Descriptive Cross-Sectional Observational Study http://dx.doi.org/10.1590/S1808-185120222102258674
Basic Sciences/Others

THE INFLUENCE OF PHYSICAL ACTIVITY ON THE PREVALENCE OF LOW BACK PAIN AMONG THE PORTUGUESE POPULATION

INFLUÊNCIA DA ATIVIDADE FÍSICA SOBRE A PREVALÊNCIA DA DOR LOMBAR NA POPULAÇÃO PORTUGUESA

LA INFLUENCIA DE LA ACTIVIDAD FÍSICA EN LA PREVALENCIA DEL DOLOR DE LA REGIÓN LUMBAR EN LA POBLACIÓN PORTUGUESA

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ABSTRACT

Objective: I) To investigate the influence of physical activity (PA) on levels of low back pain, and II) To classify the respondents regarding low back pain. Methods: Collection of responses, through an online questionnaire, from 199 adults aged between 18 and 65 years (36.05 ± 11.90 years). The following inclusion criteria were applied: I) Suffering or have suffered pain in the spine at some point in life; and as an exclusion criterion: I) Being outside the required age range. Results: Investigating the level of pain and the risk of low back pain, there was a significant association ($r = 0.481$; $p \leq 0.01$) between these two factors, indicating that the higher the levels of pain, the higher the risk of low back pain. Those who presented higher levels of chronic pain either did not practice any physical activity (58.8%), or practiced formal PA (42.9%) or practiced informal PA (30.7%). Those who had practiced physical exercise for three months or more mostly did not have chronic pain (70.1%). Conclusions: There was a decrease in chronic low back pain which was associated with increased time and frequency of PA, as well as the practice of postural physical exercises. ***Level of Evidence I; Prognostic Studies— Investigating the Effect of a Patient Characteristic on the Outcome of Disease.***

Keywords: Low Back Pain; Spine; Portugal; Physical Activity.

RESUMO

Objetivo: I) Verificar a influência da atividade física (AF) nos níveis de lombalgia, II) Classificar os entrevistados quanto à dor lombar. Métodos: As respostas foram obtidas por meio de um questionário on-line respondido por 199 adultos com idades entre 18 e 65 anos (36,05 ± 11,90 anos). Foram aplicados os seguintes critérios de inclusão: I) Sofrer ou ter sofrido dor na coluna em algum momento da vida e de exclusão: I) Não pertencer à faixa etária determinada. Resultados: Ao analisar o nível de dor e o risco de lombalgia verificou-se uma associação significativa ($r = 0,481$; $p \leq 0,01$) entre esses dois fatores, o que indica que quanto maiores os índices de dor, mais alto é o risco de lombalgia. Os participantes que apresentaram valores maiores de dor crônica não praticavam atividade física (58,8%), praticavam AF formal (42,9%) ou praticavam AF informal (30,7%). A maioria dos participantes que praticavam exercício físico há 3 meses ou mais não tinha dor crônica (70,1%). Conclusões: Conclusões: Houve diminuição da dor lombar crônica que foi associada ao aumento do tempo e frequência de AF, bem como à prática de exercícios físicos posturais. ***Nível de Evidência I; Estudos prognósticos – investigação do efeito de característica de um paciente sobre o desfecho da doença.***

Descritores: *Dor Lombar; Coluna Espinhal; Portugal; Atividade Física.*

RESUMEN

Objetivos: I) Verificar la influencia de la actividad física (AF) en los niveles de dolor de la región lumbar, II) Clasificar a los encuestados en relación con el dolor de la región lumbar. Métodos: Las respuestas se obtuvieron a través de un cuestionario online al que respondieron 199 adultos de entre 18 y 65 años (36,05 ± 11,90 años). Se aplicaron los siguientes criterios de inclusión: I) Padecer o haber padecido dolor de columna en algún momento de la vida; y como criterio de exclusión: I) No pertenecer al grupo de edad indicado. Resultados: Al analizar el nivel de dolor y el riesgo de lumbalgia se observó una asociación significativa ($r = 0,481$; $p \leq 0,01$) entre estos dos factores, lo que indica que cuanto mayor es el índice de dolor, mayor es el riesgo de lumbalgia. Los participantes que presentaron valores más altos de dolor crónico o no practicaban actividad física (58,8%), practicaban AF formal (42,9%) o practicaban AF informal (30,7%). La mayoría de los participantes que practicaban ejercicio físico durante 3 o más meses no presentaba dolor crónico (70,1%). Conclusiones: Hubo una disminución del dolor de la región lumbar crónico que se asoció con el aumento del tiempo y la frecuencia de AF, así como con la práctica de ejercicios físicos posturales. ***Nivel de Evidencia I; Estudios de pronóstico - investigación del efecto de una característica del paciente sobre el resultado de la enfermedad.***

Descriptores: *Dolor de la Región Lumbar; Columna Espinal; Portugal; Actividad Física.*

Study conducted at the Portugal, though an online survey.
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Received on 11/29/2021 accepted on 03/25/2022
Reviewed by: Dr. Alexandre Fogaça Cristante

INTRODUCTION

According to the World Health Organization (WHO), physical activity (PA) is described as "any bodily movement produced by the skeletal muscles that results in energy expenditure above resting levels".[1] This includes daily activities such as housework or gardening, while physical exercise comprises all conscious practice of physical activity, carried out with a specific objective (e.g. to improve physical fitness) and for a clearly-defined period of time, with or without a prescription. Physical activity is an integral part of the care management of several chronic diseases[2] and is one of the objectives of multidisciplinary programs for chronic non-specific low back pain. According to the Eurobarometer 2017,[3] which evaluated the twenty-eight member states of the European Union in December 2017, there is evidence that regular physical activity has been decreasing since 2009. In 2017, only 35% of the population aged 15 and over practiced sufficient physical activity. In Portugal, the percentage of people who do not walk for at least ten minutes a day increased from 17% in 2013 to 47% in 2017; those who rarely or never practice sport increased from 36% to 64%. Conversely, the percentage of those who practice other activities (commuting to work by bicycle, dancing, gardening, etc.) decreased from 17% in 2009 to 5% in 2017. A consequence of this physical inactivity is the fact that we will be the main risk factors for the appearance of non-communicable diseases. Few behavioral health interventions provide benefits in as many medical areas as physical activity. In the osteoarticular field, for example, physical exercise has been associated with reduced pain and increased quality of life in people with osteoarthritis of the knee.[4] It has also been associated with a long-term improvement in low back pain[5] and has a potential protective effect against falls and fractures in the elderly.[6]

Low back pain (LBP) is one of the most common musculoskeletal disorders, with a prevalence of 80%.[7] It is usually defined as pain, muscle tension or stiffness located below the costal margin and above the lower gluteal folds, with or without sciatica (pain radiating from the lower back leg).

In some patients, the initial acute pain may continue for three months, eventually progressing to chronic low back pain, when it ceases to be considered a symptom but a disorder, which is perpetuated by factors with different initial causes,[8] such as histomorphological and structural changes in the paraspinal muscles. Back pain often does not occur in isolation; many individuals with back pain also report pain in other regions of the body, which is associated with greater functional impairment and more absenteeism.[9,10] The study "Chronic Pain Care - Prevalence and Characterization of Chronic Pain in Primary Health Care", carried out over a one-year period, revealed the high impact of this disease on patients' quality of life. Chronic pain affected about 34% of individuals in Primary Health Care, and the main difficulties reported were pain/discomfort (92%), performing daily tasks (74%), anxiety and depression (69%), mobility difficulties (67%) and hygiene care (43%). The most frequent pathology among the patients characterized was low back pain, followed by pain in the lower limbs (66%), and in the upper limbs - shoulders (33%) and cervical region (33%). In addition, 95% of patients with chronic pain had other associated chronic morbidities, namely endocrine, nutritional and metabolic diseases (72%), diseases of the circulatory system (64%) and of the musculoskeletal system and ligaments (43%).[11]

Patients with low back pain resort to the use of drugs of various classes, generally using more than one class concurrently. The choice of appropriate pharmacotherapy for acute and chronic low back pain continues to pose a major challenge for healthcare professionals and patients. Identifying distinct phenotypes that respond to targeted treatments, improving the diagnosis to allow treatment of pain based on the mechanism rather than on the symptoms (for example, muscle relaxants for muscle spasms, or antidepressants for low back pain of the neuropathic type).[12]

In the National Health Survey (2014), which aimed to estimate the prevalence of chronic low back pain among the Portuguese population in 2014 and to study its association with sociodemographic characteristics, body mass index and physical activity, it was found that chronic low back pain is associated with a low frequency of physical activity and overweight and obesity.[13] In view of Portugal's frightening statistics, it is pertinent to create policies that involve combating physical inactivity and simultaneously spinal pain, especially the lumbar spine.

The sedentary lifestyle resulting from professional activity leads to increased levels of inactivity, with the accumulation of uninterrupted episodes in prolonged sessions (≥30 min).[14,15] Previous studies report that continuous contraction of the trunk muscles in a seated position can, if prolonged, lead to fatigue of the trunk muscles. The trunk muscles play an essential role in contributing to the stability of the spine.[16-18] There are two muscular systems of the trunk: superficial and deep.[15,17,19] This physical inactivity and consequently, the imbalance in the structures of the spine and in the muscular systems can lead, as mentioned previously, to overweight, obesity and pain in the spine.

There have been few studies in the Portuguese population that assess the importance between physical activity and pain in the lumbar spine. Thus, the experimental questions in this study are:

1. To assess the level of importance between Physical Activity and Low Back Pain.
2. To determine how the intensity of low back pain is characterized in the Portuguese population.
3. To investigate whether taking drugs is a common behavior to mitigate low back pain.
4. To determine the main position adopted during the day among those with low back pain.

OBJECTIVES

The main objective is to verify the level of importance of physical activity in low back pain. However, to better understand spine pain, other objectives have been proposed:

- To check whether the practice of physical activity is associated with low back pain;
- To measure the intensity of spine pain, with a special focus on the lumbar spine;
- To investigate whether taking drugs is a common behavior to mitigate low back pain;
- To investigate where the pain interferes in daily tasks, and whether the position adopted for most of the day is associated with pain.

METHODOLOGY

Sample Characterization

For the present study, we collected responses, through a questionnaire, from 199 adult male (n = 49) and female (n = 150) people aged between 18 and 65 years (36.05 ± 11.90 years). The following inclusion criteria were applied: i) Suffering or have suffered pain in the spine at some point in life; and as exclusion criteria: i) Being outside the age range of 18 to 65 years.

Variables

Table 1 presents the operational plan of variables, with the characteristics of each variable, specifying how they will be named during the collection, treatment and presentation.

Instruments

The instruments used in the study were as follows:

- 1 AsusVivoBook computer;
- Microsoft Excel and Word;
- Google Forms;
- IBM SPSS Statistics version 26 for Windows;
- Questionnaire "Start Back Screening Tool" (SBST).[20]

Procedures

The data were collected online, between June 11 and August 15, 2020, using a validated questionnaire to survey the risk of low back pain.[20] The application of the validated questionnaire consisted of questions

Table 1. Operational Plan of Variables.

Name	Description	Domain	Units	Type	Function
Age	Age of participants	No. Natural	Years	Discreet quantitative	Characterizing
Sex	-	-	-	Qualitative	Moderator
District	-	-	-	Qualitative	Characterizer
Level of Pain	VAS Scale	0-10	-	Discrete Quantitative	Dependent
Type of Physical Activity		Aerobic Ex. Muscle Resistance Ex. Postural Ex.	-	Qualitative	Independent
Frequency of Physical Activity		6-point Likert Scale	-	Ordinal quantitative	Independent
Type of Physical Activity Practiced		Formal and/or Informal	-	Qualitative	Independent
Nuisance		5-point Likert Scale	-	Ordinal quantitative	Dependent
Time practicing Physical Activity		3-point Likert Scale	-	Ordinal quantitative	Independent
Drug Taking		Knitting	-	Qualitative	Dependent
Most frequent position		Knitting	-	Qualitative	Characterizing
Risk of low back pain		Knitting	-	Qualitative	Dependent
Duration of pain		Dichotomous	-	Qualitative	Dependent

about the spine. However, to better characterize the spine pain, the respondents were also asked about their perceived level of pain and the practice of physical activity. The questionnaire was shared through direct contact, emails to companies with different workers, and on the social networks, such as Facebook, Instagram and WhatsApp.

Data Processing

All the data were statistically treated using IBM SPSS Statistics version 26 for Windows. The Kolmogorov-Smirnov tests were performed to test the normality of all variables, which was not assumed for the variables under study. For the descriptive statistics, averages and standard deviations were calculated, and the frequency of responses was verified for each situation.

Considering that not all questions in the questionnaire were validated to understand the phenomenon under study, except for the group II questions, which belong to the "Start Back Screening Tool",[20] exploratory factor analysis was carried out, to verify the existence of latent variables. Thus, for all the variables under study, the following steps were performed, according to Marôco.[21]

- Check whether the sample size is adequate using the Kaiser-Meyer-Olkin test (KMO): the KMO statistical test = 0.850, indicating that the sample size is adequate to proceed with the analysis;
- Check sphericity using Bartlett's test: it was found that the variables can be used for this analysis ($\chi 2 = 1376{,}448$, $p \leq 0.05$);
- Check the Total Variance Explained by the variables, through the principal component method: a value of 66.344% was observed, so the model can be used;
- Identify the variables that belong to each latent variable, and their relative weights, which are identified in Table 2, removing the variables that do not have a weight greater than 40%;
- Name the category for each group of variables under study;
- Check the credibility of the factors, through the Cronbach's alpha confidence test: values of 0.656, 0.959 and 0.685 were found, respectively, for the factors Pain, Drugs and Autonomy and Safety;
- Check that the inter-item correlation is greater than 0.3: the value was obtained for the three latent variables;
- Check that there is no correlation between latent variables: correlation of 0 was verified; remove the scores for each latent variable, which was performed using the regression method.

To compare the values of latent variables by the most frequent position adopted during the day, type of physical activity practiced (i.e. formal/informal), and the mode of exercise, the Kruskal-Wallis test was used for multiple samples. If significant differences were found between groups, comparisons paired with Bonferroni correction for multiple tests were performed. For comparison between sexes, the Mann-Whitney U test was performed. Furthermore, the values of Spearman's Rho for the age and time of practice were correlated with the values of the variables Latent Pain, Drugs and Autonomy and Safety. The level of significance was set at $p \leq 0.05$.

Table 2. Latent variables and their relative weights.

	Latent Variables		
	Pain	**Drugs**	**Autonomy and safety**
taking Painkillers		0.933	
Taking Muscle Relaxers		0.950	
Taking Anti-inflammatories		0.937	
Suffering low back pain for more than 3 months	0.729		
Level of Pain	0.736		
Pain When Walking Short Distances			0.750
Getting dressed more slowly			0.747
Lack of sense of physical safety			0.709
Too much back pain, causing concern	0.709		
Terrible back pain	0.666		
No longer like the things previously enjoyed			0.448
Discomfort caused by the pain	0.824		

RESULTS

The descriptive statistics showed no significant differences in the average ages between males and females ($U = 3490.50$; $p > 0.05$), highlighting an average age of 35.27 years for adult males and a greater data dispersion for males than for females, with an average age of 36.31 years.

Characterization of the Physical Activity

Analyzing the practice of physical activity, only 8.5% of the participants said they did not practice any type of physical activity, while the remaining 91.5% said they practiced some type of physical activity. Regarding the length of time spent practicing physical activity, 77.4% of the participants had done so for more than three months and 16.6% for less than three months. Of the participants who said they practiced physical activity, 101 did so informally, 14 formally, and the remaining 67, a mixture of both formal and informal. Regarding the type of exercise practiced, aerobic exercise was the most common, with 142 respondents. Muscle endurance exercise was the second most common, with 109 respondents, and postural exercise was the form chosen by only 34 respondents.

Table 3 shows the weekly frequency of practitioners by type of practice. The practice of formal PA was performed 1, 3, 4 and more than 6x/week by just one practitioner, eight said they practiced 2x/week, and two said 5x/week. As for informal PA, 27 practiced 1x/week, 29 said 2x/week, 22 said 3x/week, 11 said 4x/week, eight said 5x/week and four said they practiced informal PA + 6x/week.

Of those who practiced both formal and informal PA, 18 of the respondents said they did so 2x/week; 16 said 3x/week, 12 said 1x/week, 9 said 4x or 5x/week and the remaining 3 said + 6x/week.

Characterization of Pain

Pain can be classified according to its persistence and duration. Chronic pain is defined as recurrent pain that has been reported for more than three months,[8] on the other hand, acute pain is non-persistent pain and/or pain that has lasted for less than three months.

Table 4 shows the pain classification data by type of PA. It can be seen that for the sample as a whole, 67.8% of the participants suffered from acute pain and the remaining 32.2% suffered from chronic pain. In the classification of pain by type of PA practice, of the participants who reported that they did not practice any kind of physical activity, 58.8% had suffered pain for three or more months, this group being the one with the highest prevalence of pain. The remaining 41.2% of the non-active participants said they had pain lasting for less than three months. Of those who practiced both formal and informal PA, 74.6% suffered from acute pain and 25.4% suffered from chronic pain. Of those who practiced formal PA, 69.3% suffered acute pain and the remaining 30.7% suffered chronic pain. Those who practiced formal PA suffered mostly acute pain, with 57.1%, or chronic pain, with 42.9%. (Table 4)

As for the time spent practicing PA and the classification of pain, of the 154 participants who had practiced PA for three months or months, 108 (70.1%) suffered acute pain or no pain. Only 46 (29.9%) of those in this group suffered chronic pain. Of the 33 participants who had practiced PA for less than three months, 21 (63.6%) had acute or no pain and 12 (36.4%) had chronic pain. (Figure 1)

Characterization of Drug Taking

Analyzing the taking of drugs and the levels of pain, it was found that 95 (47.74%) of the participants said they did not take any type of drugs, and 104 (52.26%) said they took drugs to reduce the low back pain. Regarding the type of drug taken, analgesics were reported by 70 (35.18%), muscle relaxants by 68 (34.17%), and anti-inflammatory drugs by 87 (43.72%). Regardless of the type of drugs used, the respondents said they used drugs at least several times a month. Table 5 below shows the frequency with which the participants took analgesics, muscle relaxants and anti-inflammatory drugs.

Associating the taking of drugs with the type PA, referred to in Table 6, it was found that of the 70 respondents who reported taking analgesics, 35 practices informal PA and 26 both formal and informal PA. Six did not practice any PA, and the remaining three practiced formal PA. The third most widely used drug, muscle relaxants, was reported by 68 participants: 28 of these practiced informal PA, 27 both formal and informal PA, nine no PA, and four formal PA. Anti-inflammatory drugs were reported by 87 participants: 45 of these practiced informal PA, 32 both formal and informal PA, seven no PA, and the remaining three formal PA.

Characterization of the position most frequently adopted during the day

Regarding the position most frequently adopted during the day, 86 (43.22%) of the respondents said they were mostly standing, in small or large spaces, and 113 (56.78%) said they were mostly sitting down. Table 7 below shows the positions most frequently adopted during the day and the type of PA practiced. When the most frequent position was standing in small spaces, 26 participants responded that they practice informal PA, 12 participants practiced formal and informal PA, four participants did not practice PA and only one participant practiced formal PA. Of the 43 participants who said they were mostly standing in large spaces, 20 practiced formal and informal PA, 17 informal PA, four formal PA and two no PA.

Of the participants who are mostly seated during the day, 58 practiced informal PA, 35 practiced formal and informal PA, 11 participants did not practice PA and the remaining nine participants who were mostly sitting practiced formal PA.

Table 3. Weekly frequency and respective type of practice.

	Practice formal PA	Practice Informal PA	Practice Formal and Informal PA	Total
1x/week	1	27	12	40
2x/week	8	29	18	55
3x/week	1	22	16	39
4x/week	1	11	9	21
5x/week	2	8	9	19
+ 6x/week	1	4	3	8
Total	14	101	67	182

Table 4. Classification of pain by type of PA.

	Acute pain	Chronic pain
No PA	41.2%	58.8%
Formal and Informal PA	74.6%	25.4%
Informal PA	69.3%	30.7%
Formal PA	57.1%	42.9%
Total	67.8%	32.2%

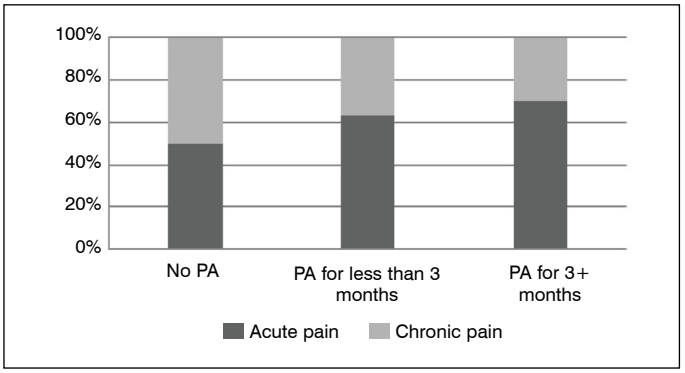

Figure 1. Classification of pain by time of PA practice.

Table 5. Frequency of use of each type of drug.

	Analgesics	Muscle Relaxants	Anti-inflammatories
Never	129	131	112
A few times a month	34	36	54
Less than once a week	3	0	1
1 to 2 times a week	4	4	3
3 to 4 times a week	20	19	22
Once a day	5	5	4
Several times a day	4	4	3
Total	199	199	199

Table 6. Drug taking and type of PA practice.

	Analgesics		Muscle Relaxants		Anti-inflammatories	
	No	Yes	No	Yes	No	Yes
No PA	11	6	8	9	10	7
Formal and Informal PA	41	26	40	27	35	32
Informal PA	66	35	73	28	56	45
Formal PA	11	3	10	4	11	3
Total	129	70	131	68	112	87

Table 7. Position most frequently adopted during the day and type of PA practiced.

	Standing in small spaces	Standing in large spaces	Sitting down
No PA	4	2	11
Formal and Informal PA	12	20	35
Informal PA	26	17	58
Formal PA	1	4	9
Total	43	43	113

Pain parameter

Assessing the association between age and the pain parameter, we found that age has a weak but significant positive correlation ($\rho = 0.189$; $p \leq 0.01$) with pain. On the other hand, the time spent practicing PA did not show any association with this parameter.

Comparing levels of pain by sex, position adopted during the day, mode of exercise and type of practice, we found no significant differences.

Drugs Parameter

There was an association between age and the use of drugs; age had a weak, but significant positive correlation with drugs ($\rho = 0.205$; $p \leq 0.01$). However, for time spent practicing PA, there was no association with the use of drugs.

The variables mode of practice, position adopted during the day, and the sex of the individual, did not show significant differences when compared to the rate of drug use. Regarding the taking of drugs compared to the type of PA practiced, there were significant differences when comparing the practice of formal PA with the practice of both formal and informal PA ($H = 49.499$; $p \leq 0.01$), also when comparing formal with informal ($H = 36.575$; $p \leq 0.05$), and when comparing informal with no PA ($H = 46.237$; $p \leq 0.05$).

Sense of Autonomy and Safety

Assessing the association between age and the parameter autonomy and safety, no association was found. However, for the association between time spent practicing PA and the parameter sense of autonomy and safety, we found that the time spent practicing PA had a weak, but significant positive correlation ($\rho = -0.108$; $p \leq 0.02$), with this parameter.

Comparing the levels of autonomy and safety by type of exercise practiced, we found that those who practiced muscle endurance exercise and postural exercise had a significantly greater sense of autonomy and safety ($H = 73.036$; $p \leq 0.05$) than those who do not practice any type of physical exercise. Muscle endurance exercise and postural exercise practitioners give a significantly higher sense of autonomy and safety than aerobic exercise and postural exercise ($H = 105.150$; $p \leq 0.01$). The combination of the three modes of exercise, muscular endurance, aerobic and postural reveals significant differences ($H = 39.791$; $p \leq 0.01$), greater sense of autonomy and safety, compared to the practice of aerobic exercise alone, and also when compared to the practice of aerobic and postural exercise ($H = 89.948$; $p \leq 0.01$). Comparing the practice of the three exercise modes with no PA at all, significant differences were found ($H = 57.833$; $p \leq 0.05$). The combination of aerobic exercise and muscle resistance revealed significant differences when compared to the practice of aerobic exercise alone ($H = 24.0791$; $p \leq 0.05$). The practice of only muscle resistance exercise and the set of aerobic exercise and muscle resistance revealed significant differences when compared to aerobic exercise and postural exercise ($H = -61.579$; $p \leq 0.05$; $H = -74.948$; $p \leq 0.01$, respectively), the latter being translated into less autonomy and security. Comparing the levels of autonomy and safety by type of exercise practiced, we found significant differences between those who practice formal and informal physical exercise, with a greater sense of autonomy and safety than those who practiced informal PA alone ($H = -19.082$; $p \leq 0.05$), or those who did not practice any PA ($H = 32.848$; $p \leq 0.05$). We also found significant differences when comparing the parameter sense of autonomy and safety by sex ($H = 2767.00$; $p \leq 0.01$).

On the other hand, comparing the levels of sense of autonomy and safety by the position most frequently adopted during the day, no significant differences were found.

DISCUSSION

This is a descriptive study, the primary objective of which is to investigate the level of association between physical activity and low back pain. For this purpose, an online questionnaire was made available, to gather date on the practice of physical activity, the level of pain and the risk of low back pain. Regarding the practice of PA, we found that 91.5% of the respondents practiced some form of PA, with the majority (77.4%) having done so for more than three months. However, analyzing the type of practice, it was found that 55.8% practiced PA informally, followed by 36.8% who did so both formally and informally, and only 7.7% practiced formal PA. This suggests a concern of people with spine pain to practice PA, as opposed to the general population. As for the type of exercise, most of the respondents did aerobic and muscle resistance exercises and a small portion (18.7%) did postural exercises. Oliveira et al.,[22] consider that physical exercise, particularly Pilates, is a beneficial treatment for patients with chronic low back pain, as it reduces pain and disability in the short and long term[23] and improves balance. However, there still very little knowledge or clarification about the benefits of postural exercises in reducing low back pain. Nevertheless, it was found that those who had higher levels of pain preferred muscle and postural resistance exercises, which may be justified by a greater need for postural correction and muscle reinforcement to reduce pain. However, neither the type nor the mode of PA practiced presented significant differences in relation to pain, therefore these do not appear to be factors that reduce or increase the levels of pain.

Regards the type of pain, 67.8% of respondents suffered acute pain and the remainder, chronic pain. It is noteworthy, however, that of the latter group, 15.6% did not practice any type of PA. (Table 8)

Regardless of the pain classification, we found that most of the respondents practiced informal PA. However, the number of respondents who practiced formal PA was higher in the chronic pain group, with slightly lower values for other types of practice. Regards length of time practicing PA, our study did not show this indicator to be a factor that reduced or increased the level of pain, contrary to what is indicated by the guidelines for the treatment of chronic low back pain (CLBP) that recommend being as active as possible and increasing the practice of physical activity,[24,25] and with the results of the study by Vanti,[26] who observed similar effects for walking (informal physical activity) and physical exercise (formal physical activity). Also, no significant further improvements were observed when walking was added to the exercise.

Considering the respondents' age, we found that a weak correlation with the level of pain, indicating that older people have higher levels of pain. These data are in line with what was stated by Rubin,[27] which shows that demographic factors, such as age (especially between 30 and 60 years old) are among the main risk factors, with lower levels of pain among young adults, which increases with age up to 60-65 years. Comparing the levels of pain by sex, and position adopted during the day, we found no significant differences.

Regarding the use of drugs and level of pain, most participants (52.26%) had used drugs to reduce low back pain, mainly anti-inflammatory drugs (43.72%), followed by analgesics (35.18%) and finally muscle relaxants (34.17%). Considering the respondents' age, there was a weak correlation with the use of drugs, with older people resorting more to drugs. Time spent practicing PA did not show any association with the parameter use of drugs. Considering the type of PA practiced, we found that those who practiced formal PA have a lower need to use drugs to ease low back pain (4.4%), while those who practiced informal PA were more likely to use drugs (48%). Comparing the use of drugs with type of exercise, those who practiced only formal PA took significantly less drugs than the other respondents. These data seem to indicate that practicing formal PA is a mitigating factor for low back pain, as those who do this type of practice have a follow-up adjusted to their individual needs, which

Table 8. Classification of pain by type of PA practiced.

Practice Type	Acute pain	Chronic pain
No PA	5.2	15.6
Formal and Informal PA	37.0	26.6
Informal PA	51.9	48.4
Formal PA	5.9	9.4
Total	100	100

is not the case for those who practice informal PA, and who are generally self-taught, sometimes performing the exercise incorrectly or in a maladjusted way. The type of PA, position adopted during the day and sex did not show any relation with the use of drugs. However, those who mostly stood during the day, in large spaces, or who were sitting for most of the day, used less drugs than those who spent most of their time standing in small spaces.

For most of the participants (56.78%) the most frequent position adopted during the day was sitting. Analyzing the type of PA among these individuals, it was seen to be mostly informal, and the same was true of those who spent most of their day standing in small spaces. Most of those who frequently find themselves standing in large spaces, performed formal and informal practice. (Figure 2)

Comparing the levels of autonomy and safety by most frequent position during the day, no significant differences were revealed.

Considering the levels of sense of autonomy and safety by time spent practicing PA, we found that the respondents who had done so for longer felt more autonomous and safer. In addition, men appeared to feel less autonomous and safer than women, whether due to worry about the pain, walking short distances, or dressing more slowly due to the pain. Regarding the type of practice, we found that there were significant differences between those who did both types of practice and those who only did informal PA, with the former feeling more autonomous and safer than the latter. These results are in line with other studies that point to an improvement in quality of life and the importance of physical activity[7,13] for a more autonomous and safer daily life, i.e., more independent. Comparing the levels of autonomy and safety between the different modes of physical exercise, we found that those who practice the three modes of exercise (aerobic, muscular and postural resistance) were significantly more autonomous and safer than non-practitioners, indicating the importance of physical exercise for a more independent day-to-day lifestyle. Combining the practice of muscular resistance exercise and postural exercise, there were greater benefits for those who practiced PA in reducing low back pain, as increasing the amount of exercise also led to an increased sense of autonomy and safety.

Practical Applications

This is a descriptive study, with the main goal of analyzing the importance of physical activity in individuals with low back pain. Most of the participants in this study, who suffer from low back pain, practice some type of PA, mostly informal. Thus, it is verified that people with low back pain show affinity with the practice of PA. The highest levels of pain were found in older participants, indicating that age is as a risk factor for the prevalence of low back pain. For the majority of participants, it appears that they commonly resort to drugs to reduce low back pain, mainly anti-inflammatory drugs, followed by analgesics and finally, muscle relaxants. The most frequent position adopted during the day was sitting down or standing in small spaces, indicating that these are the ones who suffer most from pain, whether acute or chronic. As for the ability to perform daily tasks, those who practiced both formal and informal PA were the ones who felt the most autonomous, safe and apparently the most tolerant of pain.

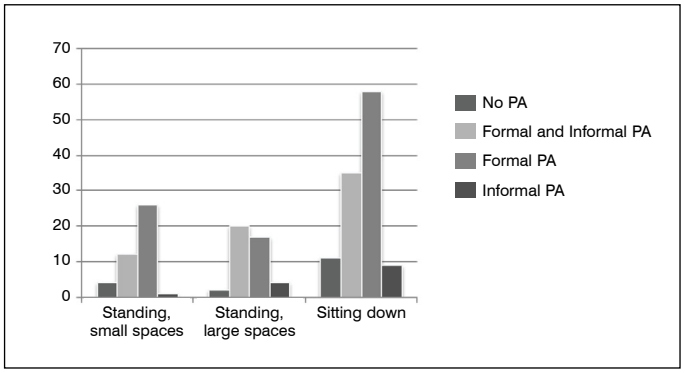

Figure 2. Most frequent position adopted during the day by type of PA practice.

Although in this work data were collected from a sample that allowed us to gain clues about the interaction between PA and low back pain, this study needs to be replicated in a representative sample, in order to study the prevalence of low back pain in the Portuguese population and thereby gain an understanding of which types and modes of physical activity are most beneficial for this population and for reducing the risk of low back pain. Specific training programs for this population should be implemented in gyms, health clubs and clinics, in order to reach a larger number of individuals and improve their quality of life.

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

CONTRIBUTIONS OF THE AUTHORS: Each author made significant individual contributions to this manuscript. CIGR: Conceptualization, Investigation, Writing, Original Draft, Visualization; CIAM: Conceptualization, Methodology, Visualization; MACB: Conceptualization, Formal analysis, Resources, Visualization, Writing, Review & Editing, Supervision.

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