



Original article

Injuries among amateur runners[☆]



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ABSTRACT

Objectives: To determine the frequency and severity of injuries that affect amateur runners. **Methods:** This study was conducted by means of a questionnaire applied to 204 amateur runners. Individuals who were under the age of 18 years and those who were unpracticed runners were excluded. The data gathered comprised the number, type, site and degree of severity of the injuries and the individuals' age and sex.

Results: It was observed that male athletes predominated. The mean age was 32.6 ± 9.3 years with a range from 18 to 68 years, and the injuries were classified as mild, keeping the athlete away from practicing running for fewer than eight days. Sprains, blisters and abrasions were the most frequent injuries, located most often on the lower limbs and predominantly on the feet.

Conclusion: In practicing running, sprains, blisters and abrasions occur frequently, but are mild injuries. They mostly affect the lower limbs.

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Lesões em praticantes amadores de corrida

RESUMO

Objetivos: Verificar a frequência e a gravidade das lesões que acometem praticantes amadores de corrida.

Métodos: O estudo foi conduzido por meio de questionário aplicado a 204 corredores amadores. Foram excluídos do estudo menores de idade e pessoas sem prática de corrida. Número, tipo, topografia e grau de gravidade das lesões, além de idade e sexo, foram os dados coletados.

Palavras-chave:

Corrida/lesões

Traumatismos em atletas

Exercício

[☆] Work performed in the Orthopedics and Traumatology Service, Hospital e Maternidade Celso Pierro, Pontifícia Universidade Católica de Campinas, Campinas, SP, Brazil.

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Resultados: Observou-se predomínio de atletas do sexo masculino, idade média de $32,6 \pm 9,3$ anos com variação de 18 a 68 anos. As lesões foram classificadas como leves e afastaram o atleta da prática de corrida por menos de oito dias. Entorses, lesões bolhosas e escoriações foram as lesões mais frequentes, localizadas mais frequentemente nos membros inferiores, com predomínio nos pés.

Conclusão: Na prática de corrida, entorses, lesões bolhosas e escoriações são frequentes, porém são leves e acometem mais os membros inferiores.

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Introduction

The importance of physical activity within the field of health-care has been increasing. This has been justified by the large amount of evidence showing that regular exercise practices have beneficial effects on individuals, as a factor for improving their health and quality of life. It is known that regular practicing of running is associated with improvement of blood glucose levels, cholesterol and cholesterol fraction concentrations and lean mass and bone percentages, among other benefits.¹

However, practicing sports activities exposes individuals to physical injuries, which may sometimes be even greater than the injuries among workers who perform repetitive movements. For example, this can occur among soccer players and such injuries keep these players away from their sport for a few days.² Bennell and Crossley³ demonstrated that exercising to exhaustion, without guidance or with inadequate guidance, may contribute toward a higher injury rate.

Running may give rise particularly to knee, ankle and foot injuries. These may affected up to 83% of amateur or competitive runners and thus impair their quality of life, either temporarily or definitively.⁴⁻⁸

Some studies have sought to ascertain the epidemiology of sports injuries in order to provide better indications for safer sports practices for given populations and to develop injury prevention strategies. Higher body mass index, presence previous injuries, use of improper footwear with an inappropriately low heel and a fallen navicular bone in women have been found to be predictive factors for injuries while running.^{6,9,10}

The classical definition of injuries was presented by Dvorak and Junge¹⁰: an injury is an event that occurs during training or a match that causes the sports player to be absent from the next training session or match. In this case, the injury is then followed by an investigation in order to make an anatomical diagnosis and provide treatment.

Injury classification according to severity is based on the length of absence from sports practice. Absences of one to seven days are taken to be mild; eight to 28 days, moderate; and greater than 28 days, severe.¹¹

The objective of this study was to ascertain the frequency and severity of injuries that affect individuals who are amateur runners.

Materials and methods

This study was approved by our institution's medical ethics committee under the number 20817613.8.0000.5481 and the approval number 407.082. It was conducted by means of a questionnaire that was applied to individuals frequenting a public park that has two running tracks: one that is cemented and the other that is irregular with small stones.

The individuals included in the study were adult amateur runners, and those under the age of 18 years were excluded.

Through the questionnaire, the following data were gathered: age, sex, schooling level, number of training sessions per week and mean duration of training per week, length of time for which the individual had been a runner, any occurrences of injuries while running, location of the injury, any need to take time off running and the length of such absences.

The severity of the injuries was classified as described by Carter et al.,¹² in accordance with the length of absence from running after the injury reported by the runner. These absences were classified as mild (one to seven days), moderate (eight to 28 days) or severe (greater than 28 days).⁸

Results

Interviews were conducted with 204 amateur athletes: 117 males (57.4%) and 87 females (42.6%). Their mean age was 32.6 ± 9.3 years, with a range from 18 to 68 years.

None of the interviewees were illiterate. Eleven (5.4%) had not completed high school education; 35 (17.1%) had completed high school education; 78 (38.3%) had started but not completed a university-level course; and 80 (39.2%) had completed a university-level course.

These athletes reported practicing running twice a week in 22.6% of the cases (46); from three to five times a week in 65.6% (134); and more than five times a week in 11.8% (24). For 32.5% of the athletes (66), their training was every day, with a duration of less than 1 h and 30 min; for 53.8% (110), its duration was from 1 h and 30 min to 3 h; and for 13.7% (28), its duration was more than 3 h. Among all the interviewees, 36 (17.7%) had been training for less than six months, 47 (23%) for six months to one year; and 121 (59.3%) for more than one year.

Eighty-five of the athletes (41.6%) reported that they had had one or more types of injuries resulting from this sport.

Table 1 – Distribution of the number of athletes injured according to age group.

Age (years)	Total number of athletes	Number of athletes with injuries	% injured out of total number of athletes injured	% injured out of number of athletes in the same age group
18-30	104	49	57.7	47.1
31-60	81	30	35.3	37.0
>60	19	6	7.0	31.5
Total	204	85	41.6	-

Table 2 – Types of injury resulting from this sport.

Types of injury	N	(%)
Sprain	45	29.9
Blisters	30	19.9
Excoriation	30	19.9
Distension	15	9.9
Contusion	12	7.9
Flexural eczema	8	5.3
Dislocation	3	2.0
Fracture	2	1.3
Others	6	3.9
Total	151	100

Table 3 – Anatomical locations of the injuries resulting from this sport.

Location	N	(%)
Head/neck	4	2.6
Shoulder	8	5.2
Elbow	12	7.8
Wrist	6	3.9
Entire upper limb	26	17.3
Hip	8	6.7
Thigh	3	2.4
Knee	56	46.2
Lower leg	6	4.9
Foot	28	23.2
Ankle	20	16.6
Entire lower limb	121	80.1
Total	151	100

Friction between foot and shoe, sprains and falling to the ground were the mechanisms most often reported as responsible for these injuries.

Table 1 presents the injury distribution according to the athletes' age group.

In relation to the period since starting to practice running, 71 athletes reported that they had suffered only one type of injury, 32 reported two types, five reported three types and one reported four types; thus totaling 151 injuries in 85 athletes, which corresponded to a mean of 1.8 injuries per athlete. In relation to the diagnosis, we found that the most frequent types were sprains of the foot and ankle, blisters and excoriations. Table 2 presents the types of injury resulting from this sport that the athletes reported.

Regarding the anatomical location of the injuries, they occurred in the lower limbs (78.9%), upper limbs (18.54%) and head (2.6%). Injuries to the feet and ankles predominated (40.3%). Table 3 presents the anatomical locations of these injuries.

In relation to the degree of injury, among the 85 runners who had presented some type of injury, 19 (22.3%) had suffered

Table 4 – Degree of severity of the injuries resulting from this sport.

Degree of injuries	Number of athletes	Percentage of all injuries
Mild	40	47.0
Moderate	26	30.6
Severe	19	22.4
Total	85	100

injuries classified as severe and thus remained absent from running practice for more than 28 days. Two of these runners had presented fractures (one in the wrist and the other in the ankle), 14 had presented foot and ankle sprains and three had suffered hip dislocation. Moderate injuries, with absence from running practice of between eight and 28 days, were found among 26 athletes. However, the majority of the cases had presented mild injuries with absences of less than eight days. Table 4 presents the degree of severity of the injuries.

Discussion

Popular participation in street running has been increasing significantly within our setting and individuals with regular moderate training activities can be called amateur runners. Regular running practice brings a series of physical and mental benefits to its practitioners, but injuries relating to running are common among amateur runners, at rates ranging from 14 to 50% per year.^{11,13-15} These injuries seem to have many causes, such as age, sex, experience, fitness, weather conditions, use of appropriate footwear, type of footfall, type of ground and excessive use, among others.¹³

This study confirmed that the incidence of these injuries is high. In a systematic review on the incidence of lower-limb injuries among long-distance runners, van Gent et al.⁶ found that the rate of low-limb injuries ranged from 26 to 92.4%.

The injury distribution according to sex in the present study was in line with data in the literature showing that injuries occur predominantly among males,¹³ although other studies have not found this difference.⁴

Runners between the ages of 18 and 30 years suffered more injuries than older runners, which was discordant with other studies, which found more injuries among runners aged 30-45 years.^{13,14}

The present study showed that the injuries were predominantly in the lower limbs. The knees, ankles and feet were the regions most affected.¹⁶

Studies conducted among long-distance runners who ran more than 5 km per training session have reported frequencies of knee injuries ranging from 7.2 to 50%, lower-leg injuries in

9 to 32.2%, foot injuries in 5.7 to 39.3%, thigh injuries in 3.4 to 38.1%, ankle injuries in 3.9 to 16.6% and hip injuries in 3.3 to 11.5%.⁶ Lun et al.¹⁷ found among recreational runners that 79% of them had injuries after six months of training with a mean frequency of three training sessions per week. The men had higher frequency of knee injuries, while the women had higher frequency of foot injuries.

The types of injury most commonly reported in the present study were skin injuries (blisters and excoriations), followed by sprains. It is known that skin injuries and sprains are frequently found among runners, along with cramps, hematomas and ankle sprains,⁶ although another study found that tendinopathy and muscle injuries predominated among marathon runners in São Paulo.¹⁴

It was also observed that the great majority of the athletes interviewed had mild injuries, which kept them away from sports practice for up to eight days. This shows that because running is a sport without direct physical contact, it leads to injuries of lower severity than those of other sports in which physical contact is more common, such as soccer.

Because this study was based on interviews, one limiting factor was that the body mass index, type of footwear used and type of footfall were not analyzed, which may have influenced the results.

Conclusions

The practice of running may give rise to high numbers of knee, foot and ankle injuries among its practitioners, such as sprains, blisters and excoriations. However, the majority of these are classified as mild, with a rapid return to sports practice.

Conflicts of interest

The authors declare no conflicts of interest.

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