

# PREVALENCE OF SPINAL DISEASES IN PRACTITIONERS OF BODYBUILDING

PREVALÊNCIA DE DOENÇAS DA COLUNA VERTEBRAL EM PRATICANTES DE MUSCULAÇÃO

PREVALENCIA DE ENFERMEDADES DE LA COLUMNA EN PRACTICANTES DE MUSCULACIÓN

NATAN WILD<sup>1</sup> , CAROLINE ANDREAZZA<sup>1</sup> 

1. Orthopedics and Traumatology Specialties Center of Ijuí, Ijuí, RS, Brazil.

## ABSTRACT

**Introduction:** Low back pain has a high prevalence, impacting the quality of life. Bodybuilding has been studied as a conservative treatment that helps reduce pain, but it is still underused and often associated with worsening the pathology. **Objective:** The objective of the study is to describe the prevalence of spinal diseases in bodybuilders and observe the degree of perceived improvement with the practice of the same. **Methods:** A cross-sectional study was carried out in a gym in the interior of Rio Grande do Sul. The sample considered 40 participants of both genders and was randomly chosen. Bodybuilding practitioners were included for more than six months and those over 18 years of age. A sociodemographic and clinical experiment was used to analyze the individual characteristics of the participants, and an analog pain scale (VAS) was used to compare pain before and after bodybuilding. **Results:** Of the study participants, 62.5% had no spinal pathologies against 37.5% ( $p$ -value = 0.025). The main pathology was low back pain in 40.0% of the cases, but that is not statistically different from the 33.3% with scoliosis/kyphosis/lordosis ( $p$ -value = 0.705), nor the 13.3% with disc herniation ( $p$ -value = 0.099). In the general analysis of the VAS, the score given for pain before bodybuilding was 5.73, and after 2.27 ( $p$ -value = 0.001). **Conclusion:** The practice of bodybuilding, when appropriate, is a tool that can help improve referred pain in patients with spinal pathology. **Level of Evidence III; Retrospective comparative study.**

**Keywords:** Low Back Pain; Musculoskeletal Pain; Chronic Pain; Resistance Training; Spine.

## RESUMO

**Introdução:** A lombalgia tem alta prevalência e impacto na qualidade de vida. A prática de musculação vem sendo estudada como tratamento conservador que auxilia na redução da dor, porém ainda subutilizada e associada, muitas vezes, à piora da patologia. **Objetivo:** O objetivo do estudo é descrever a prevalência de doenças da coluna vertebral em praticantes de musculação e observar o grau de melhora percebido com a prática da mesma. **Métodos:** Foi realizado um estudo transversal, numa academia no interior do Rio Grande do Sul. A amostra considerou 40 participantes, de ambos os gêneros e escolhidos aleatoriamente. Foram incluídos praticantes de musculação há mais de 6 meses e maiores de 18 anos. Foi utilizado questionário sociodemográfico e clínico para análise de características individuais dos participantes e a escala analógica da dor (EVA) para comparar a dor pré e pós musculação. **Resultados:** Dos participantes do estudo 62,5% não tinha patologias na coluna vertebral contra 37,5% ( $p$ -valor = 0,025). A principal patologia apresentada foi a lombalgia com 40,0% dos casos, mas que não é estatisticamente diferente dos 33,3% com escoliose/cifose/lordose ( $p$ -valor = 0,705), nem dos 13,3% com hérnia de disco ( $p$ -valor = 0,099). Na análise geral da EVA, a nota dada para dor pré musculação foi de 5,73 e pós 2,27 ( $p$ -valor = 0,001). **Conclusão:** A prática de musculação quando adequada, é uma ferramenta que pode auxiliar na melhora da dor referida em pacientes com patologia da coluna vertebral. **Nível de Evidência III; Estudo retrospectivo comparativo.**

**Descritores:** Dor Lombar; Dor Musculoesquelética; Dor Crônica; Treinamento de Força; Coluna Vertebral.

## RESUMEN

**Introducción:** El dolor lumbar tiene una alta prevalencia que impacta en la calidad de vida. La práctica de musculación se ha estudiado como un tratamiento conservador que ayuda a disminuir el dolor, pero aún está infrautilizada y muchas veces asociada a un empeoramiento de la patología. **Objetivo:** El objetivo del estudio es describir la prevalencia de enfermedades de la columna en fisicoculturistas y observar el grado de mejora percibido con la práctica. **Métodos:** Se realizó un estudio transversal en un gimnasio del interior de Rio Grande do Sul. La muestra consideró 40 participantes, de ambos sexos y elegidos aleatoriamente. Se incluyeron practicantes de musculación con más de 6 meses y mayores de 18 años. Se utilizó un cuestionario sociodemográfico y clínico para analizar las características individuales de los participantes y la escala analógica del dolor (EVA) para comparar el dolor antes y después del culturismo. **Resultados:** De los participantes del estudio, 62,5% no tenía patologías de la columna contra 37,5% (valor de  $p$  = 0,025). La principal patología presentada fue la lumbalgia con 40,0% de los casos, pero que no difiere estadísticamente del 33,3% con escoliosis/cifosis/lordosis ( $p$ -valor = 0,705), ni del 13,3% con hernia discal ( $p$ -valor = 0,099). En el análisis general de EVA, la puntuación dada para el dolor antes del culturismo fue de 5,73 y después de 2,27 ( $p$ -valor = 0,001). **Conclusión:** La práctica de la musculación, cuando es adecuada, es una herramienta que puede ayudar a mejorar el dolor referido en pacientes con patología de columna. **Nivel de Evidencia III; Estudio retrospectivo comparativo.**

**Descritores:** Dolor de la Región Lumbar; Dolor Musculoesquelético; Dolor Crónico; Entrenamiento de Fuerza; Columna Vertebral.

Study conducted by the "In Rittmo Academia" Avenida Coronel Dico, 304. Centro. Ijuí, RS, Brazil.

Correspondence: Natan Wild. 23, Getúlio Vargas Ave., Sol Nascente, Ijuí, RS, Brazil. 98700-000. natanwild7@hotmail.com



## INTRODUCTION

Faced with a diagnosis of spinal disease, it is common in office, we come across patient doubts or even fears, about the practice of weight training. Is it a beneficial practice, or does it bring risks and worsening of pain?

The complaint of "back pain" is common in primary health care consultations and configures 25% of referrals to the orthopedic clinic, being in the "ranking" of the main causes of functional disability.<sup>1,2</sup> A "back pain", called low back pain, is characterized by all the pains. acute or chronic conditions affecting the lumbar region.

It is known that low back pain is a disease that has been increasing over the years,<sup>3</sup> which makes us wonder about low-cost tools that can assist in its prevention and conservative treatment.

Studies show the benefits of strength training, which is the purpose of bodybuilding, as prophylaxis for various pathologies. However, the fear of referral to bodybuilding may lie in the fact that movements are performed in such a way as to inappropriate may worsen the injury, aggravating the patient's situation.<sup>4</sup>

In order to contribute to the literature base, to avoid beliefs and devaluation of conservative treatments that come to assist in the promotion, prevention, and improvement of the quality of life of patients with spinal diseases, this study aimed to describe the characteristics of the prevalence of spinal diseases in bodybuilders from a gym in the interior of the State of Rio Grande do Sul and the degree of improvement they perceive through the application of the Visual Analog Pain Scale (VAS).

## METHODOLOGY

A cross-sectional, descriptive study with a sample composed of 40 participants of both genders, bodybuilding practitioners for more than six continuous months of a gym in the municipality of Ijuí-RS, aged 18 years or older, the sample was selected randomly, according to the entry of users in that gym. The inclusion criteria were: bodybuilding practitioners for more than six consecutive months, who were over 18 years of age, and who accepted and signed the informed consent form (ICF). Exclusion criteria were: under 18 years old; bodybuilders for a period of less than six months; non-literate and who refused to sign the terms of the study.

The study was approved by the Ethics Committee of the Universidade Regional do Noroeste do Rio Grande do Sul (CAAE: 68243623.8.0000.5350).

A sociodemographic questionnaire was applied, and clinical was previously defined, which consists of two stages (ANNEX 1) and later, the study participant who had some pathology in the spine was asked to classify his pain using the Visual Analog Pain Scale - VAS before weight training and after (ANNEX 2).

The interviews were conducted randomly at the aforementioned academy by a professional from previously trained in physical education. Before the start of each interview, the following was explained to the participant the objectives of the research, the procedure, the clarification on the anonymity of the data, and their freedom to interrupt and withdraw from the survey at any time.

### Sociodemographic and Clinical Assessment Questionnaire

This questionnaire aims to assess the sociodemographic and clinical characteristics such as age; gender; education; time of practice in bodybuilding and the presence of spinal pathologies. Additionally, was asked if the pathology is being followed up by a doctor and if the practice of weight training was his recommendation.

### Visual Analog Pain Scale (VAS)

The Visual Analog Pain Scale (VAS) assists in measuring the intensity of pain in individuals. It is an important tool for more reliably verifying the evolution after an intervention. The study participant was asked to rate the pain experienced before and after the study bodybuilding practice. The scale goes from 0 to 10, whereby 0 means total absence of pain, and 10 means the maximum pain level bearable by the patient.

For the literature review, scientific articles from the databases were used: Virtual Health Library (VHL), Medical Literature Analysis and Retrieval System Online (MEDLINE), Scientific Electronic Library Online (SciELO), and Latin American and Caribbean Literature in Health Sciences (Lilacs). The following search descriptors were used: low back pain, musculoskeletal pain, chronic pain, strength training, spinal diseases, and spine.

The collected data were organized in Excel Office 2010 spreadsheets, which will constitute the database of this study. With the help of graphs and tables were created to better summarize the results, and presentation of the data found. The database was then transferred to the SPSS (Statistical Package for the Social Sciences) V26 (2019) software, where the statistical analyzes were performed, with a range of 95% confidence and an alpha significance level of 0.05. In this statistical analysis, the software was also used: Minitab 21.2 (2022).

## RESULTS

Of the 40 participants interviewed, 62.5% had no spinal pathologies compared to 37.5% who did, this being a statistically significant difference ( $p$ -value = 0.025) (Figure 1). Analyzing the individuals with spinal pathology, the main pathology presented was low back pain in 40.0% of cases, which is not statistically different from the 33.3% with scoliosis/kyphosis/lordosis ( $p$ -value = 0.705), nor from the 13.3% with disc herniation ( $p$ -value = 0.099) (Figure 2). The higher prevalence of low back pain is in line with the data found in the literature, but we believe that there may be confounding factors for the participants to present a high prevalence of pathologies with deformities in the lumbar spine, perhaps due to the small sample.

The Wilcoxon test was used to analyze the VAS results before weight training and after weight training. We made the comparison

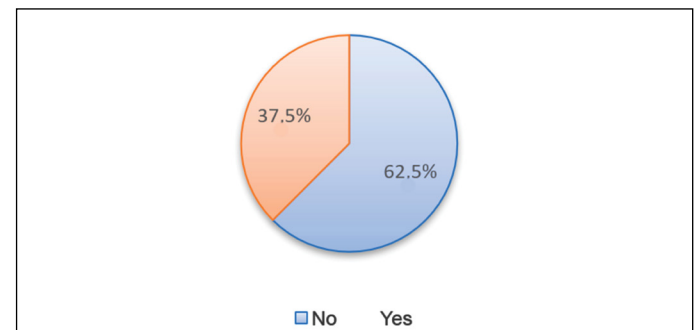


Figure 1. Presence of spinal pathology.

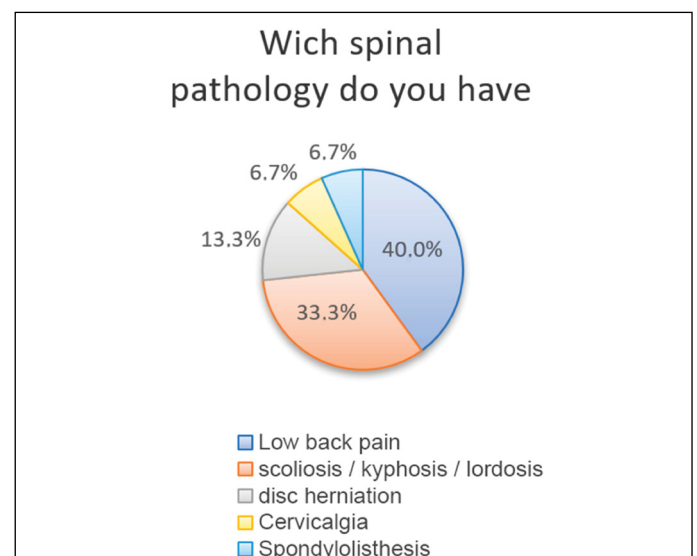


Figure 2. Prevalence of spinal pathologies.

in the total sample, that is, of the 15 subjects who had VAS evaluation, and we also performed the segmented analysis by the other covariates, and thus we were able to have a broader view.

We conclude that in the General analysis, there is a statistically significant difference in VAS, where the score given by the individual for his pre-muscle pain was 5.73 and post-muscle 2.27 (p-value = 0.001). It is worth noting that in almost all other segmentations evaluated, statistical difference was found, but in the comparisons for: 41 years or older, without higher education, low back pain, and other pathologies, the differences in VAS before and after weight training are not significant.

Another interesting finding is for scoliosis/kyphosis/lordosis pathologies, the mean dropped from 5.00 in the pre to 1.80 in the post (p-value = 0.042), and among women, the mean dropped from 5.63 to 2.88 (p-value = 0.018).

In Figure 3, we present the segmented analyses of the result of the VAS application in the pre and post-weight training.

**DISCUSSION**

Low back pain is a highly prevalent disease that impacts on directly on the quality of life, affecting individuals of different ages and genders, leading to the “ranking” of the main causes of uselessness in the world. It is considered a disabling disease where its main causes are: Inadequate physical conditioning, repetitive strain, overwork, etc. weight, trauma, postural deficit, arthrosis, osteoporosis, tumors, inflammatory and infectious diseases, discopathies, and congenital malformations, but generally, the etiology is nonspecific.<sup>5</sup>

Epidemiological data indicate a prevalence of between 50% and 80% of low back pain in the general population, being more prominent in men over 40 years of age and women between 50 and 60 years of age. These probably in due to the higher prevalence and consequences of osteoporosis and also because they are more concerned about health-related issues.<sup>6,7</sup> Except in situations where there is a neurological deficit or intractable pain, surgery is indicated.<sup>2</sup> Otherwise, conservative treatment is standard, with the practice of weight training is an available resource of great help in reducing pain.

However, despite the many positive results, it is still, underutilized and often mistakenly associated with worsening health outcomes. pathology, especially when practiced incorrectly or without follow-up.<sup>8</sup>

Although weight training may not have such positive results, there are few reports of severe health effects or manifestation of low back pain. On the contrary, it proves to be effective as long as it is performed properly by its practitioner.<sup>9</sup> Studies have shown that weight training reduces pain, strengthens the body’s supporting structure and improves posture, relieving symptoms of low back pain, thus providing quality of life to patients and slowing down the progression of the disease. The purpose of weight training is strength training, and several studies point to the benefits of this practice for pain relief. Muscle strengthening exercises have been indicated for degenerative disc disease, with reduced flares and incidences of pain.<sup>10-11</sup>

As a limitation of our study, we identified a small sample and the realization in a gym located in the center of a city in the interior of Rio Grande do Sul, which may not be consistent with other realities. However, the most interesting fact is that the reported improvement in pain after weight training in a general analysis was quite prominent, with a significant improvement in the individual’s quality of life.

**CONCLUSION**

Low back pain is a highly prevalent and disabling disease. It is one of the most common complaints in primary health care consultations, generating expenses with frequent consultations and referrals to specialists. The practice of weight training, when appropriate, has proven to be a low-cost tool that can help both in the prevention and improvement of the quality of life of patients with spinal pathology, helping to improve referred pain, obviously, when there is no surgical indication.

All authors declare no potential conflict of interest related to this article.

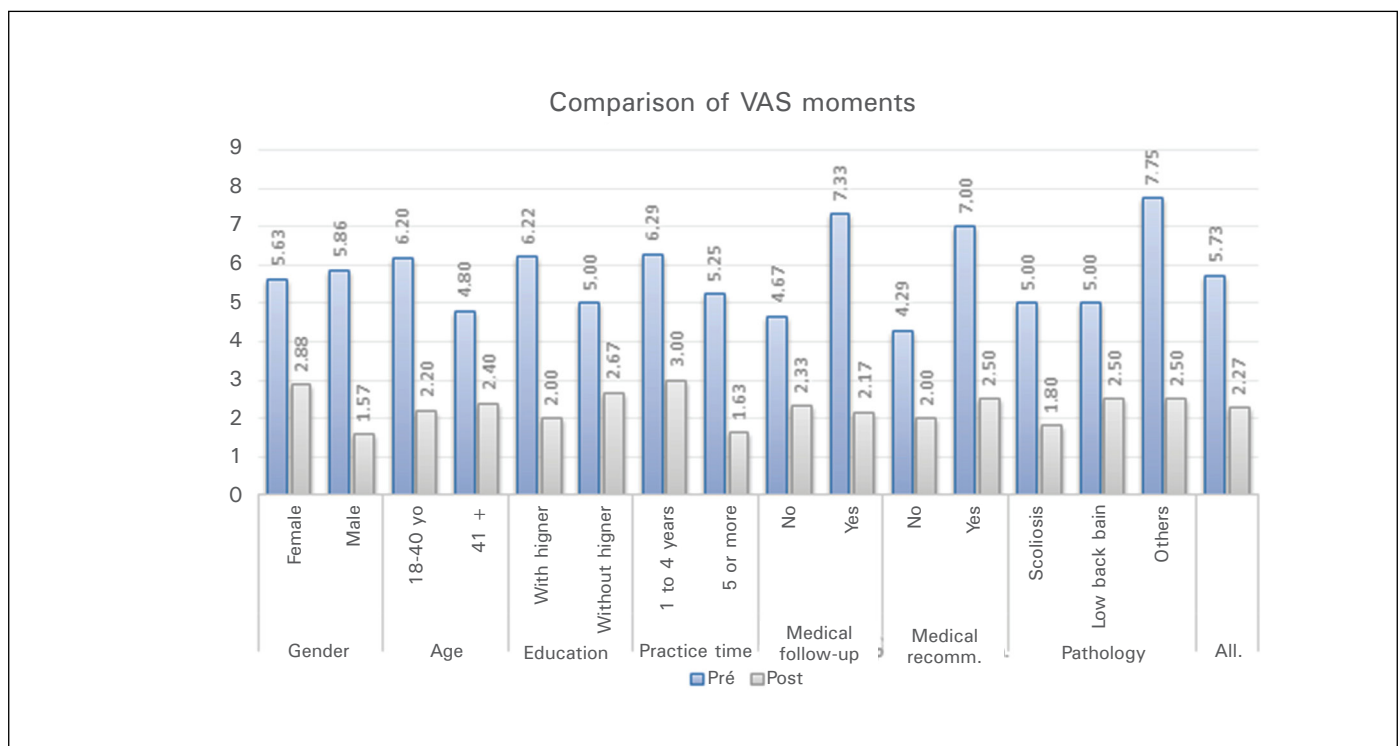


Figure 3. Comparison of pre and post-weight training VAS.

**CONTRIBUTIONS OF THE AUTHORS:** Each author contributed individually and significantly to the development of the manuscript. NW was the main contributor in the design, analysis, interpretation of the data of the article, and final revision of the manuscript. CA had participation in the writing of the manuscript, literature review, and the intellectual concept of the study.

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## Annex 1.

Sociodemographic and clinical questionnaire		5. Presence of spinal pathology?
1. Sex		<input type="checkbox"/> Yes
<input type="checkbox"/> Female		<input type="checkbox"/> No
<input type="checkbox"/> Male		<b>If your answer was "YES" in the previous question, proceed to the second part of the questionnaire, if you have answered "NO", we thank you for your participation.</b>
2. Age		
<input type="checkbox"/> 18-30		Sociodemographic and clinical questionnaire (part 2)
<input type="checkbox"/> 31-40		6 What spinal pathology do you have?
<input type="checkbox"/> 41-50		<input type="checkbox"/> Herniated Disc
<input type="checkbox"/> 51 or more		<input type="checkbox"/> Low back pain
3. Level of Education		<input type="checkbox"/> Cervicalgia
<input type="checkbox"/> Illiterate		<input type="checkbox"/> Spinal fractures
<input type="checkbox"/> Incomplete primary education		<input type="checkbox"/> Osteoporosis
<input type="checkbox"/> Complete primary education		<input type="checkbox"/> Radiculopathies
<input type="checkbox"/> Incomplete secondary education		<input type="checkbox"/> Arthrosis of the lumbar spine
<input type="checkbox"/> Complete high school		<input type="checkbox"/> Sciatic nerve problems
<input type="checkbox"/> Higher education completed		<input type="checkbox"/> Scoliosis/Kyphosis/Lordosis
<input type="checkbox"/> Technical course		<input type="checkbox"/> Other: _____
4. Time spent in weight training		7 Do you follow up with a doctor?
<input type="checkbox"/> Less than six months		<input type="checkbox"/> Yes
<input type="checkbox"/> Six months to 1 year		<input type="checkbox"/> No
<input type="checkbox"/> 1 to 2 years		8 Was weight training a medical recommendation?
<input type="checkbox"/> 2 to 4 years		<input type="checkbox"/> Yes
<input type="checkbox"/> > than five years		<input type="checkbox"/> No

## Annex 2.

Visual analog scale of pain (vas)

**VISUAL ANALOG SCALE - VAS**

The Visual Analog Scale - VAS consists of a score for measuring the intensity of pain by the individual. This is a straight line, indicating one end the indication "no pain", and on the other the "worst possible pain". On the scale the 0 means total absence of pain, and 10 the level of maximum pain endured.

Rate how your pain was before weight training and how it is now.