

# Study of chronic low back pain treatment using the Back School

## *Estudo do tratamento da lombalgia crônica por meio da Escola de Postura*

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### ABSTRACT

*The aim of the present study was to quantitatively analyze the response of patients with chronic low back pain to treatment at the Back School at the IMREA-HCFMUSP. The following scales were used to measure the therapeutic response: the Oswestry Low Back Pain Disability Questionnaire, a Visual Analog Scale (VAS), and a corporal diagram of the pain. The sample was composed of 43 patients with chronic low back pain evaluated, treated, and referred to by the Back School program. The results showed significant improvement among those who completed the program in all three scales applied. Since the period of study was only*

*two months, the results do not support any claim that the Back School is also this effective on long-term treatment of chronic low back pain. Further qualitative and quantitative studies must be carried out in order to support the development of specialized multi-professional teams, who will carry out alterations and improvements in therapeutic resources to the management of chronic low back pain.*

**Keywords:** Low Back Pain, Quality of Life, Questionnaires, Treatment Outcome

### RESUMO

O objetivo do presente trabalho foi analisar a resposta ao tratamento dos pacientes com dor lombar crônica, atendidos pela "Escola de Postura" do IMREA-HCFMUSP. Os questionários utilizados para avaliação da resposta terapêutica foram a escala "Oswestry Low Back Pain Disability Questionnaire", a Escala Visual Analógica (EVA), e um diagrama corporal de dor. A amostra foi composta por 43 pacientes com lombalgia crônica encaminhados, avaliados e tratados pela Escola de Postura. Observou-se que os indivíduos que concluíram a Escola apresentaram melhora significativa com relação às três escalas de avaliação aplicadas. Cabe ressaltar que o período de estudo

de avaliação da Escola de Postura foi de dois meses, sendo que os resultados não possibilitam afirmar que tal método terapêutico também é eficaz em longo prazo. Mais estudos, quantitativos e qualitativos, devem ser realizados de modo a oferecer subsídios à equipe multiprofissional da Escola que permitam operar mudanças e ampliar recursos terapêuticos no tratamento de pacientes com lombalgia crônica.

**Palavras-chave:** Dor Lombar, Qualidade de Vida, Questionários, Resultado de Tratamento

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## INTRODUCTION

Pain is the most common complaint in the cases of musculoskeletal afflictions, and it can be localized or diffuse, derived from impairment of articular, tendinous, osseous, muscular or fascial structures, as well as from acute and chronic conditions. Chronic pain is a public health problem, due to its high prevalence, high cost, and negative impact in the quality of life of patients and their families.<sup>1,2</sup> Among the most prevalent causes for chronic pain are the low back afflictions. Low back pain is characterized as painful symptoms in the low back, sacral or sacroiliac regions of the vertebral column. It is believed that the pain comes from an imbalance of those structures, creating a multidimensional sensation that varies with each patient, depending on the individual nociception.<sup>2</sup>

Chronic low back pain affects about 80% of individuals in the general population at some moment in their lives,<sup>3</sup> and its prevalence increases with age, reaching its peak during the sixth decade of life.<sup>5</sup> The point prevalence of chronic low back pain, whose evolution period is equal to or longer than 12 weeks, is estimated in 10 to 15% of workers,<sup>6</sup> corresponding to about 7% of the search for medical assistance each year.<sup>7</sup> In the United States, it is estimated that 5.4 million individuals suffer disabilities due to chronic low back pain per year, causing 250 million work days lost per year, 19 million visits to doctors, half of the cost of labor compensations, and a consumption of US\$ 16 billion per year with expenses related to the disease or its complications.<sup>8</sup> In adults aged less than 45 years, chronic low back pain is an important cause of disability, being included among the physical illnesses related to work.

Chronic low back pain is multifactored, presenting distinct causes in its development, being considered neuromusculoskeletal afflictions, in which neurological and biomechanical impairments can be observed, as well as psychological aspects.<sup>9</sup>

Because of the extensive possibility of factors that revolve around chronic low back pain, the search for a more comprehensive treatment that could encompass the many aspects of the disease has begun. It is in this context that the Back Schools appear. The first report of the application of exercises on a large scale for the treatment of spinal column problems was at the Institute founded in 1825 by Jacques Malthieu Delpechi in Montpellier, France.<sup>10</sup> Only in 1969 was a formally structured training program initiated, developed at the Hospi-

tal Dandery, in Sweden, called “Back School” followed by Hamilton Hall from the “Canadian Back Education Unit”, in 1974,<sup>11</sup> seeking to help patients with chronic low back pain. In the same period records of the first American back school were also found.<sup>12</sup> However, only in the 80s, was there a noticeable growth of back schools, and they started to utilize programs prepared by multi-disciplinary teams.<sup>13</sup> The idea of a multi-disciplinary approach became more and more important, once various investigations began to show that a uni-disciplinary approach would not obtain good results.

Thus, the multi-disciplinary approach slowly began to be adopted in different services for treatment worldwide, as an efficient way to treat chronic low back pain, substantially improving the quality of life of people with those symptoms. In our country efforts were also made to encourage this multi-disciplinary therapeutic approach to chronic low back pain. In 2001 it was created the *Escola de Postura do Instituto de Medicina Física e Reabilitação do Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo* (IMREA - HC FMUSP) (Back School at the Institute for Physical Medicine and Rehabilitation of the Hospital of Clinics from the School of Medicine of the University of São Paulo).<sup>14</sup> A service program was prepared for people with chronic low back pain, based on the parameters promulgated by the Schools already existing. This program, which also utilizes a multidisciplinary team, has the basic strategy of educating and training the patients who sought out the service, preparing them for prevention and for living with the problems related to chronic low back pains.<sup>15,16</sup>

Currently, the Back School, in its most diverse services, offers multidisciplinary approaches to postural re-education, with the largest part of the programs including medical, nutritional, social, and psychological evaluation and orientation, as well as many theoretical and practical activities, including physical activities. In the short term, the Back School seeks to reduce pain, stimulate adequate rest, and emphasize the favorable prognosis that occurs in most cases. In the long term, the goal is to teach notions of posture, ergonomics, and body mechanics, in addition to improving the physical conditioning of people, in an attempt to prevent episodes of low back pain. In most cases, such an approach thus avoids consultations and expensive hospital treatments, while at the same time it functions as a support for health professionals involved in the treatment of patients with chronic maladies of the column.<sup>17,18</sup>

## OBJECTIVES

The object of the present work is to evaluate the evolution of chronic low back pain in patients who concluded the Back School program developed at the IMREA-HC FMUSP.

## METHODS

### Sampling

Forty-three (43) patients were selected, voluntarily and randomly, who presented the classic symptoms of chronic low back pain (12 weeks or more of pain) and who concluded the treatment program at the Back School developed at the IMREA-HC FMUSP. In this institution the patients participate in a thirty-four hour educational program for 4 consecutive days, developing theoretical-practical activities and return two months later to be re-evaluated. The patients who participated in the study were evaluated before and after having been submitted to the treatment, using the following scales: “Oswestry Low Back Pain Disability Questionnaire” (OLBPDQ), Visual Analog Scale of Pain (VAS), in addition to a representational body diagram, which they filled in themselves.

The OLBPDQ scale is an important tool for the evaluation of disabilities caused by pain, being utilized for more than 25 years and considered a touchstone in evaluating chronic back evolution.<sup>19,20</sup> The VAS is an aid in measuring the intensity of the pain in the patient, and an important instrument to verify the evolution of the patient during treatment. It is useful in gauging whether the treatment is being effective, as well as whether there is any deficiency in the therapeutic approach, according with the degree of improvement or worsening of the pain.

The AVAS can be utilized at the beginning and at the end of each treatment session, always recording the results in the evolution. To utilize the VAS the attendant must question the patient about the degree of pain with the score “0” meaning “complete absence of pain” and “10” indicating the level of “maximum pain” tolerable to the patient.

The Pain drawing is a method still without validation in the literature, which can, however, present information given by the patient without the interference of the interviewer, showing in a simple and comparative way the evolution of pain according with the corporal perception of the patient. The method consists of a drawing in the shape of the human body where the patient can relate to his/her own

body. Then the patient is guided to color in the diagram the area of his/her body where he/she feels pain at that moment, before, and after the Back School interventions. The quantification of the pain area made by the patient is accomplished counting the numbers of square millimeters painted inside the body diagram, compared before and after the treatment.

The program consisted of an evaluation of the medical service, the social service, and the psychologist given to patients sent to the Back School to verify their eligibility to the program. The patient, once fulfilling the criteria of eligibility, was sent to a medical consultation followed by lessons of one to two hours each, given by various professionals: a physician, a social worker, a psychologist, a physical therapist, an occupational therapist, a nutritionist, a nurse, and a physical education teacher, aiming to guide the patients on notions of anatomy and biomechanics, the causes of back pain and their treatments, ergonomics, and posture in one's daily life activities (DLAs) and in the practical life activities (PLAs), physical activities, and emotional alterations. The patients were guided and taught to practice a series of daily exercises at home consisting of stretches of the muscle chains of the pectoral girdle and pelvis, lower limbs musculature, strengthening of the gluteus, abdominals, and quadriceps, as well as ergonomics and correction and awareness of the body. The need to keep the exercise program at home was emphasized and instructions were given for the correct execution of the DLAs and PLAs.

Patients with chronic low back pain were included and agreed to participate in the research, signing the consenting term of the CAPPesq Ethics Committee for Research, which had approved the research. Patients who simultaneously frequented another type of physiotherapeutic treatment associated with the Back School were excluded from the work to keep that from becoming an interference factor in the results obtained in this work. This data was submitted to a statistical study.

### Statistical Analysis

The Kolmogorov-Smirnov test was made to determine whether the gravity evaluation values of the patients were normally distributed. As the analyses did not reject the normal distribution, a parametric analysis was done through the paired-t test, since the patients had been analyzed before and after the therapeutic procedure.

An analysis to verify the possible influences of the "Time of Complaint from Pain", "Age", and "Gender" variables in the therapeutic response.

There was no influence of these variables in the procedure results, in none of the evaluations.

### RESULTS

The average time of complaint for the patients was 18.25 years (mean of 15.75 years) and the average age was 56.25 (mean of 52.46 years). Of the 43 patients, 34 (79.07%) were female.

The Kolmogorov-Smirnov test was done to determine whether the gravity evaluation values of the patients were distributed normally. The analyses did not reject the normality (normal distribution present).

The analyses of the Treatment results were done taking three variables into consideration, namely the "Pain Drawing", the "OLBPDQ" and the "VAS", at the beginning of the Back School program and two months after its completion.

As the normality was not discarded, a parametric analysis was done through the paired-t test, since the patients had been analyzed before and after the therapeutic procedure.

The therapeutic procedure that was done significantly reduced the scores of all the evaluations, as shown in Table 1.

### DISCUSSION

The object of this study was to evaluate the response of chronic low back pain patients who attended the IMREA – HC FMUSP Back School, through the utilization of the Pain Drawing, the OLBPDQ, and the VAS scales. The evaluation instruments utilized in this study were complementary and important to verify the efficacy of the treatment. Studies on chronic low back pain mainly evaluate the modalities of treatment. The development of the therapeutic, educational, and preventative programs must be directed so as to promote behavior changes compatible with the proposal they intend and, therefore, show the importance of the studies that investigate such aspects.

The therapeutic response presented by the patients who participated in the IMREA – HC FMUSP Back School was substantial, reaching statistically significant responses in all the evaluation scales utilized, independently of the "Time from Pain to Complaint", "Age", and "Gender" variables.

The Pain Drawing, one of the scales utilized to measure pain in the present study, has been utilized for more than 30 years as a tool in research and clinical practice to aid in the etio-

**Table 1** - Comparative values of the scales "Pain Drawing," "Oswestry Low Back Pain Disability Questionnaire," and "Visual Analog Scale," at the beginning and two months after the intervention of the IMREA-HCFMUSP Back School.

	Initial Value	Final Value	% reduction ± SD	p
<b>Pain Drawing</b>	62,74	25,45	59,44 ± 50,60	0,000
<b>"Oswestry Low Back Pain Disability Questionnaire"</b>	30,28	23,83	21,30 ± 13,33	0,003
<b>Visual Analog Scale</b>	6,14	4,14	32,57 ± 2,59	0,000

**Table 2** - Analysis of the pain measurement variables, in relation to "Time from Pain to Complaint", "Age", and "Gender."

		Pain Drawing	"Oswestry Low Back Pain Disability Questionnaire"
<b>Time of complaint</b>	<b>r*</b>	0,000	0,101
	<b>p</b>	0,999	0,521
<b>Age</b>	<b>r</b>	0,085	0,059
	<b>p</b>	0,591	0,709
<b>Gender</b>	<b>p</b>	0,299	0,807

\* r: coefficient of correlation

logical diagnosis of low back pain, as well as to measure the proportion of the body affected by pain. This instrument has passed the test of time in evaluating the course of the disease.<sup>21</sup> Its utility has been described with various objectives, including as a diagnostic aid,<sup>22</sup> the determination of non-organic factors related to pain, the evaluation of the effectiveness of the treatment performed,<sup>23</sup> and the prediction of treatments to be instituted.<sup>24</sup> However, some studies have demonstrated some contradictory results.<sup>25,26</sup> Despite the inconsistency of certain findings in the literature, some results have shown that the Pain Drawing is associated with the intensity of the pain,<sup>27-29</sup> with the disability it causes,<sup>21,30,31</sup> as well as to its reliability in the evaluation of the course of the disease.<sup>32</sup> Nevertheless, few studies were made utilizing the Pain Drawing as an evaluation of the therapeutic approaches.<sup>22</sup>

Other standardized clinical evaluations were also conducted concomitantly to that conducted by the Pain Drawing. There was a statistically significant decrease in the VAS scores, which is a scale that aids in measuring the intensity of pain in patients. There was also a statistical reduction in the measurements of the OLBPDQ scale, which is an important tool for the evaluation of disabilities caused by pain, and is considered the touchstone for evaluating the evolution of low back pain.<sup>19,20</sup>

The Back School, with its educational approach towards patients with chronic low back pain, has shown efficacy in the short and long terms, according to recent meta-analysis.<sup>33</sup> This study demonstrates that there is moderate evidence suggesting that Back Schools, in an occupational context, reduce pain, improve functionality, and promote return to work better in both short and long terms when compared to exercises, manipulation, myofascial therapy, counseling, placebos or waiting lists for chronic and recurrent low back pain patients; however, there are some reservations related to the heterogeneity of the studies carried out and their methodological limitations. Our study also has limitations, especially in the distribution of the participants' gender, for there are a great number of females with low back pain, as has also been seen in similar studies.<sup>18</sup> Nonetheless, in spite of that, the "Gender" variable did not influence the therapeutic response to the Back School. Another possible limitation of the present study was the limited number of patients participating in the investigation. However, despite the limited number of participants, the therapeutic response obtained by them was significant enough to be detected by the statistical analyses made.

## CONCLUSION

Taking into consideration the findings of the present study, as well as the results of the studies found in the national and international literature, the Back School must always be considered as a resource to be utilized in the treatment of chronic low back pain patients. The utilization of a multidisciplinary team offers the opportunity for the integration of professionals who act in distinct aspects of the same problem, allowing a more suitable approach from the preventive and therapeutic point of view, offering varied information to the patients so that they can deal with their chronic low back pains in a more satisfying manner, overcoming their limitations in daily tasks the best way possible. Despite the existence of many Back School programs, the best results are obtained when the patients become aware that they are the managers of their own health and of their own well-being. Thus, the Back School, being educational, presents an additional advantage in relation to traditional therapeutic programs. Therefore, improving the physical limitations imposed by chronic spinal column pain triggers a change in the patients' ways of thinking and acting. With this in mind, it is very important to continue working to better evaluate the effectiveness of the Back School as an inexpensive and effective therapeutic option for chronic low back pain patients.

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