



The losses of lower back pain to the quality of life in bodybuilding

Prejuízos da lombalgia à qualidade de vida de praticantes de musculação

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ABSTRACT

Physical exercise is present in everyday life with several objectives: among them, the improvement of the quality of life. Despite providing health benefits, pathologies and symptoms can also affect this type of activity. These are triggered, most of the time, by inappropriate behavior during training, among others. We have the benefits of bodybuilding for the human body, but this constant practice also leads to an increase in the installation of musculoskeletal injuries and symptoms, such as low back pain. The objective of this study was to identify the damage caused by low back pain to the quality of life of bodybuilders. The proposed method was an exploratory quantitative study. Participants were approached in gyms in the city of Maringá, Paraná, Brazil, answering the Roland Morris and Short Form Health Survey questionnaires. The data showed an impairment of functional capacity and social aspects of individuals affected by low back pain and bodybuilders

Keywords: Covid-19. Backache; Health promotion; Physical exercises; Physical conditioning; injuries in athletes.

RESUMO

O exercício físico está presente no cotidiano com vários objetivos; dentre eles, a melhora da qualidade de vida. Apesar proporcionar benefícios à saúde, também patologias e sintomas podem incidir nesse tipo de atividade. Estes são desencadeados, na maioria das vezes, por comportamentos inadequados durante o treino, entre outros. Temos os benefícios da musculação para o corpo humano, porém essa prática constante também leva ao aumento da instalação de lesões musculoesqueléticas e sintomas, como a lombalgia. O objetivo deste estudo foi identificar quais são os prejuízos da lombalgia à qualidade de vida dos praticantes de musculação. O método proposto foi de estudo quantitativo exploratório. Os participantes foram abordados em academias da cidade de Maringá, Paraná, Brasil, respondendo aos questionários Roland Morris e *Short Form Health Survey*. Os dados demonstraram um comprometimento da capacidade funcional e de aspectos sociais dos indivíduos afetados pela lombalgia e praticantes de musculação.

Palavras-chave: Dor lombar; Promoção da saúde; Exercícios físicos; Condicionamento físico; Lesões em atletas.

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INTRODUCTION

Among all the benefits provided by bodybuilding, with emphasis on strengthening the stimulated muscles, improving joint stability, and improving physical conditioning for daily life activities, some harms can also be highlighted, such as lower back pain or back pain¹.

Lower back pain is characterized by segmental pain, more specifically in the lumbar region of the spine, which may progress to chronic symptoms; it affects individuals in all age groups and all over the world, which has currently made it a major public health problem^{1,2,3}.

Caused by different reasons (eg, incorrect body posture during the individuals' daily activities), it can also manifest itself after the person has started the practice or during the performance of physical exercises, including weight training. This causes the symptomatic picture of this pathology to evolve frequently and ends up taking the individual away from the regular practice of exercises, work, or social life, which then makes it a socioeconomic problem^{4,5}.

Bodybuilding is present in the daily life of certain people, who adhere to it with numerous objectives, mainly to improve their quality of life; and it is interpreted by many as necessary for the good functional development of the body and longevity⁶.

It is a type of physical exercise, as it does not only refer to movements that provide energy expenditure greater than the resting state, as in the case of physical activity: it shows a structured and systematized methodology, with the education of professional physics, playing a crucial role in the good result of this practice⁵.

Through external resistance, bodybuilding under proper guidance and within its various periodization's', also respecting the principles of biological individuality and the specificity of each individual, has beneficial effects on processes of muscle hypertrophy, localized muscle resistance and body fat reduction².

These factors improve the physical and psychological abilities of adept individuals, as well as the capacity for resistance, strength, speed, flexibility, and agility for daily life activities, which, in turn, reflects positively on these factors².

This type of physical exercise is also indicated as a form of conservative treatment for strengthening and resolving spinal disorders as a whole. However, its incorrect execution or undue indication and inattention during its performance can make bodybuilding unfavorable or harmful, especially when pain sets in after its onset⁴.

Such a pathology, in this case, is triggered most of the time by inappropriate behavior during training, lack of physical preparation, recklessness, lack of attention, incorrect prescription or unpreparedness in guidance by health professionals in the area or in high-performance athletes, which can negatively compromise both superficial and deep tissue structures¹.

Here, then, is an interesting factor for the area of health promotion, since low back pain and its symptoms are constantly the focus of complaints from bodybuilders, even affecting this population with great intensity^{1,2}.

On the one hand, the technologies currently used for this type of exercise have evolved through research in order to provide human beings with greater care, comfort, practicality and agility in their development, as is the case with the development and evolution of devices used in bodybuilding. On the other hand, it is observed that this has brought some public health problems to the world population, due to the increase in the number of its adherents⁶.

Urgent attitudes and efficient actions, such as the emphasis on the practice of physical exercises, have already been taken by the health promotion area as a way to circumvent the sedentary lifestyle, which can not only compromise health in a physiological way, but also the quality of life of people. Even so, it is still observed that the war against this "modern

plague” brought on the other hand another risk factor to the health of this population: the pathologies resulting from physical exercise⁶.

Therefore, the search for means and alternatives to identify, prevent or treat this type of clinical condition requires a better reconciliation of interdisciplinary work by all professionals involved in the area, with emphasis on health promotion^{4,7}.

Some doubts arise when attention and reasoning in health promotion are turned to bodybuilding. More specifically, it is intended to know why many fans of this modality have symptoms of pathologies, as is the case here with lower back pain, as this type of physical exercise would have the purpose of improving the quality of life of its fans, and not the opposite⁷.

So, within this context, we ask about the effects of bodybuilding that could harm the daily activities of its practitioners. In this sense, health promotion, through the identification of these losses, would have the responsibility of dealing with this problem^{1,2}.

That said, the objective of the present study was to identify what are the losses of lower back pain to the quality of life of bodybuilders

METHODOLOGY

The present study used the exploratory quantitative study format. It was prepared in accordance with the Declaration of Helsinki and obtained a favorable opinion from the REC (Unicesumar Research and Ethics Committee, Maringá, state of Paraná [PR]) under No. 4,052,982, on May 27, 2020.

The following individuals were included in the study: between 18 and 50 years old; of both sexes; who regularly practiced bodybuilding for at least one year, with a minimum frequency of three days a week; who manifested or manifested the complaint of lower back pain for at least seven days and after starting bodybuilding; that

they were assisted individually (personal trainer) or not; who agreed to participate in the study after signing the Free and Informed Consent Form (FICF).

Those who had a history of injuries or direct trauma, surgeries or degenerative diseases of the spine, who had cognitive impairment or neurological pathologies and functional impairment were excluded.

The sample consisted of 27 individuals, approached in gyms in the city of Maringá, Paraná, Brazil. They were invited to answer questionnaires about lower back pain Roland Morris¹⁰ and Short Form Health Survey (SF-36)¹¹, from which the data to be analyzed for the conclusion of the study were taken.

Data collection through questionnaires was chosen due to the practicality of the application in this type of study, since they are elaborated with direct questions, with little time spent by the respondents. This facilitates the approach and adhesion of individuals in specific places or during activities developed, targets of the study, without relevant damages to these, also simplifying the analysis and comparison of data from the studied sample.

The data obtained were tabulated and analyzed using statistical methods, through descriptive analysis and correlation of factors. At first, a descriptive analysis of the results was prepared to obtain graphs and frequency tables, in order to characterize the research participants. To describe the results, the absolute frequency and percentage were used for categorical variables, and the mean, standard deviation, minimum, median, and maximum for numeric variables.

Still, to evaluate the distribution of scores and the relationship between them, boxplots and scatter diagrams were constructed. The boxplot (or box plot) gives an idea of the position, dispersion, asymmetry, tails and outliers¹², being built with the quartiles of the data distribution.

The scatter diagram is used to simultaneously represent the values of two

quantitative variables, measured in each element of the data set, by assigning points to the observed values of these variables in two-dimensional Cartesian space.

Subsequently, to verify the possible relationship between the scores of the SF-36 domains and the Roland Morris questionnaire, Spearman's rank correlation test was applied, since the variables were measured in continuous or ordinal scales. This test¹³ makes no assumptions about data distribution, being appropriate for variables with at least an ordinal scale.

According to Gibbons and Chakraborti¹⁴, the coefficient is a measure of the association between two variables, which evaluates the degree of correspondence between positions instead of the actual values of variables.

A score is attributed to each observation, referring to the ranks of the observations of each variable; in the event of ties, the score is given by the average of the orders of repeated observations¹⁷.

Likewise, a score is assigned to each observation according to the number of observations; and, according to Sheskin¹⁵, the statistic is given as follows: the coefficient varies in the range of (-1, 1); the sign indicates the direction of the correlation, inverse (negative) or direct (positive), while the value indicates the strength of the correlation; the closer the coefficient is to -1 or 1, the stronger the correlation between the variables; on the other hand, if the correlation is equal to 0, there will be no relationship between the variables under study.

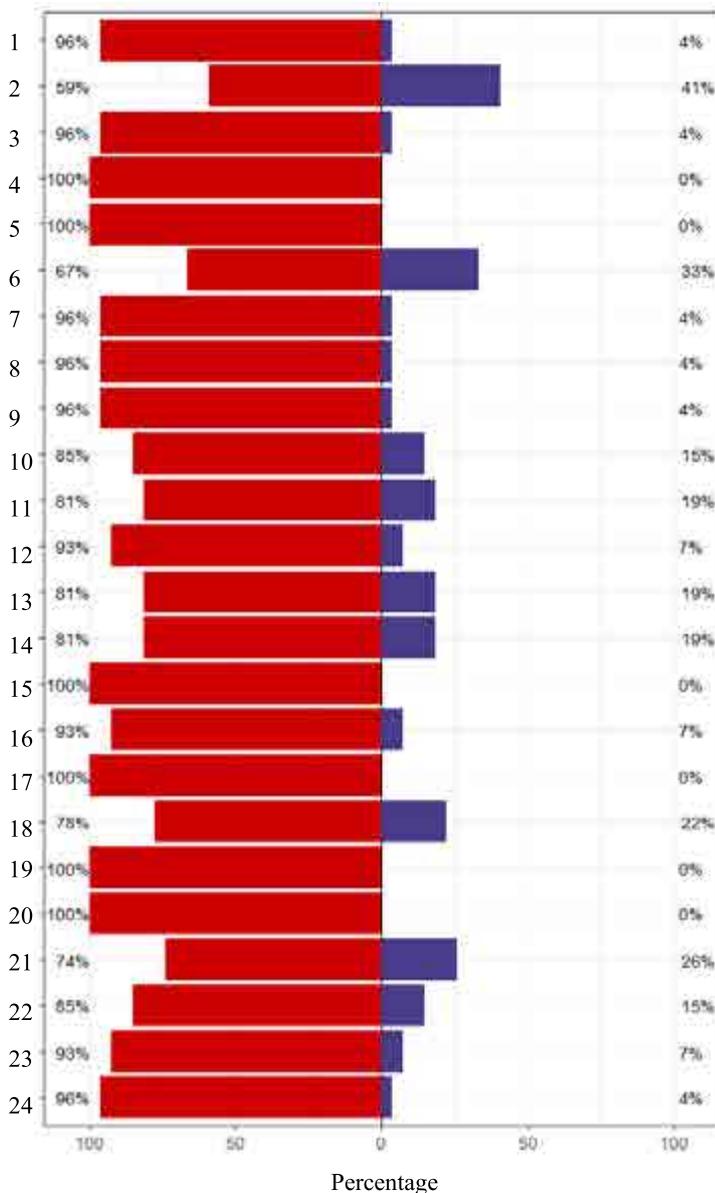
All analyzes were performed with the aid of the R statistical environment¹⁷.

RESULTS

Below, the frequency distribution of the Roland Morris questionnaire questions is presented, as well as the distribution of the scores of this instrument and the SF 36.

In Graph 1, it can be seen that, for all items comprising the Roland Morris questionnaire, the survey participants predominantly responded with the alternative "no", highlighting that, for 6 of the 24 questions, the answer was unanimous.

However, although still with the majority of negative responses, the items with the highest frequency of "yes" responses in Graph 1 were "I change position frequently to try to make my back comfortable" (41%) and "Because of on my back, I lie down more often to rest" (33%).



- 1 - I stay home most of the time because of my back.
- 2 - I change positions frequently to try to get my back comfortable.
- 3 - I walk slower than usual because of my back.
- 4 - Because of my back, I don't do any of the work I would normally do in my home.
- 5 - Because of my back, I use the handrail to climb stairs.
- 6 - Because of my back, I lie down more often to rest.
- 7 - Because of my back, I have to lean on something to get out of an armchair.
- 8 - Because of my back, I try to get other people to do things for me.
- 9 - I get dressed more slowly than usual because of my back.
- 10 - I only stand for short periods of time because of my back.
- 11 - Because of my back, I avoid bending or kneeling.
- 12 - I find it difficult to get up from a chair because of my back.
- 13 - My back is almost always hurting
- 14 - I have trouble turning over in bed because of my back.
- 15 - I don't have much appetite because of my back pain.
- 16 - I have trouble putting on shoes or socks because of my back pain.
- 17 - I can only walk short distances because of my back.
- 18 - I don't sleep so well because of my back.
- 19 - Because of my back pain, I get dressed with the help of someone else.
- 20 - I sit most of the day because of my back
- 21 - I avoid heavy work at home because of my back.
- 22 - Because of my back pain, I am more irritable and bad tempered with people than usual.
- 23 - Because of my back, I take the stairs slower than usual.
- 24 - I stay in bed most of the time because of my back

Graph 1. Frequency distribution of the survey participants' responses to the Roland Morris instrument

In Table 1, on the one hand, it is observed that, among the eight domains of the SF-36 instrument, the highest score was observed for functional capacity, both in mean (80.93 points) and in median (90.00 points). On the other hand, the two domains that presented the lowest mean (56.44 and 57.31) and median (52.00 and 57.50) scores were pain and vitality, respectively,

emphasizing that the score of all domains can vary from 0 to 100 points, even if no patient has reached such limits.

It is also seen in Table 1 that the domains of social aspects (74.04), limitations of social aspects (65.43) and mental health (66.00) obtained high means.

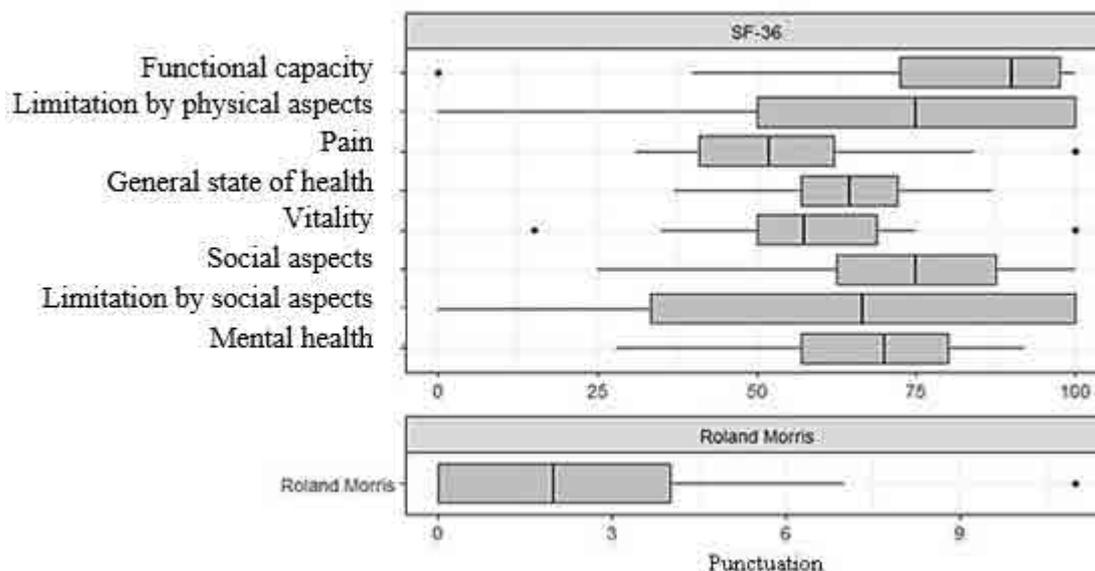
Tabela 1. Summary measures of SF-36 and Roland Morris domain scores obtained by survey participants

Domain	Medium	DP	Minimum	Mediam	Maximum
Functional Capacity	80,93	23,94	0,00	90,00	100,00
Limitation by physical aspects	70,37	31,80	0,00	75,00	100,00
Pain	56,44	18,14	31,00	52,00	100,00
General state of health	64,15	11,38	37,00	64,50	87,00
Vitality	57,31	17,10	15,00	57,50	100,00
Social aspects	74,04	22,06	25,00	75,00	100,00
Limitation by social aspects	65,43	38,65	0,00	66,67	100,00
Mental Health	66,00	18,46	28,00	70,00	92,00
Roland Morris	2,52	2,69	0,00	2,00	11,00

Complementing the results shown in Table 1, Graph 2 presents the distribution of scores for the SF-36 domains and the Roland Morris instrument.

Regarding the Roland Morris questionnaire, its score can vary between 0 and

24 points, although the maximum score observed in the sample was only 11 points. The average observed was 2.52 points, with a standard deviation of 2.69 points and a median of 2 points, as shown in Graph 2.



Graph 2. Boxplots of SF-36 and Roland Morris domain scores

Next, the results of the correlation test between the scores of the SF-36 domains and the Roland Morris questionnaire are presented.

Tabela 2. Correlation of the SF-36 domains with the Roland Morris instrument

Domain	r_s	Value p
Functional Capacity	-0,646	< 0,001*
Limitation by physical aspects	-0,323	0,100
Pain	-0,798	< 0,001*
General state of health	-0,013	0,948
Vitality	-0,386	0,051
Social aspects	-0,178	0,385
Limitation by social aspects	-0,304	0,123
Mental health	-0,230	0,259

*value p < 0,05.

Table 2 highlights that the functional capacity domain of the SF-36 presented a significant correlation with the Roland Morris questionnaire ($p < 0.001$), according to the results of the Spearman correlation test. The correlation was moderate and negative (-0.646), indicating that the higher the quality of life in relation to functional capacity, the lower the disability score on the Roland Morris questionnaire tends to be.

Likewise, the correlation with the pain domain was also significant ($p < 0.001$), moderate and negative (-0.798).

However, for the other SF-36 domains, there was not enough sample evidence that the correlation with the Roland Morris questionnaire is significant, considering a 5% significance level.

Diagram 1, below, graphically presents the relationship of the scores of the SF-36 domains with the Roland Morris questionnaire.

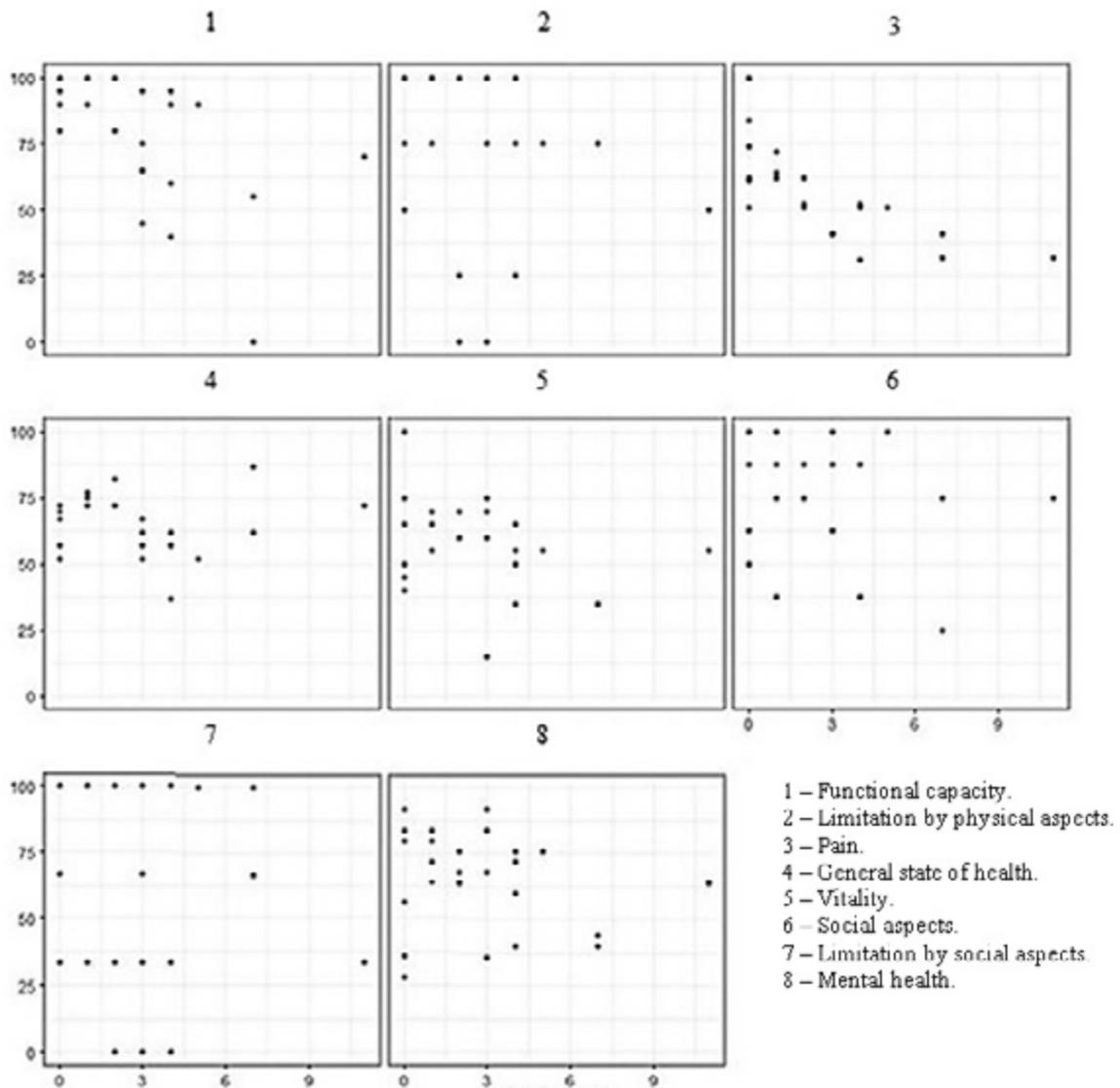


Diagram 1. Dispersal of the SF-36 domains with the Roland Morris instrument

DISCUSSION

According to the objective of this study to identify the damage to the quality of life of bodybuilders, it can be noted that physical exercises, more specifically bodybuilding, can result in impairments^{1,2}.

Within the proposed theme, we highlight the strengthening of the muscles stimulated by this activity, which would provide local stability and mainly for the lumbar region (eg, transversus abdominis and lumbar multifidus); this would structurally influence the individual's posture, reducing the incidence of lower back pain¹⁶.

However, based on the analysis of the results collected from the sample, it was noted (Graph 1) that most individuals answered “no” to the question about whether lower back pain-imposed limitations on their daily activities. This finding demonstrates that, despite the onset of lower back pain, activities of daily living (such as bodybuilding) were maintained.

Still in Graph 1, there was another highlight in the prevalence of answers: “I change positions frequently to try to make my back comfortable” (41%) and “Because of my back, I lie down more often to rest” (33%).

So, it is considered that, despite the maintenance of activities of daily living, perhaps

due to obligation, commitment to a certain act, fear, effort or personal commitment, the onset of low back pain with the practice of bodybuilding meant that they needed more time to adaptation or rest, to relieve symptoms in your daily life.

It is possible to consider that lower back pain is irrelevant for bodybuilders, although it is present in their daily lives and has appeared after starting this form of exercise. Despite the pain, they maintain their activities of daily living, including weight training, contradicting a study in which it is stated that bodybuilders frequently withdraw from this activity due to lower back pain⁴.

Despite this, this fact is also in line with another study, which concludes that it is necessary to improve the interdisciplinary approach and health promotion on the part of the professionals involved⁴.

Still, the study states that there is a need for awareness, assessment of symptoms, identification, referral for treatment, prevention, and adoption of protective measures, in order to avoid or solve the low back pain present in the practice of bodybuilding. This prevents a chronic condition, late withdrawal from exercise and evolution to pathologies that are more specific and that compromise both the general health of the individual in greater complexity and his quality of life⁴.

Regarding the aspect observed by the score obtained with the application of the SF-36 capacity questionnaire reported in Table 1, it was observed that most individuals presented a greater decrease in functional capacity (80.93%) and social aspects (74.04%).

This demonstrates that the low back pain condition developed with the practice of bodybuilding affects not only the physical capacity, even if insistently maintained as seen in the analysis of Graph 1, but also compromises the social life of these individuals. Therefore, it can bring harm to your personal or professional life, as shown in Table 1, with regard to the large

percentage of responses about limiting social aspects (65.43) and compromising mental health (66.00).

These facts confirm previous studies, when they report that low back pain, not only in the general population, but also in bodybuilders, has become a major public health problem^{1,5}.

This even influences the social capabilities of the affected individuals, often alienating them from their social life and directly impacting their mental capacity, which can bring not only psychophysiological damage, but also economic damage to society, when we associate such factors with social and professional life^{1,5}.

Furthermore, when relating the results of the SF-36 questionnaire to the Rolland Morris questionnaire in Graph 2, Table 2 and Diagram 3, it is once again noted that compromised quality of life directly influences the individual's functional capacity.

In other words, when observing the relationship between the results of the two questionnaires, it is possible to consider a relationship that, the more the individual who practices bodybuilding has low back pain or pain and continues to maintain his activities of daily living ($p < 0.001$), or its frequency, the greater the disability of functional active life ($p < 0.001$).

This result corroborates studies^{6,7,17} whose conclusion is that, although physical exercises, such as bodybuilding, are encouraged and their benefits are consensus among health professionals, media, among others, for maintaining a good quality of life, this can often suffer damage with the practice of this activity.

Such a path takes bodybuilding in the opposite direction to its true objective of promoting health, either due to the lack of attention of the professionals involved in indicating or carrying out this type of activity, or due to the lack of preparation and incorrect assistance to its practitioners, who seek this physical activity as an alternative for health maintenance^{6,7,17}.

The limitations of this study were due to people's low perception that there is a relationship between the beginning of weight training and the manifestation of low back pain by the individuals approached during sample selection, which directly impacted the number of participants. This, perhaps, also occurred due to lack of information about how the incorrect or improper execution of this type of physical exercise can generate the referred problem.

CONCLUSION

Through the available literature reviewed, it was confirmed that bodybuilding is one of the most common physical exercise modalities in today's society, providing benefits to the lives of its followers.

However, it is also evidenced by the results of this study that there is impairment of the functional capacity, social and mental aspects of the individuals who started to present lower back pain after the beginning of the practice of bodybuilding. This fact demonstrates, then, that health professionals involved in the process of orientation, identification, evaluation, prevention, or treatment of this situation need greater attention regarding the presence of low back pain in this population. Thus, they will promote health in an adequate way and in all its instances, making bodybuilding really a healthy physical exercise and with a true objective of improving the quality of life of its practitioners.

Therefore, it is concluded that the action of health promotion should be encouraged in the disclosure of factors that are harmful to health in populations such as this one, since several of them have characteristic factors or comorbidities and frequent incidents, therefore, efficient approaches in prevention and treatment by professionals are needed. trained and from all areas involved.

REFERENCES

1. Nascimento PRC, Costa LOP. Prevalência da dor lombar no Brasil: uma revisão sistemática. *Cad Saúde Pública*. 2015; 31(6):1141-1155. doi: 10.1590/0102-311X00046114
2. Fleck SJ, Kraemer WJ. *Fundamentos do Treinamento de Força Muscular*. Artmed. 2017.
3. Oliveira MASD, Fernandes RDSC, Daher SS. Impacto do Exercício na Dor Crônica. *Rev Bras Med Esport*. 2014; 20(3):200-203. doi: 10.1590/1517-86922014200301415
4. Souza GL, Moreira NB, Campos W. Ocorrência e Características de Lesões entre Praticantes de Musculação. *Rev Saud Pesq*. 2015; 8(3):469-477. doi: /10.177651/1983-1870.2015v8n3p469-477
5. Pinto SM, Silva MAG, Novaes JS, Batista LA. Prevalência de lombalgia em praticantes de musculação. *Fisioterapia Brasil*. 2008; 9(3):189-193. doi: 10.33233/fb.v9i3.1643
6. Santos ALP, Simões AC. Educação Física e qualidade de vida: reflexões e perspectivas. *Saúde Soc*. 2012; 21(1):181-192. doi: 10.1590/S0104-12902012000100018
7. Astur DC, Novaretti JV, Uehbe RK, Arliani GG, Moraes ER, Pochini AC, et al. Lesão Muscular: perspectivas e tendências atuais no Brasil. *Rev Bras Ortop*. 2014; 49(6):573-580. doi: 10.1016/j.rboe.2013.10.003
8. Roschel H, Tricoli V, Ugrinowitsh C. Treinamento físico: considerações práticas e científicas. *Rev bras Educ Fís Esporte*. 2011; 25: 53-65. doi: 10.1590/S1807-55092011000500007
9. Junior JPB. *Fisioterapia e Saúde Coletiva: desafios e novas responsabilidades profissionais*. Ciência e Saúde Coletiva. 2010; 15(suppl 1):1627-1636. doi: 10.1590/S1413-81232010000700074

10. Monteiro J, Faísca L, Nunes O, Hipólito J. Questionário de Incapacidade Roland Morris – Adaptação e Validação para os Doentes de Língua Portuguesa com Lombalgia. *Acta Med Port. Lisboa.* 2010; 23(5):761-766.
11. Ciconelli RM, Ferraz MB, Santos W, Meinão I, Quaresma, MR. Tradução para a Língua Portuguesa e Validação do Questionário Genérico de Avaliação da Qualidade de Vida SF-36 (Brasil SF-36). *Rev Bras Reumatol.* 1999; 39(3):143-150.
12. Bussab WO, Morettin PA. *Estatística Básica.* 2012.
13. Spearman C. The Proof and Measurement of Association between Two Things. *The American Journal of Psychology.* 1904; 15(1):72-101. doi: 10.2307/1412159
14. Gibbons JG, Chakraborti S. *Nonparametric Statistical Inference, Fourth Edition: Revised and Expanded.* Quarta edição. Publisher Taylor & Francis. 2014.
15. Sheskin D. *Handbook of Parametric and Nonparametric Statistical Procedures.* Chapman & Hall/CRC. 3 ed. 2003.
16. Barros SSD, Ângelo RDCDO, Uchôa EPBL. Lombalgia ocupacional e a postura sentada. *Rev Dor.* 2011; 12(03):226-230. doi: 10.1590/S1806-00132011000300006
17. Mendes R, Fernandez JCA, Sacardo DP. Promoção da Saúde e Participação: abordagens e indagações. *Saúde Debate.* 2016; 40(108):190-203. doi: 10.1590/0103-1104-20161080016