

# EFFECTS OF A GUIDANCE PROGRAM TO ADULTS WITH LOW BACK PAIN

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## ABSTRACT

**Objective:** to implement a "Back School" program for low back chronic pain. **Methods:** forty-one subjects were evaluated (46.81 + 13.35 years old) of both sexes, aged from 25-65 years, who had had low back pain for more than six months. Initially, quality-of-life was evaluated (Medical Outcomes Study 36- Item Short-Form Health Survey- SF-36), and also functional capacity (Oswestry Low Back Pain Disability Questionnaire - ODQ). Next, each subject participated in five 60-minute weekly meetings, in which theoretical-practical capacities were developed. After one week, the subjects were re-evaluated. The data obtained in the evaluations were analyzed using the Wilcoxon non-parametric

statistical test, with a significance level of 5% ( $p \leq 0.05$ ). **Results:** A significant improvement in functional capacity was observed (ODQ,  $p < 0.0001$ ). In relation to quality of life, a significant improvement was observed in the domains functional capacity ( $p = 0.0016$ ), pain ( $p = 0.0035$ ), general status of health ( $p < 0.0001$ ), vitality ( $p < 0.0001$ ), social aspects ( $p < 0.0001$ ) and mental health ( $p = 0.0007$ ). For the physical and emotional aspects, no significant difference was observed. **Conclusion:** the Back School program was capable of improving the quality of life and functional capacity of the participants.

**Keywords:** Low back pain, Quality of life. Posture.

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## INTRODUCTION

The spinal column constitutes the central axis of the human body. The correct functioning of this axis calls for the balance of its constituent parts. However, as the spine is constantly submitted to postural changes and to the bearing of different loads, the misalignment of these parts occurs frequently, characterizing the widespread incidence of back pain in the population.<sup>1</sup>

Low back pain is defined as a clinical condition of moderate or intense pain at the bottom of the spinal column. This pain, that might or might not become chronic, originates from various causes, which include: inflammatory, degenerative and neoplastic diseases, congenital defects, muscular debility, rheumatic predisposition and signs of degeneration of the spine and of the intervertebral discs.<sup>2,3</sup>

These musculoskeletal alterations gained greater relevance mainly after the expansion of industry, in the 19<sup>th</sup> century, as this new type of work favored the development of many risk factors that affect spinal stability. These factors include dissatisfaction with work, static work posture, constant forward inclination of trunk, and the repeated lifting of weights as well as stress.<sup>4</sup>

The rise in rates of low back pain is also due to the increase in life expectancy resulting in the growth of the elderly population. Aging triggers a natural process of wear and tear of the spinal structures. This process includes hereditary factors and degenerative processes that affect people in various intensities. The degree of involvement determines the presence or absence of low back pain and the level of this pain.<sup>3</sup>

The WHO estimates that 80% of subjects already have low back pain or will have it one day, and in 40% of the cases the initial pain tends to become chronic. The dimension of these data brings economic losses as a consequence, whereas the expenses related to low back pain, including business, industry and government expenditures, come to roughly 50 billion dollars per annum.<sup>5-7</sup>

The considerable incidence of low back pain also produces psychosocial losses. In Brazil, diseases of the spinal column correspond to the first cause of payment of disability compensation and the third cause of retirement due to disability. Moreover, there are other consequences that can affect the performance of the social function such as: loss of fitness, deterioration of general health, decrease of participation in social activities, family stress, decrease of contact with the community, irritation, anxiety and depression.<sup>8-11</sup>

All the authors declare that there is no potential conflict of interest referring to this article.

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These estimates demonstrate that low back pain has become a problem of epidemiological scope in the population. Thereby, the rehabilitatory intervention does not suffice; after all, this is becoming increasingly unviable as between the 70's and the 90's, the rate of low back pain experienced growth 14 times higher than that of the population. It is necessary to expand the focal point on primary health care, which encompasses education and health promotion.<sup>12</sup>

Health education corresponds to any activity aimed to achieve health seeking to bring about behavioral changes individually. Health promotion reaches a more global sphere, which includes health education, geared toward changes in the organizational behavior, bringing benefits in greater proportions than education.<sup>13</sup>

In view of this context, the "Back School", arises as an alternative in postural training, as it covers both the prevention and the treatment of low back pain. This method, created in Sweden in 1969, aims not only to lessen spinal dysfunctions, but also to produce awareness in the population receiving medical care and thus to facilitate the acquisition of healthier postural habits, particularly in day-to-day activities.<sup>14</sup> The "Back School" programs have different structures. Originally, when it was created in Sweden, it catered to people with acute, subacute or chronic pain in any region of the spine, and intervention was exclusively physiotherapeutic. After prospering at Scandinavian institutions, the "Back School" spread to other countries such as Canada, the United States and Brazil. When it appeared in Canada in 1974, the program was restricted to the provision of care to patients with chronic low back pain, yet in a multidisciplinary service environment. In California, the patients were split into two different groups: one with low back pain and the other with lumbar sciatic pain.<sup>15</sup>

In Brazil, the "Back School" arose in 1972, at Hospital do Servidor Público in São Paulo, with Knoplich, a rheumatologist who graduated from Faculdade de Medicina da Universidade de São Paulo, who was a pioneer in deploying the method in Brazil and responsible for its success. After prospering in São Paulo, the program spread to Universidade Federal da Paraíba in 1990, to Universidade Federal de São Paulo in 1993 and to Faculdade de Medicina da Universidade de São Paulo, in 1994. At the latter the School was comprised of a multidisciplinary team formed by professionals from the following areas: Physiotherapy, Medicine (Psychiatry), Physical Education, Nutrition, Psychology and Social Service. This team catered to groups of 20 patients with acute or chronic pain in the spine.<sup>16</sup>

Since the beginning, in Sweden, the program has presented positive results. Chung,<sup>16</sup> in his study, addressed a retrospective of the main schools in the world and the results presented by them. According to his analysis, they all brought benefits to the population served. In a more recent study, Oliveira et al.<sup>17</sup> confirm the effectiveness of the program by affirming that the benefits produced do not just correspond to musculoskeletal dysfunction, but also to quality of life and to psychosocial aspects.

Generally speaking, the "Back School" is a method of educational intervention that aims to guide patients in relation to spinal biomechanics, posture and ergonomics. Besides the physical aspects, the "Back School" also intervenes in socio-psychosomatic aspects

in order to analyze the whole context experienced by the patient so as to be able to provide this individual with more correct advice according to the context of life of each one.<sup>18</sup>

Due to the lack of standardization of the methods of approach of the "Back School", surveys designed to analyze the effectiveness of these interventions are necessary. In view of this situation, the aim of this study was to prepare and apply a "Back School" program in patients with chronic low back pain at the Basic Health Units (UBS) and Family Health Units (UF) of the city of Marília-SP, and to evaluate the influence of the proposed program on the quality of life and disabilities of subjects affected by chronic low back pain.

## MATERIALS AND METHODS

### Recruitment

Volunteers were recruited by means of initial contact with the UBS and UF of Marília-SP, which selected the patients with the profile of the program. This contact was made possible through authorization from the Municipal Department of Health that allowed the performance of the program and sent a memorandum to all the units notifying them of the program.

This study was submitted and approved by the Institutional Review Board of Faculdade de Medicina de Marília, with protocol nº 161/08 and also authorized by the Municipal Department of Health of Marília, protocol nº 265/08 - SS. The subjects taking part in the program signed a Informed Consent Form.

### Subjects

Forty-one patients of both sexes, aged between 25-65 years (46.81 ± 13.35 years) and with a background of low back pain for at least six months (chronic pain) were included in the program. Subjects that exhibited some illness that could significantly implicate their health, besides affecting the spinal column, would be excluded. Therefore subjects with a diagnosis of rheumatoid arthritis, ankylosing spondylitis, psoriatic arthritis, fractures or presence of tumors in the spinal column region, would not take part in this survey. There was no need to exclude any patient from the program.

### Materials

The following materials were utilized for the performance of this study: assessment sheet, Oswestry Low Back Pain Disability Questionnaire (ODQ), Short-Form Health Survey (SF-36), stethoscope, sphygmomanometer, multimedia projector, mats and wooden batons.

### Procedures

The program consisted of six meetings with groups of up to ten people, which were held once a week, lasting for one hour each. In the first meeting the patients were assessed by means of the assessment sheet, which included postural evaluation for identification of misalignments in the spinal column. Next they applied questionnaires SF-36 and the ODQ.

### Short-Form Health Survey (SF-36)

The SF-36 is a generic questionnaire for quality-of-life assessment. Its adaptation and validation in Portuguese were performed by Ciconelli, in 1999 and, since then this tool has been one of the most widely publicized in the area of health.<sup>19</sup>

This is a multidimensional questionnaire of easy administration and comprehension. Its format consists of 36 items divided into eight domains: Functional capacity, physical aspects, pain, general state of health, vitality, social aspects, emotional aspects and mental health. The final score can range from zero to 100, whereas zero corresponds to the worst and 100 to the best state of health.<sup>20,21</sup>

#### Oswestry Low Back Pain Disability Questionnaire (ODQ)

The Oswestry Low Back Pain Disability Questionnaire (ODQ) aims to evaluate dysfunctions in individuals with low back pain by means of the analysis of daily life activities. In addition, it can also evaluate the impact of chronic pain on the day-to-day activities of individuals affected. This questionnaire is currently being validated to the Portuguese in the Nursing Department of UNICAMP in conformity with international standards.<sup>22,23</sup>

#### “Back School” Program

The proposed program was drawn up to be developed in six meetings, held once a week, lasting for 60 minute each. The patients were assessed in the first meeting, while theoretical and practical training classes were given in the following five meetings. The following topics were addressed:

- Notions of anatomy, kinesiology and biomechanics of the spinal column.
- Postural alterations, causes of low back pain and its respective treatments
- Posture in daily life activities: notions of ergonomics and prevention of dysfunctions.
- Living habits in the prevention of low back pain: obesity, sedentary lifestyle, aging and physical activity.
- The influence of psychosocial factors on spinal dysfunctions.

In the practical activities the participants worked on the maintenance of adequate postures in daily life activities, and received guidance on how to perform stretching and muscular strengthening exercises.

The classes were prepared using simple language, to be accessible to subjects with any level of education, and presented by the researcher, who used an expositive lesson with the assistance of a multimedia projector as a resource. All the material used in lesson preparation originated from scientific literature (articles and books) from the areas of medicine and physiotherapy.

#### Data analysis

The data were expressed in mean and standard deviation. Wilcoxon's non-parametric test was used to compare the results obtained in the evaluation and reevaluation. The significance level considered for the conclusions was 5% ( $p \leq 0.05$ ).

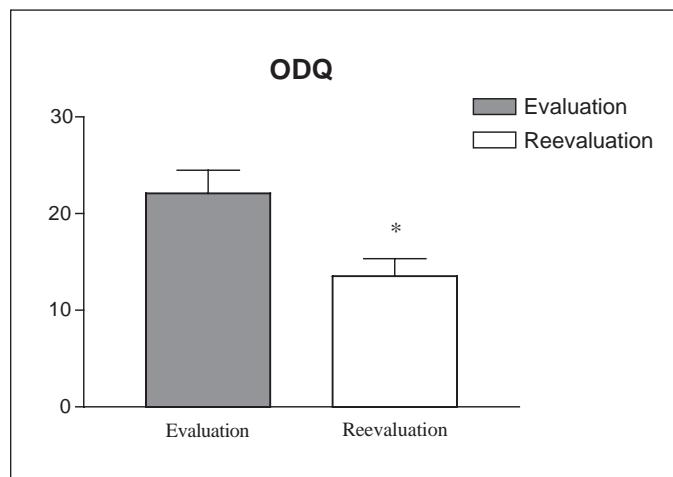
Table 1 characterizes individuals in relation to gender and average age. Female participants predominated.

Figure 1 illustrates the mean values and standard deviations referring to the rate of disabilities obtained by means of the ODQ. A significant reduction ( $p < 0.0001$ ) was observed in the rate of disabilities, whereas in the evaluation it corresponded to  $22.08 \pm 15.39\%$  and in the reevaluation it decreased to  $13.52 \pm 11.63\%$ .

**Table 1 – Characterization of the subjects in relation to gender and mean age.**

Gender	Male	Female	Total
Number of Individuals	5	36	41
Age (years)	$50.40 \pm 19.13$	$46.31 \pm 12.64$	$46.81 \pm 13.35$

Data are expressed as mean and  $\pm$  standard deviation



\* $p < 0.05$  ( $p < 0.0001$ )

**Figure 1 – Rate of disabilities measured by the ODQ.**

Table 2 shows the results obtained in the eight domains of the SF-36 questionnaire. It can be noted that there was significant improvement between the evaluation and the reevaluation, in six of the eight domains.

**Table 2 – Results obtained in the quality of life questionnaire SF-36.**

	Evaluation	Reevaluation	p
Functional Capacity	$61.58 \pm 25.822$	$72.44 \pm 20.44^*$	0.0016
Physical Aspects	$61.58 \pm 39.17$	$69.51 \pm 33.31$	0.2012
Pain	$50.76 \pm 21.33$	$58.34 \pm 20.09^*$	0.0035
General State of Health	$65.02 \pm 21.16$	$76.85 \pm 19.42^*$	<0.0001
Vitality	$50.37 \pm 21.13$	$61.34 \pm 21.82^*$	<0.0001
Social Aspects	$66.77 \pm 23.82$	$80.18 \pm 19.36^*$	<0.0001
Emotional Aspects	$66.65 \pm 39.44$	$75.75 \pm 33.83$	0.1178
Mental Health	$65.17 \pm 21.62$	$72.83 \pm 21.44^*$	0.0007

\*  $p < 0.05$

## DISCUSSION

This study evaluated the impact of a “Back School” program on the quality of life, and functional disability of adult patients with chronic low back pain. The participants observed the positive influence of the program applied, in relation to the variables analyzed.

As regards the rate of functional disability, evaluated by the ODQ, a reduction of 8.56% was observed, demonstrating an improvement in the functional capacity of the participants.

The quality-of-life evaluation, which was performed by means of the SF-36 questionnaire, presented significant improvement in six domains. Only the domains Physical Aspects and Emotional Aspects failed to present significant difference in this study. In the study by Tsukimoto<sup>18</sup> an improvement of six domains of the SF-36 was also verified. However, no significant differences were found in the domains Emotional Aspects and Mental Health. These data suggest that the knowledge obtained through participation in "Back School" programs is not capable of modifying the emotional aspect, possibly because greater knowledge of physical conditions generates a greater concern in relation to one's own health.

An aspect that should be emphasized is the rate of abandonment of the "Back School" program. In this study, they achieved abandonment rates of only 18%, while in the studies of Caraviello *et al.*<sup>24</sup> and Tsukimoto,<sup>18</sup> these rates were respectively 43.1% and 54.9%. A possible explanation for low rates of abandonment of the program proposed in this study was due to the reduced hours and weekly frequency, which might facilitate the assiduity of the participants. In the studies with high rates of abandonment (above 40%), both the quantity of hours in each meeting, and the weekly frequency, were high. These data suggest that the "Back School" should have a reduced weekly hour load (one hour).

Vieira and Souza,<sup>25</sup> who evaluated the effectiveness of the "Back School" by questioning the patients about the subjects put up for discussion in class, were able to verify the implementation of the conception of good posture by the patients, who, after the intervention, adapted this conception to the one currently proposed by literature. In this manner they verified the effectiveness of the intervention at the level of understanding and corporeal and behavioral construction.

Some studies sought to evaluate the effectiveness of "Back School" programs by means of comparison with other low back pain treatment techniques. Donzelli *et al.*<sup>26</sup> conducted a comparative study of the effectiveness of a "Back School" program and of intervention by the Pilates Cova Tech method. The patients from the first program showed superiority of 16.9% in the maintenance of exercises at home when compared to the second group. In terms of functional capacity and pain intensity, both programs proved effective, yet there was no significant difference in their comparison. Assendelft *et al.*<sup>27</sup> compared several methods for the treatment of low back pain with vertebral manipulation therapy, and found that when compared to the "Back School" method, there is no evidence of superiority of the manipulation method. Van der Roer *et al.*<sup>28</sup> compared intervention in patients with chronic low back pain, treated by means of an "intensive group" that involved exercises, back school and behavioral treatment with conservative treatment based on the "Dutch Guidelines is Low Back Pain". After 26 weeks of intervention a greater reduction of pain was observed in the group that followed the intensive protocol than in the group that followed the Dutch Guideline. However, after 52 weeks this difference was reversed to values without significance.

Di Fabio<sup>29</sup> argues that although the "Back School" programs are used in an extensive manner, there is great difficulty in determining their effectiveness due to the considerable variation in the methodology and in the forms of evaluation used. In his study he proposed an analysis goal to synthesize evidence and to compare the program's effectiveness as a form of primary intervention or as part of a conservative treatment in patients with low back pain. Conservative treatment, associated with the "Back School", proved more effective in terms of pain reduction, increase of spinal mobility and of muscular strength. In terms of success in the development of the educational part, the results obtained were similar in both groups. Lower effectiveness of both interventions was observed in relation to the improvement of disabilities at work.

Few studies failed to find effectiveness in the "Back School" programs. The study by Oliveira *et al.*<sup>17</sup> did not encounter benefits in the findings related to quality-of-life improvement. The patients evaluated demonstrated a tendency for isolation, decrease of functional capacity, absenteeism at work and possible loss of social and professional space besides a decrease of virility. The author affirms that, when working in a group the patients found it more difficult to accept their physical limitations and ended up exhibiting: reduction of autonomy, power and authority, besides the tendency to create stereotypes of incapacity. These data are not consistent with the result obtained in this study, which observed significant difference in the quality of life of the participants.

Daltry *et al.*<sup>30</sup> developed an educational program for over 2,500 post office workers, with low back pain, split into groups of 10 to 12 people. The participants were trained in their "Back School" sessions, totaling three hours and, in the following years, reinforcement sessions were held on the subject. The findings show that there was no reduction in the rate of low back pain, or in the average cost per dysfunction. No difference was observed in terms of absenteeism at work motivated by back problems either. The rate of related musculoskeletal dysfunctions and the rate of relapse of low back pain after return to work did not present significant alterations either. The only item that presented significant improvement after the training program what that related to knowledge of safe behaviors.

"Back School" programs, in general, proved effective. Chung<sup>16</sup> addressed the main "Back School" methods developed thus far, from the Swedish school, created in 1969, until the current programs, and stressed that even with different approaches, the main result observed is the creation of awareness that the patient is the chief health promotion agent. In addition, he brought up the issue of the importance of the multi-disciplinary team in this work with the purpose of integrating different views of the same problem.

## CONCLUSION

The data obtained in this study, under the experimental conditions used, allow us to conclude that the "Back School" program proposed and applied at the Basic Health Units and Family Health Units of Marília, São Paulo, was able to:

- Improve the functional capacity of the patients.
- Significantly improve the quality of life of the participants.

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