INJURIES RELATED TO COMPETITIVE AND NONCOMPETITIVE SPORTS IN ELDERLY MEN

Lesões relacionadas ao desporto competitivo e não competitivo em idosos do sexo masculino

Lesiones relacionadas al deporte competitivo y no competitivo en mayores del sexo masculino

Original Article

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ABSTRACT

Objective: To verify the sociodemographic profile and the frequency of musculoskeletal injuries in elderly people who practice competitive and noncompetitive sports activities in the city of Pelotas, RS. **Methods:** Descriptive study, including 29 male subjects, aged 65 years or older, who practiced sports modalities in a competitive and noncompetitive way, in the city of Pelotas, in 2015. Data collection was performed through the application of a questionnaire with questions addressing economic, sociodemographic, nutritional and behavioral issues, and injuries sustained in sports activities. Statistical analysis was performed by calculating measures of central tendency for continuous variables and proportions for categorical variables. **Results:** The current practice of competitive sports was described by 58.6% (n=17) of the subjects, and the most practiced sports were 7-a-side football (53.0%, n=9), tennis (23.5%, n=4) and swimming (23.5%, n=4). Noncompetitive sports were practiced by 44.8% (n=13), and tennis was the most popular sport played (92.3%, n=12). The frequency of injuries among individuals practicing competitive and noncompetitive sports was, respectively, 35.3% (n=6), and 38.5% (n=5). The most frequent injuries were epicondylitis (50.0%, n=3) and meniscus injuries (60.0%, n=3), and the most affected body regions were knee (27.3%, n=3), elbow (27.3%, n=3), and shoulder (18.2%, n=2). The injuries occurred during the sports activities, and the dominant side was the one affected in 63.6% (n=7). **Conclusion:** This study verified that the occurrence of injuries in elderly individuals who practice sports is relevant, even among those who practice them noncompetitively, with epicondylitis as the most frequent among them, whereas meniscus injuries are the most frequent among those who practice competitive sports.

Descriptors: Aged; Sports; Athletic Injuries.

RESUMO

Objetivo: *Verificar o perfil sociodemográfico e a frequência de lesões musculoesqueléticas em idosos praticantes de atividades desportivas a nível competitivo e não competitivo na cidade de Pelotas-RS.* ***Métodos:*** *Estudo descritivo, incluindo 29 indivíduos de sexo masculino, com idade igual ou superior a 65, que praticavam modalidades desportivas de forma competitiva e não competitiva na cidade de Pelotas, em 2015. A coleta de dados aconteceu com a aplicação de um questionário contendo questões econômicas, sociodemográficas, nutricionais, comportamentais e sobre lesões ocorridas na prática desportiva. A análise estatística deu-se através de cálculos de medida de tendência central para variáveis contínuas e de proporção para variáveis categóricas.* ***ResultadoS:*** *A prática atual de desporto competitivo foi descrita por 58,6% (n=17) dos indivíduos, sendo os desportos mais praticados o futebol de sete (53,0%, n=9), o tênis (23,5%, n=4) e a natação (23,5%, n=4). A prática não competitiva se deu em de 44,8% (n=13), e o desporto mais*

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praticado foi o tênis de campo (92,3%, n=12). A frequência de lesão em praticantes competitivos e não competitivos foi de 35,3% (n=6) e 38,5% (n=5), respectivamente. As lesões mais frequentes foram a epicondilite (50,0%, n=3) e as lesões de menisco (60,0%, n=3), e as regiões corporais mais afetadas eram joelho (27,3%, (n=3), cotovelo (27,3%, n=3) e ombro (18,2%, n=2). As lesões ocorreram durante a prática do desporto e o lado dominante foi o afetado 63,6% (n=7). ***Conclusão:*** *O presente estudo constatou que a presença de lesões em indivíduos idosos praticantes de desportos é relevante, mesmo entre aqueles que o realizam de forma não competitiva, sendo a mais frequente a epicondilite, e entre os praticantes competitivos, as lesões de menisco.*

Descritores: *Idoso; Esportes; Traumatismos em Atletas.*

RESUMEN

Objetivo: *Verificar el perfil socio demográfico y la frecuencia de lesiones musculo esqueléticas en mayores practicantes de actividades de deporte en nivel competitivo y no competitivo en la ciudad de Pelotas-RS.* ***Métodos:*** *Estudio descriptivo con 29 individuos del sexo masculino y edad de 65 años o más que practicaban las modalidades de deporte de competición o no en la ciudad de Pelotas en 2015. La recogida de datos se dio con la aplicación de un cuestionario con cuestiones económicas, socio demográficas, nutricionales, de conducta y sobre las lesiones que sucedieron la práctica del deporte. El análisis estadístico se dio a través de cálculos de la medida de tendencia central para las variables continuas y de la medida de proporción para las variables categóricas.* ***Resultados:*** *La práctica actual del deporte competitivo fue descrita por el 58,6% (n=17) de los individuos y los deportes más practicados fueron el fútbol de siete (53,0%, n=9), el tenis (23,5%, n=4) y la natación (23,5%, n=4). La práctica no competitiva se dio en el 44,8% (n=13) y el deporte más practicado fue el tenis de campo (92,3%, n=12). La frecuencia de lesión en practicantes de competición o no fue del 35,3% (n=6) y el 38,5% (n=5), respectivamente. Las lesiones más frecuentes fueron la epicondilitis (50,0%, n=3) y las lesiones del menisco (60,0%, n=3) y las regiones más afectadas fueron la rodilla (27,3%, n=3), el codo (27,3%, n=3) y el hombro (18,2%, n=2). Las lesiones se dieron durante la práctica del deporte y el lado dominante fue lesionado en el 63,6% (n=7).* ***Conclusión:*** *El presente estudio constató que es relevante la presencia de lesiones en mayores que practican deportes incluso en aquellos que no lo hacen por competición siendo la más común la epicondilitis. Las lesiones del menisco es la más común entre los practicantes de competición.*

Descriptores: *Anciano; Deportes; Traumatismos en Atletas.*

INTRODUCTION

The decline in fertility, combined with the improvement of social, medical and sanitary conditions of the last decades, has enabled an increase in the population's life expectancy[1]. This growth in life expectancy has led to an increase in the number of individuals aged 60 years or above in many countries worldwide, especially in developed and developing countries[2]. In this context, data from the Brazilian Institute of Geography and Statistics (*IBGE - Instituto Brasileiro de Geografia e Estatística*) pointed that, in 2009, the population in this age group surpassed 21 million people[3]. Such population aging slowly and gradually affects the individuals, causing important biological and environmental changes to the people's lives[4].

Adopting an active lifestyle is essential for the maintenance of the individuals' quality of life[5]. Besides being connected with longer life expectancy, regular physical activity has been identified as a preventive measure against the onset of age-related degenerative diseases[6,7]. Furthermore, functional limitations associated with the decline in muscle strength and range of motion, as well as changes and precariousness in the motricity can also be positively modified by physical activity[8].

Although various areas related to health recognize the importance of physical activity as a tool to slow down the aging process and reduce a number of associated diseases, the Brazilian Society of Sports Medicine warns that the increase in participation in competitive activities can lead to a higher incidence of complications, especially of cardiovascular, musculoskeletal and thermoregulatory nature[9].

Even today, few attempts have been made to assess the risk of injuries related to physical activity and sports in the elderly, especially those considered noncompetitive. The identification of the most popular sports and specific situations where injuries occur more often are important factors to develop strategies to prevent these injuries in the elderly[10].

Recognizing that the practice of sport, although able to bring immense benefits to health, may result in a rather perverse product of the sports environment (sports injuries) [11], it is important to identify the main injuries resulting from this practice, which may contribute to the prevention of these and, consequently, reduce treatment costs assigned to it[12].

Considering what is described, the greater physical activity among men compared to women[13], and the little knowledge of the said topic in this population, this study aimed to determine the demographic profile and frequency of musculoskeletal injuries in the elderly practicing sports activities at a competitive and noncompetitive level in the city of Pelotas-RS.

METHODS

Descriptive study, conducted in the city of Pelotas during the months from July to September 2015, which took place in the four main social clubs of the urban area of the municipality, where spaces are available for the practice of sports activities. From eight existing clubs in total, the non-participants in the sample were the ones with lower number of affiliated individuals.

First, the secretariats of the assessed clubs were contacted to gather information on the existence of the practice of sports. Soon after the survey of places that provide sports activities as a form of leisure or competition, permission of entry into the institutions was asked, in order to conduct the study.

The intentional sample included only males over 65 years old, who practice sports at a competitive level (men who participate in sports championships) or not (who practice sports for leisure only), at least once a week. The inclusion criteria were met by 37 individuals.

In each of the visited clubs, after the secretaries, teachers or other persons practicing sports had provided information about those individuals who met the required characteristics, the first personal contact was settled for explanation on the research and invitation to participate. This contact took place at the very place for sports practice at the club and, if accepted, the signature of the Free and Informed Consent Form (FICF) was then requested.

The interviews occurred in the clubs where the participants performed the sports activities, individually, in places free from other persons' interference, at the very moment of acceptance to participate in the study (if the respondent so desired) or at a scheduled date and time. A single interviewer, who underwent theoretical and practical training for that purpose, applied the questionnaire.

The questionnaire used for data collection comprised pre-existing questions used in other studies[14,15] on this subject and questions created by the authors of this study. All of them were read to the respondents, along with response options (depending on whether the question was closed- or open-ended), with no time limit for response. The questionnaire questions assessed economic characteristics - income (in minimum wages); demographic characteristics - age (in years), skin color (white, black, brown - as observed by the interviewer), marital status (married/living with a common-law partner, single, separated, widowed), education (years of schooling); and behavioral aspects - smoking (smoker, former smoker, non-smoker), nutrition - body mass index (BMI), measured by the person's weight in kilograms divided by the square of his height in meters (kg/m^2)[16].

An adapted questionnaire[14] on sports injuries in judo was used to collect the variables of interest (musculoskeletal injuries and related variables in individuals who practice competitive and noncompetitive sports). It was divided into blocks addressing the sports activities (at competitive and noncompetitive level) and the injuries sustained due to the sports practice in the last twelve months: current practice of weight training, type of sport practiced, aim, time, weekly working hours, and occurrence of musculoskeletal injuries related to the sports practice (type of injury , place of occurrence, time of occurrence of the injury, procedures adopted).

Data underwent analysis conducted using Stata 11.0, with the descriptive analysis of the studied variables made by calculating measures of central tendency (mean, respective standard deviation (SD) and median) for continuous variables, and proportions for categorical variables .

The study was approved by the Research Ethics Committee of the Physical Education School of the Federal University of Pelotas (Approval No. 1.143,379).

RESULTS

The study was performed with 29 participants (eight refusals), aged 65 years old or above, who practiced sports activities at a competitive and noncompetitive level in four social clubs in the city of Pelotas-RS.

Table I presents the sample description according to the independent variables. The average age of the individuals in the sample was 70.6 years (SD ±6.1); approximately 86.2% (n=25) were married/living with a common-law partner; 75.9% (n=22) had 17 or more years of schooling; 93.3% (n=27) were white and had an average income of 11.4 minimum wages (SD ±6.3). Regarding the nutritional status, 70.0% (n=21) were at risk for overweight/obesity according to the BMI (mean=26.9 kg/m^2, SD ±2.9). The average height and weight of individuals were, respectively, 82.4 kg (SD ±10.5 kg) and 1.75 m (SD ±0.07 m).

Almost 60% (58.6%, n=17) of the subjects reported doing some sport competitively, and the most practiced ones were seven-a-side soccer (53%, n=9), tennis (23.5% n=4) and swimming (23.5%, n=4). The average sports practice time was 28.2 years (SD ±23.3; median=20 years). Regarding the weekly practice frequency, 76.5% (n=13) reported doing the sports activity up to three times a week, while 23.5% (n=2) practiced it five times or more. More than 3/5 of the competitive individuals (64.7%, n=11) managed to be in compliance, in result of their training only, with the minimum recommendations for weekly physical activity practice time, set by the American College

of Sports Medicine and the American Heart Association for the attainment of health benefits through physical activity (150 minutes per week - min/week)[17]. The average competitive practice time was 152.6 min/week (SD ±200.2; median=100 min/week).

The most commonly reported reasons for the competitive practice of sports were the search for health (52.9%, n=9), followed by physical fitness, quality of life, and socialization, with 23.5% (n=4) each (Figure 1). Among those who performed the sport competitively, 41.2% (n=7) reported doing weight training, with the highest frequency of twice a week (n=4).

Table I - Description of the sample according to sociodemographic, behavioral and nutritional variables. Pelotas, RS, 2014.

Variables	n	%
Age (in years)		
65-70	18	62.1
71 or above	11	37.9
Marital status		
Married/living common law	25	86.2
Single	4	13.8
Education (in years of schooling)		
12-16	7	24.1
17-20	22	75.9
Skin color		
White	27	93.3
Non-white	2	6.7
Income (in minimum wages)		
1-5	5	17.2
6-10	12	41.4
11-15	5	17.2
16 or more	7	24.1
Smoking		
Never smoked	16	55.2
Former smoker	13	44.8
Body Mass Index		
<25.0 kg/m^2	8	27.6
25.0-29.9 kg/m^2	17	58.6
≥30 kg/m^2	4	13.8

All the subjects were also asked about their participation in sports in a noncompetitive way. The reports showed that 44.8% (n=13) of the respondents practiced sports noncompetitively, and only one individual who practiced one sport competitively also practiced another one, in a noncompetitive way. Among the sports practiced noncompetitively, the most often reported was tennis (92.3%, n=12). On the weekly practice frequency, 61.5% (n=8) reported doing these sports activity up to three times a week, 23.1% (n=4) practiced them four times, and 15.4% (n=2), at least five times or more. More than 4/5 of the individuals practicing sports noncompetitively (84.6%, n=11) managed to meet, in result of their training only, the minimum recommendations for weekly physical activity practice time, set by the American College of Sports Medicine and the American Heart Association for the attainment of health benefits through physical activity (150 minutes per week - min/week)[17].

The average noncompetitive practice time was 332.3 min/week (SD ±187.9; median=300 min/week). The most commonly reported reasons for noncompetitive practice were health (46.1%, n=6) and quality of life (46.1%, n=6), followed by physical fitness (38.4%, n=5) (Figure 1). Among those who performed the sport not competitively, 30.8% (n=4) reported doing weight training exercises, twice a week being the highest practice frequency, just as reported among the competitive ones (n=2).

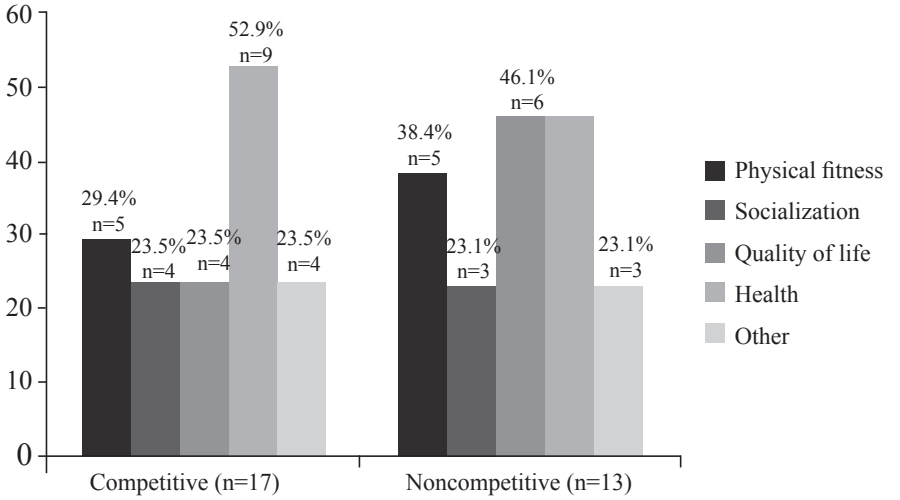

Figure 1 - Distribution of reasons for performing competitive and noncompetitive sports practices. Pelotas, RS, 2014.
*The sum of n subjects practicing sports competitively and noncompetitively equals 30 because one individual reported performing sports in both ways.

Among the total of individuals who practiced competitive and noncompetitive sports, the frequency of injury was 35.3% (n=6) and 38.5% (n=5), respectively. Among those who reported injuries, the most frequent ones were meniscus injuries, in the competitive group (50.0%, n=3) (Figure 2), and epicondylitis (60.0%, n=3) among those practicing noncompetitively (Figure 3). Knee (27.3%, n=3), elbow (27.3%, n=3) and shoulder (18.2%, n=2) were cited as the most affected body regions. The injuries occurred during the sports practice, and the dominant side was the most affected (63.3%, n=7). The treatment time of the injuries, despite the amplitude difference, appeared very similar when measured categorically. When informing about the need for medical care, surgery, use of medication, and physical therapy, the frequencies found were, respectively, 54.5% (n=6), 27.3% (n=3), 54.5% (n=6) and 45.5% (n=5). One individual (9%) stated that the injury sustained has occurred repeatedly and 27.3% (n=3) reported feeling some pain, impairment or sequel after the injury.

Of the individuals in both forms of sports practice, 13.8% (n=4) had some bone or muscle disease, or previous injury to the practice, but none of them pointed out that such lesion(s) would have been worsened or become recurrent as a result of the practice of sports. When asked if they had had a health problem that has been minimized owing to sports practice, 24.1% (n=7) of the subjects responded positively to the question, and systemic arterial hypertension and stroke appeared as the most cited ones, both with 28.6% (n=2).

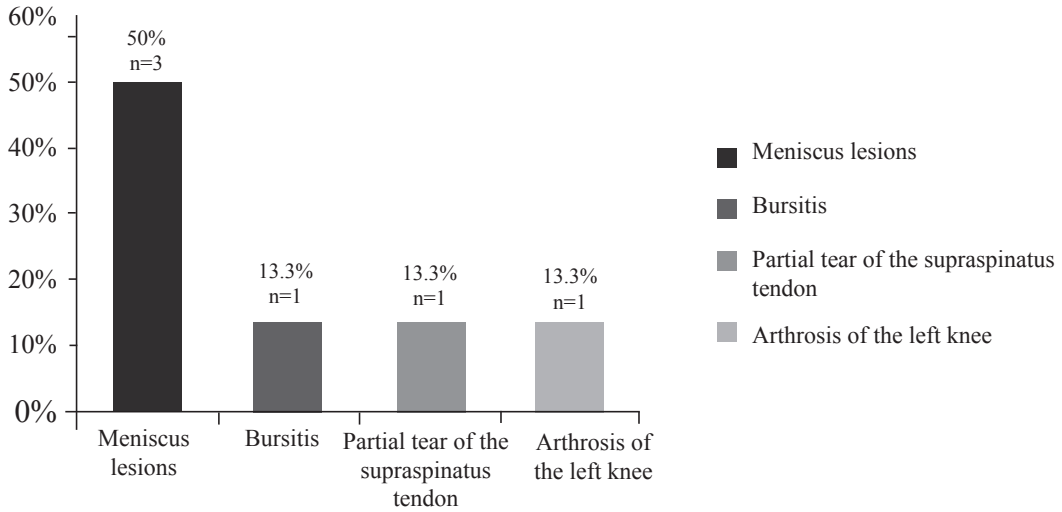

Figure 2 - Distribution of injuries in individuals practicing sports competitively. Pelotas, RS, 2014 (n=6).

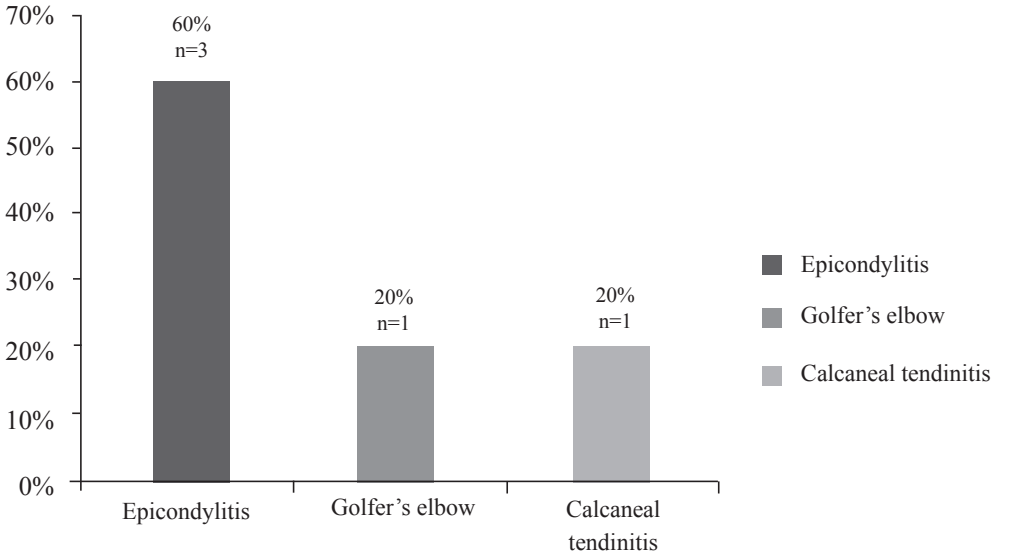

Figure 3 - Distribution of injuries in individuals practicing sports noncompetitively. Pelotas, RS, 2014 (n=5).

DISCUSSION

The age range (65-86 years) of the subjects evaluated in this study was similar to that found in two other studies[10,18], which reported ranges from 70 to 81 years, and 69 years or more, respectively.

The individuals studied in this research presented higher schooling and income levels than those found in studies of the elderly population of the same municipality[19,20], which showed a relationship between income and schooling associated with functional impairment with advancing age. Individuals involved in physical activities during their leisure time, such as sports, have higher levels of education and family income than those who do not practice such activities[21]. Moreover, in this study the clubs from which the subjects practicing sports were selected are located in middle-class areas of the city of Pelotas, which may have influenced the socioeconomic aspects.

Regarding the elderly's referred BMI in this study, the mean was very similar to that described in Portuguese physically-active elderly[22] and in the elderly population of the city of Pelotas, assessed by the same self-reported method[23]. The proportion of individuals in the obesity category was much lower than that found in population-based study conducted in São Paulo-SP[24]. Study[25] held with the population of the same municipality of the current research showed that the risk of being obese was 7.4 times higher among males aged over 60 compared with those aged 20 to 29 years. The fact that the sample of this research was only composed of individuals who practiced some kind of sports activities may influence directly and positively their weight (weight reduction) and other behavioral factors (such as nutrition and drinks consumption) that affect them and, therefore, their BMI.

In the current study, the reasons reported for the practice of competitive and noncompetitive sports differ in frequency order, but not as regards the options of reasons and the rating frequency. For the competitive practice, the reported reasons were the pursuit of health, followed by physical fitness, quality of life and socialization. The most frequent reasons for the noncompetitive practice were, in descending order: quality of life, pursuit of health and physical fitness. A study conducted in the city of Recife-PE[26] evidenced reasons similar to those found here, given that, among the participants aged above 60 years, the most often cited factors were health and quality of life, indicators that confirm the concern with a healthier lifestyle.

The subjects practicing sports in competitive and noncompetitive ways in this study have reached, only owing to such practices, the minimum recommendations endorsed by the American College of Sports Medicine and the American Heart Association for the attainment of health benefits through physical activity (150 min/week) [17]. The studied subjects' weekly frequency of sports practice, coupled with the intermittent efforts of high and moderate intensity of those practices, help them to reach the minimum recommendations regarding duration and frequency to obtain health benefits. The results found in this study gain importance as we see that, in a population-based study in the city of Campinas, the prevalence of sedentary/insufficiently active individuals during leisure time was 77.8%[27]. Nevertheless, one cannot forget that the practice of weight/resistance training is also a key component of physical activity recommendations for health[7]. Despite

that, the frequency of such practice found in the current research is still low, though higher than the frequency in the population. Similar values (37.5%) of weight training were found among over-60-year-old tennis players residing in the municipality of Pelotas[28].

Over the years, the reasons perceived for the practice continuity may reinforce other variables (more than one reason for adherence) as the maintenance requirements add up and establish stronger support over time[29]. Such statements seem to fit in the sample studied in the current research, given that the median practice time was 20 years, and 97.0% of the studied individuals reported at least eight years of competitive practice.

The frequency of lesions was found similar between the subjects practicing sports in competitive and noncompetitive ways, with knee, elbow and shoulder as the most affected body parts. Systematic review involving subjects aged 45 years or above[30] found that the parts of the body most affected by injuries are the lower limbs. Study evaluating the management of tendon injuries of the upper limb[31] concluded that the main injuries in sports such as tennis, volleyball, handball, among others, are those involving regions like shoulder, elbow, wrist and hand. In the case of soccer, the most common anatomical locations of lesions are the lower limbs, head, trunk and upper limbs[32]. Regarding swimming, research assessing the incidence of musculoskeletal injuries in athletes of this sport[33] stated that, as to the location of the injury, the shoulder region, knee and elbow are the most affected parts. Compared with the findings of the current research, there was variability concerning the affected regions, but only the knee region was found in accordance with the said studies[30,32,33].

Anyone who practices sports is likely to be injured, even in noncompetitive activities[15]. The injury values found in this study may have been similar because of the competitive character, which might be present even if the sport is practiced in a noncompetitive way. Nevertheless, a systematic review addressing injuries in the elderly does not suggest that these individuals have an increased risk of injuries due to the participation in physical activities for leisure[34]. Actually, strong evidence of the health benefits of physical activity for an elderly population exceeds the nonparticipation in light of the small risk of injury[34].

Another factor found is the fact that one of the sports evaluated in the present study involves constant body contact, that is, seven-a-side soccer, and the second most frequent sport (tennis) demands a lot of the joints of upper and lower limbs, what confirms the types of lesions found in this study. Epidemiological study of foot injuries in recreational sports practice has shown that soccer, and specially *futsal* (35%), are the sports that account for the higher incidence of injuries in this body region[35].

In the current study, the injuries occurred during the sports practice and the dominant side was the most affected, because of its greater use in the execution of movements related to the practice, similar findings to those of another study[36] with athletes playing *futsal*, where the lesions found were located on the dominant side of the body.

The treatment time of the injuries, despite the amplitude difference, was very similar when categorically measured in this study. Medical care and medication use were cited most frequently, followed by physical therapy and surgery. The results were similar to those found in a classic study of elderly people who remain active by practicing sports[18], in which rest, physical therapy, and orally-administered drug treatment were the most cited ones.

The results obtained in this study showed frequencies of injuries above 30% among individuals practicing competitive and noncompetitive sports. This fact has major relevance given that sport, particularly the team sport, is a physical activity that associates a number of people aiming, among many goals, to improve health and quality of life. Promoting actions that prevent the main injuries reported in this study is, therefore, essential for the continuity of a safer practice of this type of activity.

Some points should be considered when evaluating the present study. First, convenience sample does not allow to extrapolate the data for the total population of elderly who practice sports; the results, however, can indicate possible directions of the events. Another factor that should be taken into account are the self-reported measures of height and weight, which are the basis for calculating the BMI. Despite being widely used in epidemiological studies, they are subject to error information by the respondents, which may lead to inaccurate values of BMI. Reported information is subject to recall bias, specifically regarding the type of injury sustained by the individual, since this may have suffered more than one kind of injury at different stages of the physical activity, and only remember the one(s) that caused him more discomfort[15].

CONCLUSION

This study found that the presence of injuries in elderly individuals practicing sports is relevant, even among those who practice them in a noncompetitive way, the most frequent being epicondylitis and, among those who practice competitively, meniscus lesions.

REFERENCES

1. Priyadarshini SR, Sahoo PK, Bhuyan SK, Misra SR, Pati AR. Growing Old is Mandatory But Growing Up is Optional: An Explanation to Geriatrics. J Clin Diagn Res. 2014;8(12):22-4.

2. Salomon JA, Wang H, Freeman MK, Vos T, Flaxman AD, Lopez AD, et al. Healthy life expectancy for 187 countries, 1990-2010: a systematic analysis for the Global Burden Disease Study 2010. Lancet. 2012;380(9859):2144-62.

3. Instituto Brasileiro de Geografia e Estatística - IBGE. Síntese de indicadores sociais: uma análise das condições de vida da população brasileira 2010 [accessed on 2015 Mar 8]. Available from: http://www.ibge.gov.br/home/estatistica/populacao/condicaodevida/indicadoresminimos/sinteseindicsociais2010/SIS_2010.pdf

4. Rigo MLN, Teixeira DC. Efeitos da atividade física na percepção de bem-estar de idosas que residem sozinhas e acompanhadas. UNOPAR Cient Ciênc Biol Saúde. 2005;7(1):13-20.

5. Mazo GZ, Mota J, Gonçalves LHT, Matos MG, Carvalho J. Atividade física e qualidade de vida de mulheres idosas da cidade de Florianópolis, Brasil. Rev Port Ciênc Desporto. 2008;8(3):414-23.

6. Alencar NA, Ferreira MA, Vale RGS, Dantas EHM. Nível de atividade física em mulheres idosas. Rev Bras Promoç Saúde. 2011;24(3):251-7.

7. World Health Organization - WHO. Global recommendations on physical activity for health. Geneva: WHO; 2010.

8. Pontes-Barros JF, Alves KCAO, Dibai Filho AV, Rodrigues JE, Neiva HC. Avaliação da capacidade funcional de idosos institucionalizados na cidade de Maceió - AL. Rev Bras Promoç Saúde. 2010;23(2):168-74.

9. Sociedade Brasileira de Medicina do Esporte. I Consenso de Petrópolis: posicionamento oficial sobre esporte competitivo em indivíduos acima de 35 anos. Rev Bras Med Esporte. 2001;7(3):83-92.

10. Gerson L, Stevens J. Recreational injuries among older Americans, 2001. Inj Prev. 2004;10(3):134-8.

11. Del Vecchio FB, Gonçalves A. Epidemiologia descritiva das lesões desportivas. Rev Bras Med. 2012; 69(11): 323-27.

12. McBain K, Shrier I, Shultz R, et al. Prevention of sports injury I: a systematic review of applied biomechanics and physiology outcomes research. Br J Sports Med. 2012;46(3):169-73.

13. Knuth AG, Malta DB, Dumith SC, Pereira CA, Morais Neto OL, Temporão JG, et al. Prática de atividade física e sedentarismo em brasileiros: resultados da Pesquisa Nacional por Amostra de Domicílios (PNAD)–2008. Ciênc Saúde Coletiva. 2011;16(9):3697-705.

14. Souza M, Monteiro H, Del Vecchio FB, Gonçalves A. Referring to judo's sports injuries in São Paulo State Championship. Science & Sports. 2006; 21(5):280–4.

15. Rombaldi AJ, Silva MC, Barbosa MT, Pinto RC, Azevedo MR, Hallal PC, et al. Prevalência e fatores associados à ocorrência de lesões durante a prática de atividade física. Rev Bras Med Esporte. 2014;20(3):190-4.

16. World Health Organization - WHO. Physical status: the use and interpretation of anthropometry. Geneva: WHO; 1995.

17. Haskell WL, Lee IM, Pate RR, Powell KE, Blair SN, Franklin BA, et al. Physical activity and public health: updated recommendation for adults from the American College of Sports Medicine and the American Heart Association. Med Sci Sports Exerc. 2007;39(8):1423-34.

18. Little RM, Paterson DH, Humphreys DA, Stathokostas L. A 12-month incidence of exercise-related injuries in previously sedentary community-dwelling older adults following an exercise intervention. BMJ Open. 2013;20:3(6):e002831.

19. Del Ducca GF, Silva MC, Hallal PC. Incapacidade funcional para atividades básicas e instrumentais da vida diária em idosos. Rev Saúde Pública. 2009;43(5):796-805.

20. Del Ducca GF, Silva MC, Silva SG, Hallal PC. Incapacidade funcional em idosos institucionalizados. Rev Bras Ativ Fis Saúde. 2011;16(2):120-4.

21. Salles-Costa R, Werneck GL, Lopes CS, Faerstein E. Associação entre fatores sócio-demográficos e prática de atividade física de lazer no Estudo Pró-Saúde. Cad Saúde Pública. 2003;19(4):1095-105.

22. Mota J, Ribeiro JL, Carvalho J, Matos MG. Atividade física e qualidade de vida associada à saúde em idosos participantes e não participantes em programas regulares de atividade física. Rev Bras Educ Fis Esp. 2006;20(3):219-25.

23. Silveira EA, Kac G, Barbosa LS. Prevalência e fatores associados à obesidade em idosos residentes em Pelotas, Rio Grande do Sul, Brasil: classificação da obesidade segundo dois pontos de corte do índice de massa corporal. Cad Saúde Pública. 2009;25(7): 1569-77.

24. Barbosa AR, Souza JMP, Lebrão ML, Marucci MFN. Estado nutricional e desempenho motor de idosos de

São Paulo. ABM Rev Assoc Med Bras. 2007;53(1): 75-9.

25. Gigante DP, Dias-da-Costa JS, Olinto MTA, Menezes AMB, Macedo S. Obesidade da população adulta de Pelotas, Rio Grande do Sul, Brasil e associação com nível sócio-econômico. Cad Saúde Pública. 2006;22(9):1873-9.

26. Freitas CMSM, Santiago MS, Viana AT, Leão AC, Freyre C. Aspectos motivacionais que influenciam a adesão e manutenção de idosos a programas de exercícios físicos. Rev Bras Cineantropom Desempenho Hum. 2007;9(1):92-100.

27. Borim FSA, Azevedo Barros MB, Neri AL. Autoavaliação da saúde em idosos: pesquisa de base populacional no Município de Campinas, São Paulo, Brasil. Cad Saúde Pública. 2012;28(4):769-80.

28. Silva MC, Marins EF, Spieker CV. Prática do tênis em idosos: estudo descritivo na cidade de Pelotas/RS/ Brasil. Estud Interdiscip Envelhec. 2014;19(1):235-48.

29. Saba FKF. Aderência: à prática do exercício físico em academias. São Paulo: Manole; 2001.

30. Dunsky A, Netz Y. Physical activity and sport in advanced age: is it risky? - a summary of data from articles published between 2000-2009. Curr Aging Sci. 2012;5(1):66-71.

31. Silva RT. Lesões do membro superior no esporte. Rev Bras Ortop. 2010;45(2):122-31.

32. Cohen M, Abdalla RJ, Ejnisman B, Amaro JT. Lesões ortopédicas no futebol. Rev Bras Ortop. 1997;32(12):940-4.

33. Silva RS, Moraes LC, Dutra MC, Zaniboni GR, Silva DR, Hessel M, et al. Incidência de lesões musculoesqueléticas em nadadores de águas abertas. Coleç Pesqui Educ Fís. 2013;12(1):133-40.

34. Stathokostas L, Theou O, Little RMD, Vandervoort AA, Raina P. Physical Activity-Related Injuries in Older Adults: A Scoping Review. Sports Med. 2013;43(10):955-63.

35. Luciano AP, Lara LCR. Estudo epidemiológico das lesões do pé e tornozelo na prática desportiva recreacional. Acta Ortop Bras. 2012;20(6):339-42.

36. Santos Filho JF, Ravagnani FCP, Reis Filho AD. Frequência de lesões de joelho em atletas de futebol de salão. Lecturas EFDeportes. 2011;16(159):1-5.

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