

Prevalence of musculoskeletal pain in walkers: a cross-sectional study

Prevalência de dor musculoesquelética em praticantes de caminhada: um estudo transversal

La prevalencia de dolor musculo esquelético en practicantes de caminatas: estudio transversal

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ABSTRACT | The aim of this study was to determine the prevalence of musculoskeletal pain in walkers and the associated factors. This is a cross sectional study, conducted through a questionnaire applied to walkers in parks in which this activity is commonly seen. The form used was composed of questions about personal information, walking practice routine, injury history and the presence of musculoskeletal pain during the interview. We performed a descriptive analysis of the characteristics of the participants and used the independent t test, Mann-Whitney's test e chi-square test for the comparison of data between participants with and without pain at the moment of the interview. We interviewed 136 walkers, and the prevalence of musculoskeletal pain was 8%. The knee joint was the most affected region by pain between the participants (45%). Among the variables analyzed, the presence of previous injuries in the last 12 months showed a statistically significant association ($p < 0.05$) with the presence of pain. We can conclude that the prevalence of musculoskeletal pain in walkers was low, however, it was directly associated with previous injuries in the last 12 months.

Keywords | Musculoskeletal Pain; Sports; Walking.

RESUMO | O presente estudo teve como objetivo verificar a prevalência de dor de origem musculoesquelética em praticantes de caminhada e os possíveis fatores associados. Trata-se de um estudo transversal, realizado por meio de um formulário aplicado aos praticantes de caminhada em parques comuns à prática desta atividade. O formulário utilizado foi composto de questões sobre informações pessoais dos participantes, a rotina da prática de caminhada, o histórico de lesões e a presença de dor musculoesquelética

no momento da entrevista. Foi realizada uma análise descritiva das características dos participantes e utilizado o teste t independente, teste de Mann-Whitney e teste de qui-quadrado para a comparação dos dados entre os participantes com dor e sem dor no momento da entrevista. Foram entrevistados 136 praticantes de caminhada, sendo que a prevalência de dor musculoesquelética foi de 8%. A articulação do joelho foi a região mais acometida pela dor entre os participantes (45%). Entre as variáveis analisadas, a presença de lesões prévias nos últimos 12 meses demonstrou uma associação estatisticamente significativa ($p < 0,05$) com a presença de dor atual. Podemos concluir que a prevalência de dor musculoesquelética em praticantes de caminhada é baixa, porém esteve diretamente associada à presença de lesões prévias nos últimos 12 meses.

Descritores | Dor Musculoesquelética; Esportes; Caminhada.

RESUMEN | Este artículo tuvo el propósito de verificar la prevalencia de dolor musculo esquelético en practicantes de caminatas y los posibles factores asociados a esta práctica. Se trata de estudio transversal, que se realizó mediante un cuestionario aplicado a los practicantes de caminatas en parques y lugares que son comunes a esta actividad. El cuestionario se componía por informaciones personales de los practicantes, la rutina de la práctica, el historial de lesiones y la presencia de dolor musculo esquelético durante la entrevista. Para ello, se ha hecho un análisis descriptivo de las características de los participantes, y se han utilizados la prueba t independiente, la prueba de Mann-Whitney y la prueba de Chi Cuadrado para la comparación de los datos entre los participantes con y sin dolor en la ocasión de la

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entrevista. Se han entrevistados 136 practicantes de caminatas, y el 8% fue la prevalencia de dolor musculo esquelético encontrada. La zona más afectada por el dolor entre los participantes fue la articulación de rodilla (45%). Entre las variables evaluadas, se ha demostrado que la presencia de lesiones previas de los últimos 12

meses está asociada estadísticamente ($p < 0,05$) a la presencia de dolor actual. Se concluyó que es baja la prevalencia de dolor musculo esquelético en practicantes de caminatas, sin embargo se la asocia a la presencia de lesiones previas de los últimos 12 meses.

Palabras clave | Dolor Musculoesquelético; Deportes; Caminata.

INTRODUCTION

Regularly taking a moderate level physical exercise is considered an important factor in terms of the population's quality of life and well-being. Related benefits from such an activity include improved physical conditioning, weight control and prevention of systemic diseases such as diabetes and hypertension, among others¹⁻³. It has been increasingly suggested that walking at a speed greater than or equal to 5.5km/h is a moderate-level exercise for the population⁴. It is possible to state that walking is a low-cost activity that is easy to perform and is apparently related to low injury rates⁵.

Some studies have shown that injury rates in walkers may vary between 5% and 40%⁸⁻¹². However, others studies that included walkers and street runners in their subject population may have overestimated the injury rates found for walkers, this is because running presents higher injury rates due to it being a greater intensity activity^{2,13} which in turn has a greater impact^{14,15}.

Walking, due to it being a moderate and affordable activity, has been promoted and encouraged for the population with the objective of making people increasingly physically active^{6,7}. However, little is known regarding the rates of musculoskeletal injuries that are associated with this activity. This study is the first to identify the prevalence of musculoskeletal pain in walkers during its execution, as it is to analyze possible associated factors with the pain involved.

METHODOLOGY

This study is defined as being cross-sectional, in which 136 individual walkers were interviewed. The inclusion criteria for those participating were: (1) having walked for at least 30 minutes a day, at least three times a week, for more than six months and (2) being 18 years old or more. All participants read and signed a form of free and informed consent after being given

information regarding the study's objectives. This study was approved by the Research Ethics Committee at the University of São Paulo (protocol no. 13685795).

The interviews were performed in different public parks in São Paulo city that are used for walking. The subjects were only spoken to once, which was before, after or during their exercise. Data were collected by means of a form, which was developed by the researchers involved in the study. This form was composed of the following topics: the participants' personal data (name, age, gender, height, weight and contact details); profile of their walking habits (weekly frequency, duration and time); matters relating to other exercises undertaken by the respondents (weekly frequency, mean duration and time); history of previous injuries over the 12 months previous to the interview; issues relating to the presence of musculoskeletal pain at the time of the interview (location, general region, intensity, and if it was necessary to stop walking due to this pain). The question regarding pain, at the time of the interview, was only intended for pain resulting from walking, which was of a musculoskeletal source.

Descriptive analysis of the collected data was performed, with simple frequency distribution and calculation of the percentages for the categorical data, as well as measures of central tendency and dispersion for the continuous data. The continuous data's normality was evaluated through analyzing curve symmetry. Data with normal distribution were presented in mean and standard deviation, while data with non-normal distribution were reported through the median and interquartile range. The participants were divided into two groups in order to compare the data: 1) individuals who complained of musculoskeletal pain at the time of the interview, titled "group with pain", and 2) individuals who did not report any pain at the time of the interview, titled "group without pain". The difference between the groups was analyzed using the independent *t*-test for continuous data with normal distribution; the Mann-Whitney test was used for continuous data

Table 1. Characteristics of the participants involved in the study

	Male (n=51)	Female (n=85)	Total (n=136)
Age	60.3 (17.1)	52.4 (14.7)	55 (16.1)
BMI	26.3 (2.6)	23.7 (3.2)	24.7 (3.3)
Time undertaken (years)	10 (5-20)	10 (3-15)	10 (4-15)
Weekly frequency	4 (3-5)	3 (3-4.5)	4 (3-5)
Training duration (min)	60 (45-60)	60 (50-60)	60 (46-60)
Another physical activity undertaken			
Yes	23 (45)	52 (61)	75 (55)
No	28 (55)	33 (39)	61 (45)
Weekly frequency of the other physical activity	2 (2-3)	2 (2-3)	2 (2-3)
Previous injuries (preceding 12 months)			
Yes	5 (10)	11 (13)	16 (12)
No	46 (90)	74 (87)	120 (88)
Presence of pain at the time of the interview			
Yes	2 (4)	9 (11)	11 (8)
No	49 (96)	76 (89)	125 (92)
Pain duration (years)	1.49 (0.7)	1.49 (2.69)	3.2 (4.0)
Pain intensity	3 (1.4)	3.5 (1.3)	3.3 (1.2)
Necessity to discontinue training			
Yes	0(0)	1 (5)	1 (5)
No	2 (100)	8 (95)	10 (95)

Continuous data are expressed as mean and standard deviation or median and interquartile range. Categorical data are described in number of participants and percentage

with non-normal distribution; the Chi-square test was used for categorical data. A value of $\alpha=0.05$ was adopted for all comparisons and all analyses were performed using SPSS v.20 software.

RESULTS

A total of 136 walkers were interviewed (85 females and 51 males). The prevalence of musculoskeletal pain in the participants involved in the study was 8% (n=11), with 5% reporting to have discontinued the activity due to this pain. The mean duration time of such pain, at the time of the interview, was 1.5 years, for both men and women, and the mean pain intensity was 3 points for men and 3.5 points for women, both graded using the Visual Analogue Scale (VAS). In relation to the participants' injury history, 12% of these reported to have already suffered injuries. The characteristics of all participants involved in the study and information referring to the presence of pain at the time of the interview are presented in Table 1.

Among the participants who reported to have had previous injuries (Table 2), the most frequent condition was arthrosis (33%). As regards the individuals who were in pain at the time of the interview (Table 3), 45% reported the region afflicted to be the knee. Table

3 shows all regions that the participants reported to be in pain at the time of the interview.

Table 2. Diagnoses relating to previous injuries over the preceding 12 months

	n (%)
Artrose	3 (33)
Lumbago	1 (11)
Meniscus injury	1 (11)
Plantar Fasciitis	1 (11)
Muscular injury	1 (11)
Tendonitis	1 (11)
Calcaneal spur	1 (11)

Table 3. Region of the body reported by participants regarding pain at the time of the interview

	n (%)
Knee	5 (45)
Lumbar spine	1 (9)
Pelvic/sacral/buttock	1 (9)
Anterior thigh	1 (9)
Posterior thigh	1 (9)
Popliteus	1 (9)
Posterior leg/calf	1 (9)

A significant difference was found between the groups with pain and without pain, this was in terms of the percentage of individuals who reported having suffered some injury in the 12 months that preceded the

interview ($p=0.0001$). The group with pain had more previous injuries than the group without pain. For all the other controlled variables, no statistically significant difference was found between the groups. Table 4 shows a comparison between the groups with and without pain for all variables.

Table 4. Comparison between groups with and without pain

	With pain	Without pain	P value
Age	54 (19)	55 (15.9)	0.098
BMI	23.3 (2.2)	24.8 (3.3)	0.966
Gender			
Female	9 (81)	76 (61)	0.167
Male	2 (19)	49 (39)	
Time undertaken (years)	8 (2-10)	10 (4-15)	0.348
Weekly frequency	4 (3-5)	3 (3-5)	0.323
Time per training session (min)	50 (40-60)	60 (50-60)	0.075
Undertaking of another exercise			
Yes	6 (55)	69 (55)	0.967
No	5 (45)	56 (45)	
Presence of injury during the preceding 12 months			
Yes	6 (55)	10 (8)	0.0001*
No	5 (45)	115 (92)	

Continuous data are expressed as mean and standard deviation or median and interquartile range. Categorical data are described in number of participants and percentage

DISCUSSION

This is the first study whose objective was to investigate the prevalence of pain in walkers, while the subjects were performing the activity. Upon comparing the groups of participants who had pain and those who had no pain, at the time of the interview, it was found that the presence of injuries in the 12 months previous to the interview was associated with the prevalence of pain in these participants.

The rate of musculoskeletal pain experienced whilst walking was found to be low during this study (8%). There are some other studies that have investigated the rates of injury while walking, these found a variation of 5 to 40%⁸⁻¹², however most of these studies observed the prevalence of injury (rather than pain), and there may have been differences in terms of the definitions of such between the studies, thereby altering the changes in the found rates. In addition, some of the studies performed with walkers included recreational runners in their sample, who have higher injury rates than walkers^{8,13}. However, injury rates sustained while walking are

generally considered low in comparison to other sports, with this activity being recommended as a lower impact type with many benefits^{8,16}.

There was a significant association found between the presence of musculoskeletal pain and the presence of previous injuries suffered during the previous 12 months. These findings corroborate with those made by other studies performed with walkers^{8,9}, which found the same association between a history of injuries and the occurrence of a new injury. Walkers with a history of injuries may have opted for walking as an exercise, which is a moderate-intensity activity with low rates of injury⁴, as a result of them not being fully recovered from their injury or injuries, or for having had prior chronic injuries in structures with low regenerative potential, such as cartilage and meniscus, since the knee was the most affected region in this study.

Arthrosis of the knee was the main diagnosis related to previous injury, with the mean reported pain duration, at the time of the interview, being 1.5 years with a 3-point VAS intensity in the knee region, which can be characterized as a low-intensity chronic discomfort which lasts for a long period of time. Thus, there was some relationship between reported previous injuries and the pain that the participants were suffering at that time. In addition, osteoarthritis is a painful condition that affects approximately 1 in every 10 adults over 60 years of age, which is precisely the mean age of those included in this study¹⁷. Walking is highly recommended in order to reduce pain and for functional improvement in subjects with osteoarthritis of the knee, which justifies the fact that most individuals who have this condition perform this activity¹⁷.

One of the limitations of this study is considered to be the instrument used to evaluate the subjects. Even though the pain is a subjective factor, the decision was made to use a questionnaire to investigate the prevalence of pain reported by the participants, without employing any clinical evaluation. The cross-sectional design of the study may be considered to be another limitation, which does not make it possible for recorded complaints to be closely controlled and leaves the study subject to participant learning bias¹⁸.

According to the findings from this study, walking does not present a high risk in terms of potential injuries and should be recommended as an exercise, however, injury history must take into consideration as a possible factor

regarding future injury in these individuals. We suggest that more studies with prospective designs are performed with people who walk, so that professionals who work with this activity can understand its risks and benefits, and subsequently recommend ways for its safer execution.

CONCLUSION

This study only found an 8% prevalence of musculoskeletal pain in walkers, which was associated with those who had suffered injuries in the previous 12 months. The knee joint was the region most affected by pain in walkers.

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