



Comparison between kinesiotherapy and back school in the treatment of low back pain in older adults

Comparação entre cinesioterapia e escola de coluna no tratamento da lombalgia em idosos

Comparación entre cinesiterapia y escuela de columna en el tratamiento de la lumbalgia en ancianos

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Objective: to compare the efficacy of physiotherapy treatment involving kinesiotherapy and back school in older adults' low back pain. **Methods:** study of the case-series type. The pain visual analog scale and the WHOQOL-bref were used for assessing quality of life, and the Timed Up and Go Test was used for testing agility. A total of 21 older adults, who had had low back pain for over three months, participated in the study. The sample was divided in two groups (kinesiotherapy and back school). The older adults were assessed before and after the therapeutic interventions. **Results:** both groups obtained better scores in all the variables analyzed in the post-test in relation to the pre-test, and as a result, in the inter-group comparison, the results did not reveal statistically significant differences ($p>0.05$). **Conclusion:** back school and conventional kinesiotherapy were effective in improving the pain, quality-of-life and agility of older adults with low back pain.

Descriptors: Spine; Low Back Pain; Rehabilitation.

Objetivo: comparar a eficácia de protocolos de tratamento fisioterapêutico, que envolveram a cinesioterapia e a escola de coluna na lombalgia de idosos. **Métodos:** estudo do tipo série de casos. Utilizou-se a escala visual analógica de dor, o Questionário WHOQOL-bref abreviado para avaliar a qualidade de vida e o Teste *Timed UP and GO* para testar a agilidade. Contou com a participação de 21 idosos, com lombalgia há mais de três meses. A amostra foi dividida em dois grupos (cinesioterapia e escola de coluna). Os idosos foram avaliados antes e após as intervenções terapêuticas. **Resultados:** ambos os grupos obtiveram melhores escores em todas as variáveis analisadas no pós-teste em relação ao pré-teste, e assim, na comparação intergrupo os resultados não revelaram diferenças estatisticamente significantes ($p>0,05$). **Conclusão:** a escola de coluna e a cinesioterapia convencional foram efetivas na melhora da dor, qualidade de vida e agilidade dos idosos com lombalgia.

Descritores: Coluna Vertebral; Dor Lombar; Reabilitação.

Objetivo: comparar la eficacia de protocolos de tratamientos fisioterapéuticos, que involucraron la cinesiterapia y escuela de columna en la lumbalgia de ancianos. **Métodos:** estudio del tipo serie de casos. Se utilizó la escala de dolor análoga visual, el cuestionario WHOQOL-BREF breve para evaluar la calidad de vida y el test *Timed UP and GO* para probar la agilidad. Participaron 21 ancianos, con lumbalgia durante más de tres meses. Muestra dividida en dos grupos (cinesiterapia y escuela de columna). Los ancianos fueron evaluados antes y después de las intervenciones terapéuticas. **Resultados:** ambos los grupos tuvieron mejores puntuaciones en todas las variables en el post-test en comparación con el pre-test, y por lo tanto, en la comparación entre los grupos, no hubo diferencias estadísticamente significativas ($p> 0,05$). **Conclusión:** la escuela de columna y la cinesiterapia convencional fueron eficaces en la mejora del dolor, calidad de vida y agilidad de ancianos con lumbalgia.

Descriptor: Columna Vertebral; Dolor de la Región Lumbar; Rehabilitación.

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Introduction

Lower back pain is one of the most common musculoskeletal changes in the industrialized societies, affecting from 70% to 80% of the adult population at some point in their lives. It is one of the most frequent reasons for long-term sick leave due to total or partial disability⁽¹⁾ and can cause personal, social and financial harm.

All the categories of pain, with or without rigidity, located in the lower region of the back between the last costal margin and the gluteal fold are termed low back pain. Where pain radiates to the lower limbs, it is termed lumbosciatica, when it is accepted that the sciatic nerve is compromised⁽²⁾. Chronic pain leads to discomfort to the extent of interfering in the quality of life of many people, and can impair the undertaking of activities of daily living⁽³⁾.

There are various therapeutic resources available for the situation of low back pain, such as surgical and drug treatments. Physiotherapy functions as a conservative treatment, mainly using electrothermal- and phototherapy-related resources, while kinesiotherapy works through programs of exercises which aim for better muscle conditioning, postural alignment, relaxation and symptomatic relief of the pain. The choice of the best therapeutic option depends on the patient's clinical situation and on the physical-functional assessment. In terms of conservative treatment, kinesiotherapy continues to be the gold standard, often in association with other techniques.

As low back pain affects a large number of people, this has come to be the subject of studies by a number of authors in search of solutions, these being directed mainly towards postural education⁽⁴⁾. With the aim of improving body posture, educational, preventive and therapeutic proposals have arisen, such as, for example, back school⁽⁵⁾. This therapeutic option was created in 1969 in Sweden and involves preventive and educational training.

Back school was used more widely from the

1980s onward, with a greater number of health professionals using it in their interventions – such as physicians, social workers, psychologists, physiotherapists, occupational therapists, nurses, nutritionists and physical educators, thus making the program more complete and with a broader educational and preventive coverage. One of its characteristics is the focus on the perception of oneself, on the limits of the body and coping with pain; hence the person has knowledge of her actual functional capacity, favoring change in her body scheme and body image⁽⁶⁾.

The effects of back school, in improving the health and functionality of elderly individuals with pain or discomfort related to the spine are described in the literature. The program has been effective in the sense of minimizing the pain and/or discomfort, particularly those related to the cervical column. However, such effects were not determinant in an improvement in these individuals' functional capacity⁽⁷⁾. In this regard, the following question was formulated for investigation: Does the patient with low back pain, when treated with therapeutic exercises associated with back school theoretical-practical approach, present better progress when compared with the patient treated using kinesiotherapy alone?

This being the case, this study's objective was to compare the efficacy of physiotherapy treatment protocols which involved back school and conventional kinesiotherapy, in older adults' low back pain.

Method

Considering the descriptive and exploratory nature of the objective defined, the authors make use of a study design of the case-series type. This was undertaken in the Clinical School of Physiotherapy of a Higher Education Institution in the Northwest of the Brazilian state of Paraná. The Project was submitted to the Research Ethics Committee of Unicesumar (Cesumar University Center) and was approved under Opinion N. 416,681/2013. Prior to the assessment,

all participants signed the terms of free and informed consent.

A total of 33 older adults was assessed, aged 60 years old or over. The inclusion criteria were: to be an older adult with low back pain for over three months. The exclusion criteria were: patients with fibromyalgia, tumors, inflammatory and infectious diseases of the vertebral column, and fractures. As a result of this, 3 older adults were excluded from the sample. The participants underwent an assessment one week prior to the beginning of the program, in which their pain, agility and quality of life were determined.

As pain is a subjective criteria, in order to evaluate it better, the Visual Analog Scale for Pain is used. This is made up of a 10 cm line, in which one end is marked "without pain", and the other is marked with "worst pain possible". The patient is requested to mark on the line the pain present at a specified moment⁽⁸⁾. In the case of this study, the moment specified was during the last week. In order to analyze quality-of-life, the same difficulty is found; as a result of this, instruments are used such as the WHOQOL-bref Questionnaire, which is an abbreviated version of the WHOQOL-100. The WHOQOL-bref consists of 26 questions, these being two general questions on quality of life, while the other 24 are divided into domains, these being the physical, psychological, social relationships and environment⁽⁹⁾. Also ascertained was agility, through the Timed Up and Go Test, in which the patients begin in a sitting position in a chair, and are requested to stand up and walk as fast as possible in a straight line for 3 m, and to return to the chair⁽¹⁰⁾.

The sample was divided randomly into two groups. The Conventional kinesiotherapy group (G1) and Back school group (G2), made up of patients who in addition to kinesiotherapy received information on postural education. Both groups underwent the same therapeutic intervention, which was made up of 10 sessions, each lasting 60 minutes, once a

week, including strengthening and global stretching exercises, postural exercises and relaxation. The difference was apportioned to the Back school group, which, after the 60 minutes of exercises, took part in the theoretical and practical classes addressing issues such as the anatomy and biomechanics of the vertebral column, the diseases which affect it, how to prevent them, and the correct posture in undertaking various activities of daily living, also providing training in how to undertake these.

After the ten sessions, a reassessment was undertaken with the older adults from the participating groups, in which the same assessment tests from before the program were used, with the aim of analyzing any possible improvement in the results.

For statistical analysis, the Statistical Package for the Social Sciences, version 20.0, was used. The data was analyzed using descriptive and inferential statistics. The Student t test was used, with a level of significance adopted of 5% ($p < 0.05$).

Results

A total of 33 older adults were evaluated, three being excluded because they presented a diagnosis of fibromyalgia, and nine because they withdrew from the project while it was underway. This being so, 21 older adults completed the intervention programs. In the Conventional kinesiotherapy group, the sample was made up of 10 participants, with a mean age of 70.5 ± 6.13 , two male and eight female. From the Back school group, 11 older adults participated, with a mean age of 66.27 ± 5.47 , of whom two were male and nine female.

Table 1 shows the results obtained before and after the intervention, in relation to each domain of quality of life in the groups studied. In the Back school group, in the inter-group assessment, only the environment domain did not reveal statistically significant differences.

Table 1 - Scores of the quality of life domains, through the WHOQOL-bref questionnaire, comparing the pre-test and post-test of the older adults participating in the Conventional kinesiotherapy group (G1) and the Back school group (G2)

Domains	G1			G2		
	Pre-test	Post-test	p	Pre-test	Post-test	p
Physical domain	11.83±1.29	13.94±1.50	0.007*	11.21±2.87	15.16±2.57	0.0002*
Psychological domain	13.93±1.64	15.66±2.43	0.09	12.96±2.55	15.38±2.31	0.01*
Social relationships	11.86±4.28	13.99±2.75	0.06	13.45±2.41	15.87±2.34	0.004*
Environment	12.00±1.97	14.9±3.23	0.01*	13.00±2.83	14.72±2.76	0.10

*p≤0.05

Although the Back school group presented a statistically significant improvement in three domains, while the Conventional kinesiotherapy group presented this in two, there was no statistically significant improvement overall. Comparing the scores obtained in the pre- and post-test, between the two groups, the differences were not significant (Table 2).

Table 2 - The scores for the quality of life domains, using the WHOQOL-bref questionnaire, comparing the Conventional kinesiotherapy group (G1) with the Back school group (G2) in the results of the pre- and post-test

Domains	Pre-test			Post-test		
	G1	G2	p	G1	G2	p
Physical domain	11.83±1.29	11.21±2.87	0.54	13.94±1.50	15.16±2.57	0.20
Psychological domain	13.93±1.64	12.96±2.55	0.32	15.66±2.43	15.38±2.31	0.79
Social relationships	11.86±4.28	13.45±2.41	0.30	13.99±2.75	15.87±2.34	0.10
Environment	12.00±1.97	13.0±2.83	0.36	14.9±3.23	14.72±2.72	0.89

Questions one and two from the WHOQOL-bref questionnaire are not found in any of the domains, although they were also analyzed. In question one – “How would you assess your quality of life?” and question two “How satisfied are you with your health?”, there was statistically significant improvement in the two groups, although there was no difference in the intergroup comparison.

Both groups obtained a statistically significant improvement in relation to pain and agility, comparing the scores obtained before and after the intervention (Table 3).

Table 3 - Difference between the scores obtained in the pre-test and the post-test of the older adults who participated in the Conventional kinesiotherapy group (G1) and the Back school group (G2)

Tests	G1			G2		
	Pre-test	Post-test	p	Pre-test	Post-test	p
Escala Visual Analógica (pt)	7.91±2.30	2.61±2.72	<0.0001*	5.99±2.34	1.62±1.23	0.0004*
Teste de Timed Up and Go (s)	9.19±3.13	7.5±2.23	0.02*	9.03±3.62	6.23±1.83	0.002*

*p≤0.05; s: seconds; pt: points

In the intergroup assessment, the results obtained did not reveal statistically significant differences (Table 4).

Table 4 - Comparison of the results between the Conventional kinesiotherapy group (G1) and the Back school group (G2) in the results of the pre- and post-test

Tests	Pre-test			Post-test		
	G1	G2	p	G1	G2	p
Visual Analog Scale (pt)	7.91±2.30	5.99±2.34	0.07	2.61±2.72	1.62±1.23	0.29
Timed Up and Go Test (s)	9.19±3.13	9.03±3.62	0.918	7.5±2.23	6.23±1.83	0.17

G1: Conventional Kinesiotherapy Group; G2: Back school group; s: seconds; pt: points

Discussion

One can observe in this study that, with the intervention undertaken, the older adults who participated in the Conventional kinesiotherapy and Back school groups had significant improvement in relation to pain, agility and quality of life.

For some authors, the Back school group does not encompass the older adults' needs, as they present restrictions in movement, hindering the undertaking of some exercises⁽³⁾. The advanced age, however, was

not considered a negative point in this study, as none of the older adults presented significant difficulties in undertaking the exercises.

Similar results were found by other authors who also sought to assess the effectiveness of this type of therapeutic intervention. The Back school was implemented for patients with chronic low back pain, with the aim of assessing quality of life and functional capacity. A total of 41 older adults participated in the program, aged between 25 and 65 years old, who underwent five weekly meetings, each lasting 60 minutes. After one week, it was possible to conclude that the program elaborated was able to improve the individuals' quality of life and functional capacity⁽¹¹⁾.

The efficacy of the Back school group in a Primary Healthcare Center in Porto Alegre was also the object of investigation⁽³⁾ in a group of 29 individuals, aged 30 years old or over, using the variables of: pain, functional capacity and quality of life. The Back school group participated in only five meetings, each lasting two hours, made up of theoretical classes and practical exercises. At the end, the subjects were reassessed, with the authors concluding that the Back school group was efficacious in reducing pain, in improving quality of life, and in improving functionality.

The number of sessions also influences the outcome of the therapeutic intervention. A significant improvement in quality of life, functional capacity, intensity of pain and flexibility may be ascertained among administrative workers with lumbar pain using back school through seven meetings⁽¹²⁾.

The effectiveness of a program in a group using kinesiotherapy associated with postural education is evidenced in 10 individuals with chronic lumbar pain, aged over 50 years old, with indicators of improvement in the situation of the pain and functional capacity. The meetings were held once a week, over three months, each lasting one hour 30 minutes. The program was shown to be efficient in improving pain and functional capacity⁽³⁾.

Although the present study evidenced the efficacy of the back school, there was no statistically

significant difference when its results were compared with those of the Kinesiotherapy group, as both of them obtained improvements when the pre-test is compared with the post-test. In the literature, there are various reports of studies which evidence the effectiveness of the program; however, the vast majority of these studies are based on single groups, lacking a control group or a second group for comparing the results⁽¹³⁾.

The types of therapeutic exercises for chronic or acute low back pain which are most effective are still fairly controversial; however, one review study confirms that the therapeutic exercises are probably the conservative treatment used most worldwide⁽¹⁴⁾. Kinesiotherapy continues to be the gold standard for the treatment of low back pain, and, because it has been applied in both groups, may explain the similar results.

Individuals presented a greater incidence of chronic lumbar pain with increased age, the majority being related to the chronic and degenerative diseases which affect them⁽¹⁵⁾. The possibility of the older adult presenting functional incapacity resulting from the greater number of morbidities is a challenge for the primary healthcare services. In this context, the need is evidenced for actions directed towards maintaining the older adult's functionality⁽¹⁶⁾, such as the gradual reduction in exposure to ergonomic loads and the maintenance of more active behavior.

The treatment of the patient with chronic low back pain must include the multidisciplinary team, which allows the maintenance of an active and independent lifestyle, systematically adding specific activities to the daily or weekly plan⁽¹⁷⁾.

Conclusion

It is concluded that in the sample studied there are no significant differences between the intervention with conventional kinesiotherapy and back school in relieving the older adults' pain and improving their agility and quality of life. However, it is suggested that

the back school program should be encouraged as coadjuvant in preventing and treating low back pain, given that postural guidance can prevent structural problems of the vertebral column and can contribute to promoting health, improving the quality of life of individuals of any age range.

As a limitation found in the study, emphasis is placed on the fact that the older adults had not undergone a postural assessment before and after the intervention, a variable which could possibly present more positive results in the Back school group.

Collaborations

Zirolodo ML contributed to the conceptualization of the study, the collection, analysis and interpretation of the data, and to the editing of the article. Bertolini SMMG contributed to the conceptualization and editing of the article and to the final approval of the version to be published.

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