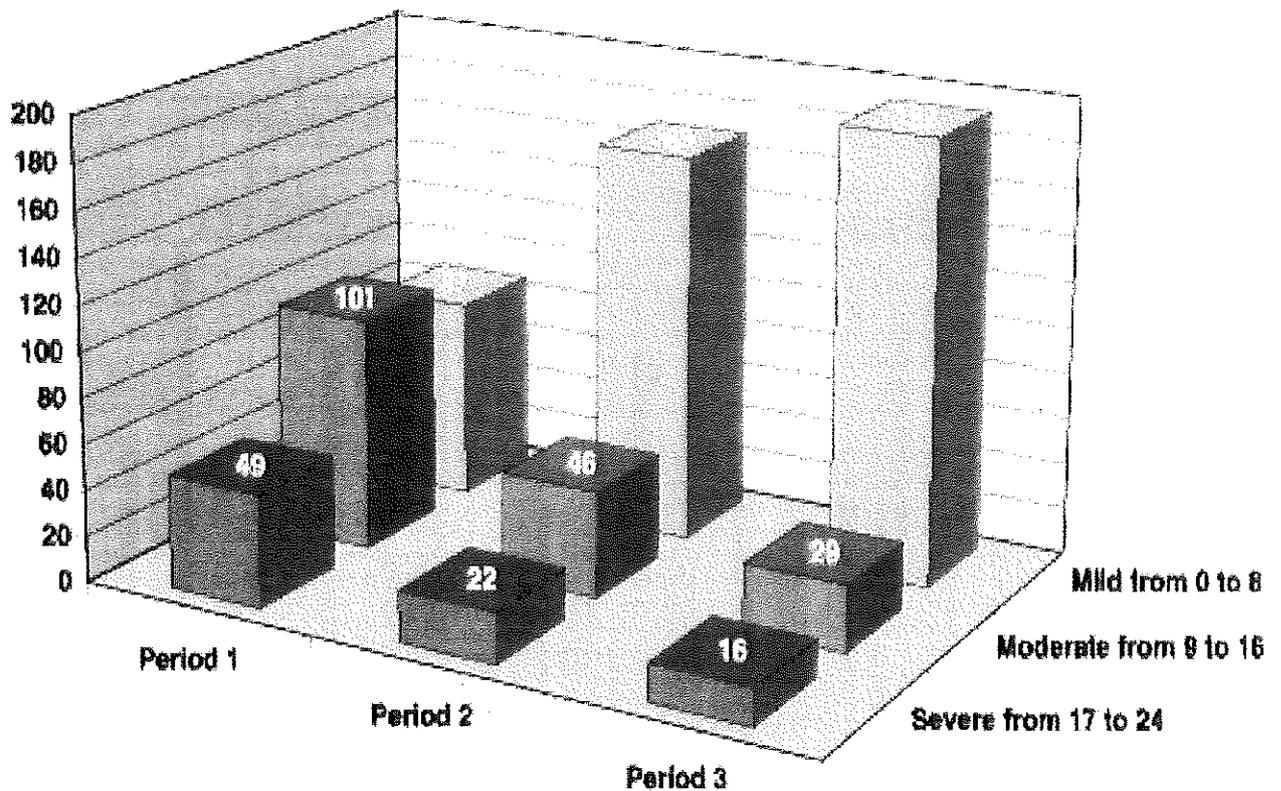
| | 0 to 8 mild | 9 to 16 moderate | 17 to 24 severe |
|-------------------------------|-------------|------------------|-----------------|
| Before the session : period 1 | 87 = 36 % | 101 = 43 % | 49 = 21 % |
| D + 2 : period 2 | 169 = 71 % | 46 = 20 % | 22 = 9 % |
| D + 6 : period 3 | 192 = 81 % | 29 = 12 % | 16 = 7 % |



Graph 5 : Distribution of „Yes” per statement.



Graph 6: Distribution of the GRL2 according to the number of Yes ticked in the questionnaires 1, 2 end



Graph 8 : Distribution of the lower-back pains at the 3 periods.

The group of severe and moderate lower-back pains was very seriously reduced, to become mild or nonexistent lower-back pains (graphs 8 to 10).

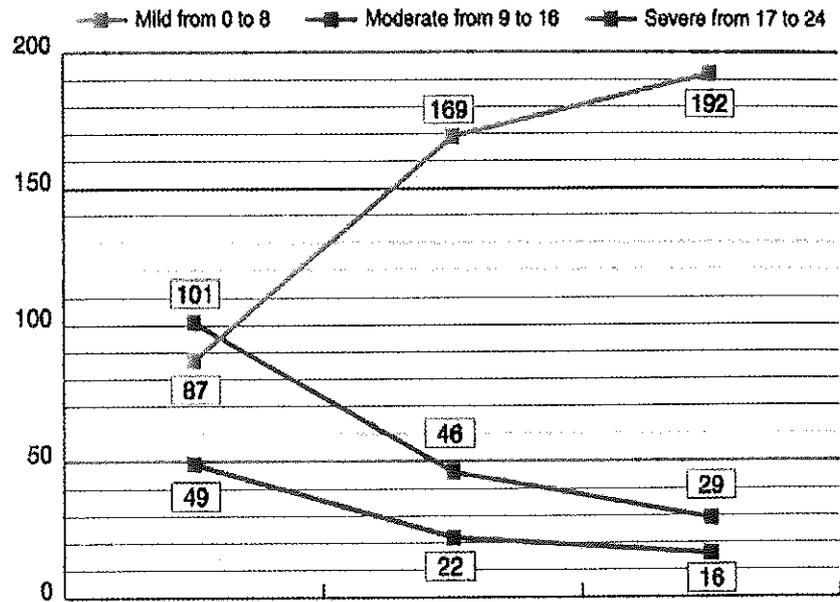
Study of the modifications between the periods

4.1.3.1 - At the period 2 (D + 2)

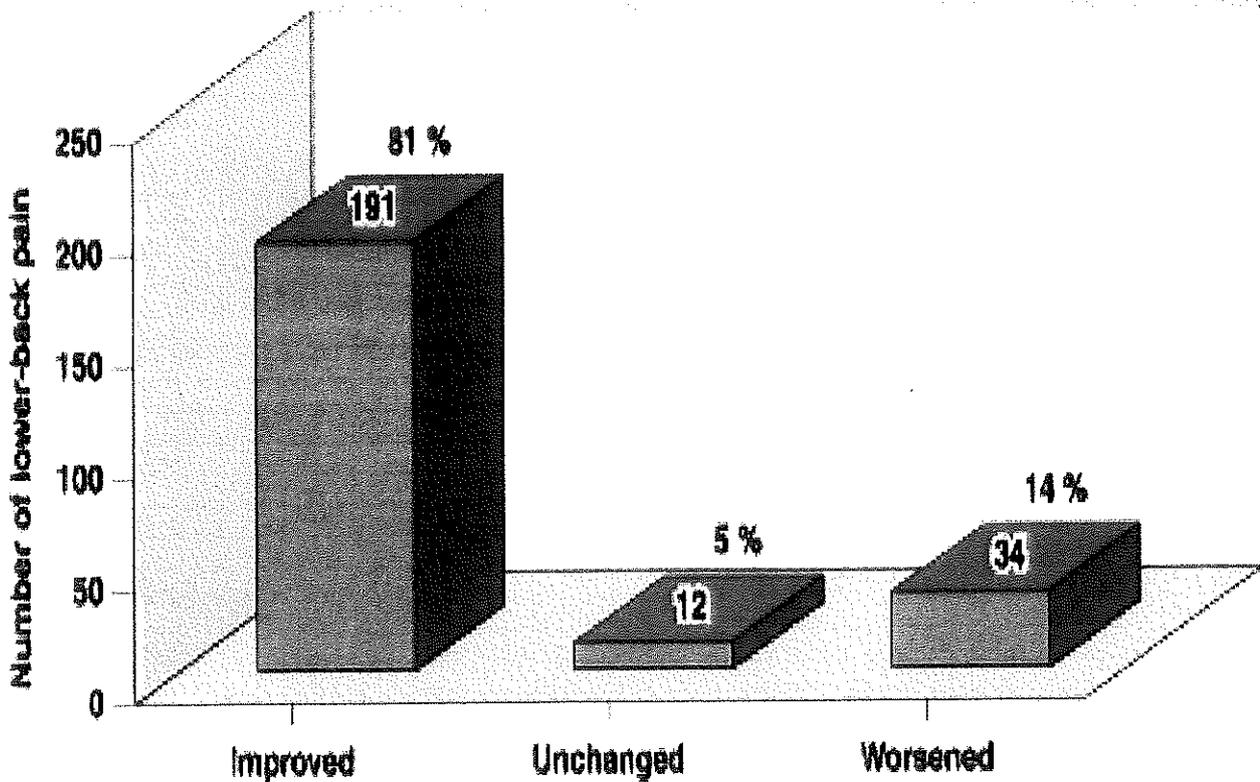
- 191 people feel better, i.e. 81 % ;
 - 12 people stay the same, i.e. 5 % ;
 - 34 people feel worse, i.e. 14 % .
- (graph 12)

4.1.3.2 - At the period 3 (D + 6)

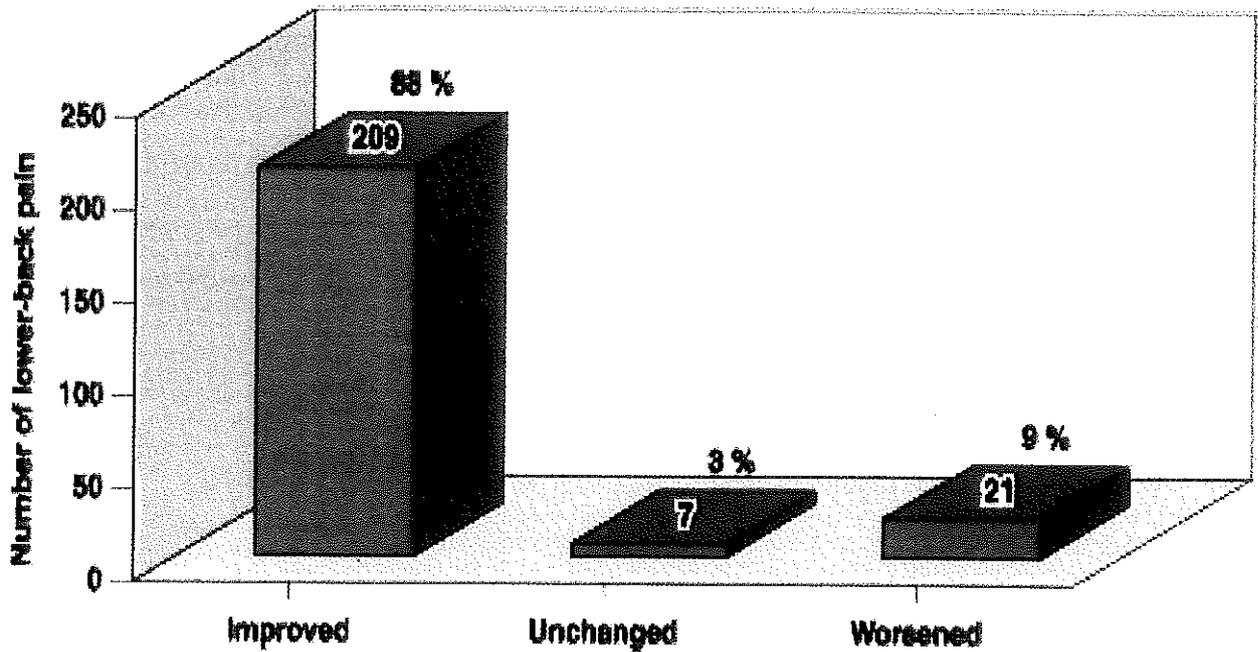
- 209 people feel better, i.e. 88 % ;
 - 7 people stay the same, i.e. 3 % ;
 - 21 people feel worse, i.e. 9 % .
- (graphs 13 and 14)



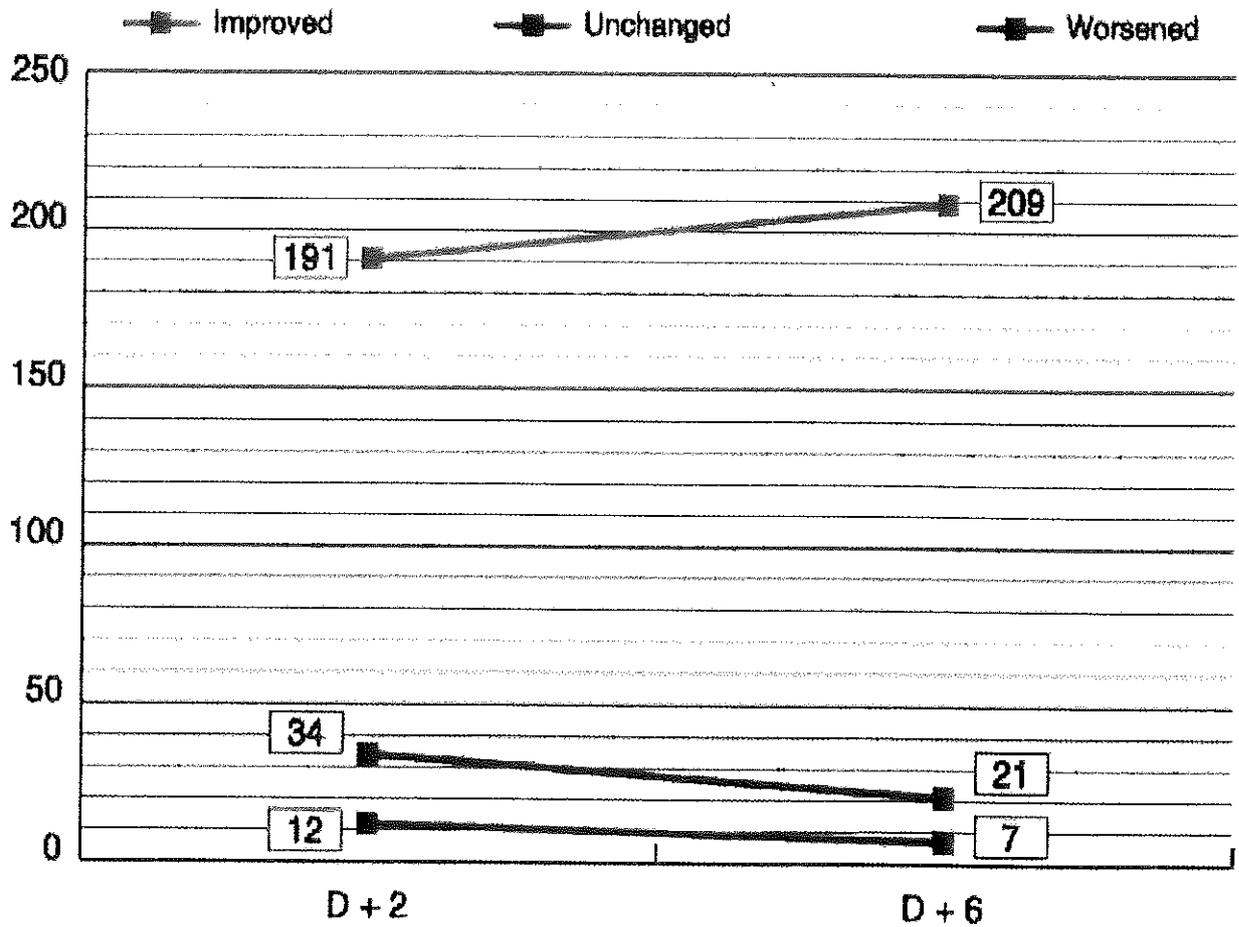
Graph 11 : Evolution of the types of lower-back pains between the periods 1, 2 and 3 (D0 ; D + 2 ; D + 6).



Graph 12 : Changes between the periods 1 and 2 (D0 and D + 2).



Graph 13 : Changes between the period 1 and 3 (D0 and D + 6).



Graph 14 : Evolution of the lower-back pain between the periods 2 and 3.

4.1.4 - Study of the percentage of change

This study consists in comparing for each person the number of Yes ticked at the period 1 before the session with the number of ticks at the period 3 (D + 6) by distributing them over 4 groups of 25 %. This way we can have precisions on the percentage of aggravation and improvement.

4.1.4.1 - Aggravation

- from 100 % to 16%: 2 people, i.e. 1 %
- from 75 % to 51 % : 2 people, i.e. 1 %
- from 50 % to 26 % : 5 people, i.e. 2 %
- from 25 % to 1 % : 12 people, i.e. 5 %

4.1.4.2 - No change

- 7 people, i.e. 3 %.

4.1.4.3 - Improvement

- from 1 % to 25 % : 21 people, i.e. 9 %
- from 26 % to 50 % : 37 people, i.e.

16 %

- from 51 % to 75 % : 46 people, i.e. 22 %
- from 76 % to 100 % : 105 people, i.e. 44 %.

60 people did not tick any "yes" in the questionnaire 3, i.e. 25 %.

This study shows that the group of people feeling worse only feels very slightly so (0 to 25 %) whereas the group feeling better feels so in an increasing percentage from 0 to 100 %. (Graph 15).

The improvement obtained after a microkinesitherapie session is significant as it is on average of 78 % in the people feeling better.

ithérapie session. A single session helped the group of the patients feel significantly better, in the pain as well as the motor deficiency. The improvement starts at least as soon as the second day after the intervention and lasts until the 6th day. On the whole, the patients are improved the same way, taking into account the correlations between the different ratings (GRL) and the improvement touches all the kinds of disabilities.

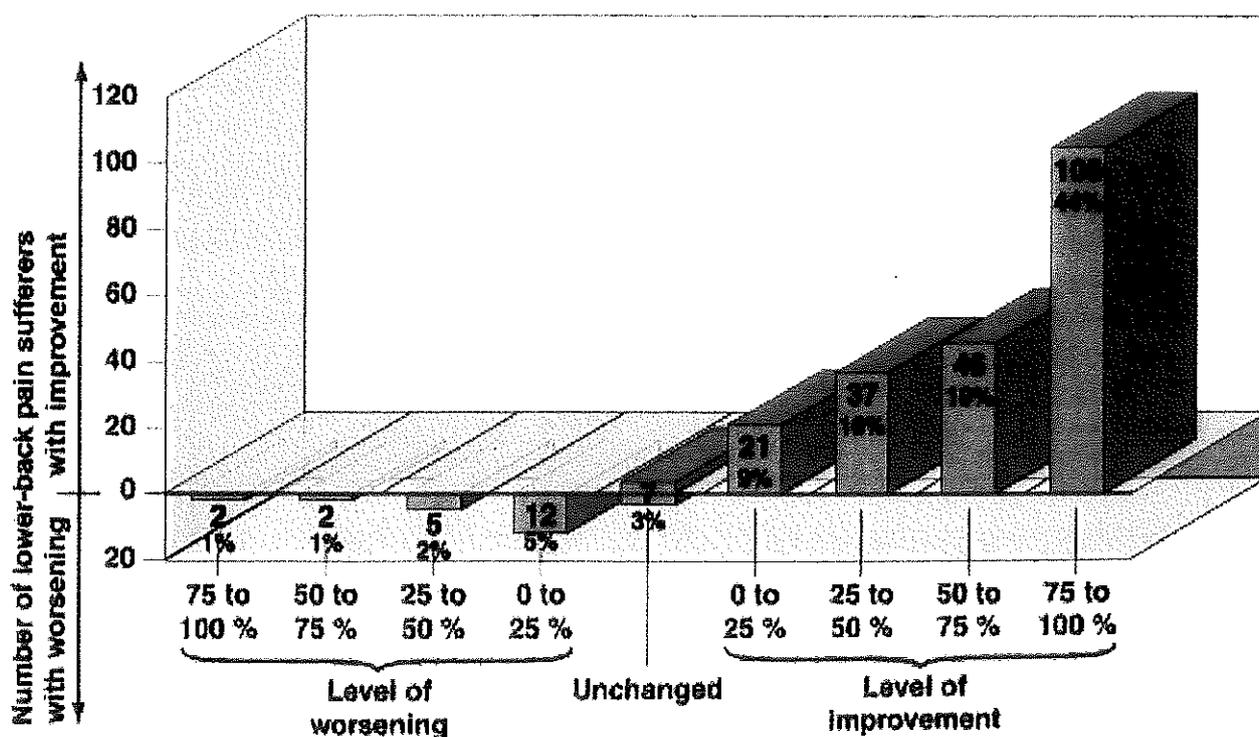
I want to thank all the microkinesitherapists who took part in this study and congratulate them on their work.

CONCLUSION

A population of 237 low back pain sufferers completed a questionnaire exploring this pathology, before and twice after a microkines-

BIBLIOGRAPHY

1. AFREK - Consensus Conference : short text - Physiotherapy treatment for the low back pain sufferers - SPEK 2000 - p.40.



Graph 15 : Distribution of the percentage of change per bracket of 25 %.



2. AFREK - Consensus Conference : long text - Physiotherapy treatment for the low back pain sufferers - SPEK 2000 - p.28.
3. GROSJEAN D. - BENINI P. - Micro-palpation, basis of Microkinesitherapie - C.F.M. -Pont- Mousson.
4. GROSJEAN D. - BENINI P. - Micro-palpation, basis of Microkinesitherapie - C.F.M. -Pont- Mousson. p.55.
5. GROSJEAN D. - BENINI P. - Approach of the algoneurodystrophy syndrome of the superior limb in microkinesitherapie. An experimental study on 46 cases. Annale de Kinesitherapie 1990 - T 17 - N16 - pp.303-4.
6. GROSJEAN D. - BENINI P. - Micro-palpation, basis of Microkinesitherapie - C.F.M. -Pont- Mousson p.59, p. 123.
7. GROSJEAN D. - BENINI P. - Micro-palpation, basis of Microkinesitherapie - C.F.M. -Pont- Mousson p. 116.
8. AFREK - Physiotherapy treatment for the low back pain sufferers - Consensus Conference SPEK 2000 - p.3.
9. AFREK - Physiotherapy treatment for the low back pain sufferers - Consensus Conference SPEK 2000-p. 10.
10. AFREK - Physiotherapy treatment for the low back pain sufferers - Consensus Conference SPEK 2000-p.291.
11. COSTE J. and CALL - French authentication of a functional disability scale for the assessment of lower-back pain, the Roland Morris Disability Questionnaire (RMDQ). Rev. Rhumatologie (Fr.ed.) 1993, 60(5)335-341.