

Consumption of analgesics among runners of the Poznań Marathon

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Abstract

Introduction. Marathons and half-marathons have become a popular physical activity. However, they can lead to overloading of the locomotor system and, consequently, to running-related musculoskeletal injuries. Some athletes participating in marathons in Europe or in the USA are known to take analgesics before or during the run to relieve existing or anticipated pain.

Aim of Study. The goal of this study was to establish whether and to what extent Polish amateur marathon runners use analgesics. **Material and Methods.** A total of 82 runners (58 men and 24 women) who took part in the Poznań Marathon on 12 October 2014 were studied. The distributed survey included, in addition to personal data, questions about the extent and reasons for taking analgesics, awareness of their potentially harmful effects, and the type of painkillers used. **Results.** It was found that 18.3% of the marathon runners used analgesics due to actual or expected pain. Painkillers were used more often by women (25.0%) compared to men (15.5%). The athletes were aware (43.6%) that using these drugs can be harmful for their body and increase the possibility of injury because of pain suppression (38.2%); however, this knowledge did not prevent 33.3% of the women and 66.7% of the men from using painkillers. **Conclusions.** The Poznań Marathon participants used painkillers before (73.3%) or during (33.3%) the run. The awareness that analgesics can be harmful when used before or during a marathon did not stop some participants from taking them (53.3%). It is recommended to implement an awareness-raising program highlighting the risks of using painkillers, especially non-steroidal anti-inflammatory drugs (NSAID).

KEYWORDS: marathon, pain, injury, analgesics, physical exercise, athletes.

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What is already known on this topic?

Long-distance running is becoming one of the most popular physical activities enjoyed by people around the world, including Poland. The permanent physical strain during an effort such as a marathon leads to pain and running-related musculoskeletal injuries. To prevent such consequences, many athletes take analgesics before or during marathons, competitions or even training; however, the use of painkillers before participating in a sporting event may cause undesirable adverse effects which exacerbate as the analgesic dose increases.

Introduction

Sport activity is associated with many beneficial effects; however, poor training technique, intensive and long physical efforts as well as different risk factors may predispose athletes, especially amateurs, to different running-related injuries. In the case of long-distance runners, this concerns particularly lower limb overuse and the resulting injuries affecting muscles, tendons, and bones [1, 2, 3].

It was found that participants of demanding sports events such as the marathon, half-marathon or triathlon, especially amateurs, took analgesics before or during

the event to relieve existing pain or pain anticipated during such activity. These observations are confirmed by the increasing number of studies carried out in Europe and the USA which deal with the issue of consumption of analgesics by marathon runners [4, 5]. A search in the National Library of Medicine (Pub Med) database browser for the keywords “MARATHON” and “ANALGESICS” in January 2015 retrieved 31 papers that have been published in the last 40 years, from 1974 to 2015; however, over 48% of these studies were published in the last ten years.

The use of analgesic and/or anti-inflammatory drugs, beside their positive pharmacological effects, has also side effects, especially in organisms exposed to a long physical effort. To the best of the authors' knowledge, there are no studies in Poland describing the problem of analgesic abuse by marathon participants, especially amateurs. The aim of this pilot investigation was, therefore: (1) to find out whether Polish amateur marathon runners use analgesics at all; and (2) to assess the scale of this problem in Poland with reference to the case of the Poznań Marathon.

Material and Methods

An anonymous survey of a total of 82 runners (58 men and 24 women), which accounted for 1.3% of all finishers of the Poznań Marathon held on 12 October 2014, was designed to describe certain aspects of marathon running which have been unknown to date. All of the survey participants had previously taken part in marathons and half-marathons organized by different contributors.

The investigated participants voluntarily filled out a questionnaire on site or via e-mail. In addition to personal data (sex, age, body mass and body height, address/place of residence, level of education, and number of marathons and half-marathons in which they took part), the survey included questions about

the extent and reasons for taking analgesics, awareness of their potentially harmful effects, and the type of painkillers used. The data were statistically analyzed using the Statistica 10.0 software package.

Results

The pilot study carried out on a group of long-distance runners revealed a new problem in Poland – the use of painkillers in amateur sport. The questionnaire was answered mostly by young participants (32 ± 8.1 years of age), with only a small quota of men and women in their 40s – two and ten, respectively. The BMI of the tested group exceeded 25 in 16.7% of women and 27.5% of men. The relevant data, including information about the place of residence and level of education, are presented in Table 1.

It was found that 18.3% of the studied marathon runners gave an affirmative answer to the question “Did you take any painkillers immediately before the marathon or half-marathon or during the run?” (Figure 1A). In this group, 11 persons used the drug before, 5 during, and 1 before and during the marathon. All runners said that actual pain was the cause for the intake of these drugs; however, three persons reported to have used painkillers as a preventive measure to avoid potentially stronger pain occurring during the run.

It was found that painkillers were used more often by women (25.0%) compared to men (15.5%) (Figure 1A). The runners took Ketoprofen, Ibuprofen, Diklofenac, and Paracetamol; however, the most frequently used drug, both by men and women, was Ibuprofen, accounting for 60% of the cases.

The answers provided to the next question clearly demonstrated that the athletes were also aware that using analgesics during physical exercise can be harmful for their organism. The majority of the participants were aware of this fact (67.1%; 69.0% of men, 62.5% of women) (Figure 1B). Moreover, the athletes understood

Table 1. Description of the investigated group of participants in the Poznań Marathon

Sex	Age		BMI		Place of residence (%)			Level of education (%)		
	\bar{x}	<i>SD</i>	\bar{x}	<i>SD</i>	Village	Small town	Large city	Primary	Secondary	Tertiary
Female (<i>n</i> = 24)	30.1	8.1	21.6	3.2	12.5	16.7	70.8	0.0	29.2	70.8
Male (<i>n</i> = 58)	32.8	8.1	24.1	2.4	8.6	19.0	72.4	1.7	17.3	81.0
Total (<i>n</i> = 82)	32.0	8.1	23.4	2.9	9.8	18.3	71.9	1.2	20.7	78.1

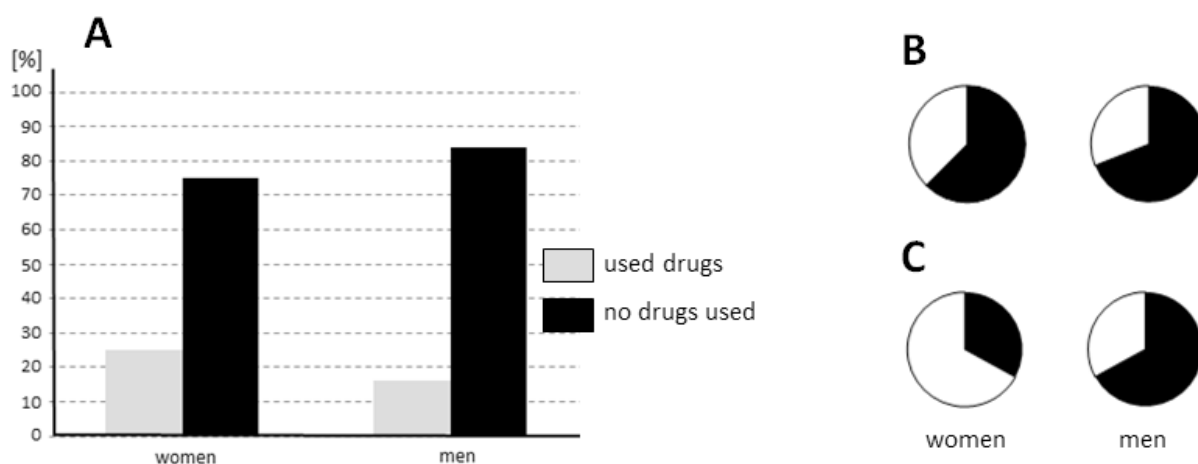


Figure 1. (A) Diagram showing the percentage of women and men taking painkillers before or during the marathon run. (B) Ratio of surveyed athletes (all women and men) who believe that the use of analgesics was harmful (black area) to those who believe otherwise (white area). (C) Percentage of marathon runners taking painkillers and aware that painkillers are harmful (black area)

that analgesics increase the possibility of injury because of pain suppression (38.2%). However, this knowledge did not prevent 33.3% of women and 66.7% of men from using painkillers (Figure 1C).

Discussion

In the last several years a growing interest in physical activity has been observed in Poland. One popular form of such activity is long-distance running. Many people take part in cyclically organized competitions such as cross-country runs, marathons and half-marathons. This trend corresponds to how free time is used in many European countries and the USA [6]. The age structure of Polish runners taking part in the Poznań Marathon, their place of residence (larger cities) and the level of education (tertiary) are similar to the situation observed in other countries [1, 7].

Long-distance running, apart from its attractiveness and the fad factor, is also a significant load on the organism [1, 8], especially for the musculoskeletal system, and, as a consequence, leads to different running-related musculoskeletal injuries [3, 9, 10], with incidence rates ranging between 18.2% and 92.4%, or 6.8 to 59 injuries in 1,000 hours of running [3]. Other data show that 2% to 8% of marathon participants will seek medical attention during or immediately after completing the race [11, 12]. Both injuries as well as the indirect effects of overloads to the musculoskeletal system are able to generate pain in athletes; however, its localization as well as the kind of affected tissue can differ. Undoubtedly, an important role is also played by the

differentiation of pain threshold and the effectiveness of the endogenous antinociceptive systems in athletes taking part in a marathon [13, 14, 15, 16].

The existence of pain or fear of pain causes that athletes, both amateurs and professionals, use painkillers to diminish or stop various types of pain [17]. Because such research has not been conducted in Poland to date, the authors carried out a pilot study to find whether a similar problem existed in Poland and to what extent. Our data show that a group of participants (18.3%) used painkillers, more before ($n = 11$) than during the run ($n = 5$). As the reasons for such behaviour, the marathon runners indicated actual pain, and in three cases, the desire to avoid it. It should be noted that the percentage of marathon runners who used analgesics did not differ from the observations regarding marathons in other countries. Reid et al. [18] found that 13% of athletes taking part in the marathon in Christchurch used non-steroidal anti-inflammatory drugs 24 hours before the start. Also, in Switzerland, more than 30% of the Jungfrau Marathon participants took painkillers [4], while in the Bonn Marathon in 2009 there were 61.5% of such persons [7]. One year ago, in the following edition of this marathon, the percentage of such runners decreased, but was still high at 49% [5].

The painkillers used by the Poznań Marathon runners, men and women alike, namely ibuprofen, ketoprofen, diclofenac or paracetamol, did not differ from the drugs taken by long-distance runners abroad [5, 7]. A large majority of participants (67.1%) were aware that the use of analgesics before or during an intensive physical load

may have serious destructive impact on health. However, in spite of their knowledge, 53.3% of the participants who declared using analgesics in general decided to use them also in this case. The observation that the women taking part in the Poznań Marathon used painkillers more frequently correlates with the data from other runs, i.e. Bonn in 2010, where the proportion of women was also higher compared to men, 61% and 42%, respectively [5]. The use of analgesics or anti-inflammatory drugs during physical exercise, apart from short-term antinociceptive effects, has also some significant side effects. None of the painkillers used by runners is neutral for the gastric mucosa and the digestive tract, and may dispose the users to the disturbance of the acid-base homeostasis [18, 19] and deteriorate the kidney function [4]. Because of these harmful effects of taking painkillers by participants of major sporting events, especially long-distance runs, it is recommended to implement an awareness-raising program highlighting the risks of using painkillers, especially non-steroidal anti-inflammatory drugs (NSAID), addressed to athletes [20] or even to non-training healthy children [21].

Conclusions

Nearly one in five Poznań Marathon participants used painkillers before (73.3%) or during (33.3%) the run because of actual or anticipated pain. The awareness that analgesics can be harmful when used before or during a marathon did not stop some from taking them (53.3%). Although in the studied group 67.1% of the runners believed that analgesics used before or during an extreme physical load may generate negative health effects, it is recommended to implement an awareness-raising program highlighting the risks of using painkillers, especially non-steroidal anti-inflammatory drugs (NSAID).

What this paper adds?

Some papers published to date show clearly that athletes, especially amateurs taking part in city marathons, use painkillers to tolerate pain during this extreme physical stress. These studies are usually limited to a certain event in a particular city or country, and are generally not repeated. This paper is the first one to demonstrate that in Poland marathon participants also take painkillers before or during the run. The authors propose to stop this negative trend through an information campaign in partnership with the organizers of such events.

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