

# INDEPENDENT PREDICTORS OF FUNCTIONAL RECOVERY IN PATIENTS WITH CRONIC LOW BACK PAIN TREATED BY SPINAL MANIPULATION, INDIVIDUAL PHYSIOTHERAPY OR BACK SCHOOL

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## 1 Objective

To identify predictors of response to treatment in a sample of 210 patients with chronic, non-specific low back pain randomly assigned to either back school, individual physiotherapy or spinal manipulation.

## 2 Methods

Retrospective analysis of data from a randomized trial comparing back school, including group exercise, education/ergonomics with individual physiotherapy, including exercise, passive mobilization and soft-tissue treatment, and with spinal manipulation, delivered according to Manual Medicine, for the treatment of chronic low back pain. The primary outcome was the Roland Morris Disability Questionnaire (RM) assessed before and after treatment: those who decreased their RM score  $<2.5$  were considered non-responders. Baseline potential predictors included demographics and information on general health, back pain history and features, and life satisfaction.

## 3 Results

205 patients completed treatment (140/205 women, age 58+14 years). On discharge, non-responders were 72 (34.2%). Manipulation showed the highest functional improvement and the lowest rate of non-response. In a multivariable backward logistic regression, a lower baseline RM score (OR 0.82, 95% CI 0.76-0.89,  $p < 0.001$ ) and the received treatment (OR 0.32, 95% CI 0.21-0.50,  $p < 0.001$ ) were independent predictors of non-response. Being in the lowest tertile of baseline RM score ( $<6$ ) predicted non response to treatment for back school and individual physiotherapy, but not for manipulation (same risk of non-response for 1st, 2nd and 3rd RM score tertile).

## 4 Conclusions

In our sample of patients with chronic low back pain, randomly assigned to either back school, individual physiotherapy, or spinal manipulation, lower baseline pain-related disability predicted non response to physiotherapy, but not to spinal manipulation.

Table 1 - Patients' characteristics according to the response to treatment, n. 205.

	Responders n. 133	NON Responders n. 72	P (*)
<b>General characteristics</b>			
- Age, years (mean $\pm$ SD)	60.3 $\pm$ 13.8	56.0 $\pm$ 15.3	0.038
- Female sex [n, (%)]	95 (71)	45 (63)	0.355
- Weight, Kg (mean $\pm$ SD)	69.9 $\pm$ 11.7	71.8 $\pm$ 11.8	0.255
- Height, cm (mean $\pm$ SD)	166 $\pm$ 9	167 $\pm$ 9	0.160
- Previous physical activity [n, (%)]	63 (47)	34 (47)	0.829
- Current physical activity [n, (%)]	29 (22)	19 (26)	0.379
- Smoking [n, (%)]	48 (36)	30 (42)	0.327
- Working [n, (%)]	62 (47)	34 (47)	0.751
- Living alone [n, (%)]	31 (23)	11 (15)	0.217
- Life satisfaction [n, (%)]	127 (95)	70 (97)	0.138
<b>Pain characteristics</b>			
- RM score (mean $\pm$ SD)	10.4 $\pm$ 4.2	7.3 $\pm$ 4.8	$< 0.001$
- PRS (mean $\pm$ SD)	2.0 $\pm$ 0.9	2.0 $\pm$ 0.9	0.882
- Reported LBP for 2 years or more [n, (%)]	105 (79)	51 (71)	0.408
- LBP-related use of drugs [n, (%)]	77 (58)	34 (47)	0.237
- Previous treatments for LBP [n, (%)]	99 (74)	41 (57)	0.031

(\*) From Student t test, Pearson  $\chi^2$  test or Kruskal-Wallis rank test, as appropriate.

Table 2 - Response according to the received treatment, n. 205.

	Back School (n = 68)	Individual Physiotherapy (n = 68)	Spinal Manipulation (n = 69)	p (*)
Responders [n, (%)]	32 (47)	41 (60)	60 (87)	$< 0.001$
Non Responders [n, (%)]	36 (53)	27 (40)	9 (13)	

(\*) From Pearson  $\chi^2$  test.

Table 3 - Response according to Roland Morris (RM) tertiles, n. 205.

	RM 1st tertile $\leq 6$ (n = 71)	RM 2nd tertile $> 6 \leq 12$ (n = 76)	RM 3rd tertile $\geq 12$ (n = 58)	p (*)
Responders [n, (%)]	32 (45)	58 (76)	43 (74)	$< 0.001$
Non Responders [n, (%)]	39 (55)	18 (24)	15 (26)	

(\*) From Pearson  $\chi^2$  test.

Table 4 - Distribution of non-responders according to received treatment and RM tertiles, n. 205.

	Back School (n = 68)	Individual Physiotherapy (n = 68)	Spinal Manipulation (n = 69)	p (*)
RM 1 <sup>st</sup> tertile $\leq 6$ [n, (%)]	16 (7.8)	17 (8.3)	6 (3.0)	0.001
RM 2 <sup>nd</sup> tertile $> 6 \leq 12$ [n, (%)]	13 (6.3)	4 (2.0)	1 (0.5)	0.001
RM 3 <sup>rd</sup> tertile $\geq 12$ [n, (%)]	7 (3.4)	6 (3.0)	2 (1.0)	0.471
p (*)	0.011	0.001	0.100	

(\*) From Pearson  $\chi^2$  test.

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