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BRIEF NOTE

Recovery sector of the Ironman triathlon race: Pain profile of triathletes and sector organization



Secteur de récupération des compétitions de triathlon Ironman : profil de douleur des triathlètes et organisation du secteur

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Summary

Introduction. – Triathletes exhibit a number of clinical conditions during races. Knowledge of pain prevalence and most affected body regions after finishing Ironman races could guide preventive programs. The objective of the study was to describe the pain profile of triathletes after finishing long-distance Ironman triathlon races based on the prevalence of pain complaints of the triathletes who sought treatment at the recovery sector.

Summary of facts and results. – 5,292 triathletes were treated during nine race editions. Previous to treatment, triathletes answered: “What parts of your body do you feel the worst pain?” and “Did you have any cramps during the race? If yes, where?”. The prevalence of

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triathletes who sought for recovery assistance was 33% and odds of a triathlete who starts the race seeks the recovery sector is 49:100. In all, 1.4% of the triathlete sought the recovery sector in pain absence, the odds is 1:100. The highest prevalence and odds of pain complaints were for anterior thigh, posterior leg, and posterior thigh regions. The highest prevalence and odds for cramps were in posterior thigh region.

Conclusion. – Approximately one-third of the triathletes starting a long-distance Ironman race sought treatment at the recovery sector with high prevalence of pain in the thighs and posterior region of legs.

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Résumé

Introduction. – Lors de courses de longues distances, les triathlètes présentent de nombreux symptômes cliniques. La connaissance de la prévalence de la douleur et des régions du corps affectées par celle-ci après une course, telle un Ironman, peut permettre de mettre en place un programme préventif et ainsi éviter ces douleurs. L'objectif de cette étude a été de décrire le profil de douleurs des triathlètes ayant achevé une course de longue distance, telle un Ironman. Ce profil a été identifié en se basant sur la prévalence des douleurs ressenties par les triathlètes qui ont cherché un traitement de récupération.

Synthèse des faits et résultats. – 5292 triathlètes ont été traités au cours de neuf éditions de courses. Avant le traitement, ces triathlètes ont répondu au questionnaire suivant : « Quelles parties de votre corps ressentez-vous le plus de douleur ? » et « Avez-vous eu des crampes pendant la course ? si oui, où se situaient-elles ? ». La prévalence des triathlètes qui ont demandé une assistance pour leur récupération était de 33 % tandis que les chances d'un triathlète qui commence la course en cherchant un traitement de récupération sont de 49/100. Au total, 1,4 % des triathlètes ont désiré un traitement en l'absence de douleur, les chances étant de 1 sur 100. La prévalence et les probabilités de douleur les plus élevées concernaient principalement les régions de la cuisse antérieure, de la jambe postérieure et de la cuisse postérieure. Concernant les crampes, la prévalence et les probabilités les plus élevées ont été observées dans la région de la cuisse postérieure.

Conclusion. – Environ un tiers des triathlètes qui se sont engagés dans un Ironman ont cherché un traitement de récupération ciblant particulièrement des douleurs dans les cuisses et la région postérieure des jambes.

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1. Introduction

Triathletes are expected to exhibit a high prevalence of pain complaints after finishing an Ironman race [1]. However, the prevalence of pain complaints after triathlon races has yet to be studied. Knowledge of pain prevalence and the most affected body regions could guide preventive programs to be included in training routines. Furthermore, training load seems to be correlated with pain in triathletes [2], and knowing pain characteristics after the Ironman race may help adjust workload ratios.

The expected high prevalence of pain complaints after the Ironman race also highlights the need for an adequate recovery process. Recovery after races and training might be as important as the training itself. For that reason, recovery services provided to triathletes during competitions may play an important role since there is evidence that interventions applied immediately after Ironman races have positive effects on pain [3]. However, managing the recovery sector in competitions with a large number of participants

could be complex. Information regarding characteristics and the number of athletes who seek recovery assistance may help clinicians and event organizers to plan and enhance their services. As such, the aim of the present study was to describe the pain profile of triathletes after Ironman triathlon races based on the prevalence of pain complaints in individuals who sought treatment in the recovery sector and present the likely characteristics of a recovery sector for competitions with a large number of participants.

2. Methods**2.1. Participants**

Participants were all of the triathletes treated in the recovery sector after nine Ironman events held in Florianópolis, Brazil, between 2008 and 2016. Triathletes sought out the sector voluntarily and their consent was obtained. The recovery sector was equipped with approximately

40 treatment tables where triathletes were assessed and treated for symptom relief and recovery assistance. Massage therapy was the most widely used treatment and other techniques, such as stretching or cryotherapy, were applied according to the triathletes' specific needs [3]. Triathletes who presented with medical conditions during treatment, such as altered state of consciousness, were immediately referred to the medical service. This is a descriptive and epidemiological study approved by the Santa Catarina State University ethics committee (register number 15225113.5.0000.0118).

2.2. Procedures

Before treatment, triathletes were asked if they were experiencing pain (yes or no) and if so, to identify the body regions where it was most intense. They were also questioned about the occurrence of cramps during the race (yes or no) and the body region where these occurred. Answers were pooled according to the following body regions: head, cervical region, shoulder, arm, forearm, wrist, hand, thoracic region, lumbar region, abdomen, hips, anterior thigh, posterior thigh, knee, anterior leg, posterior leg, ankle, and foot.

2.3. Statistical analysis

Based on the frequency of pain complaints and cramp occurrence, the prevalence and odds of each outcome were calculated [4]. The prevalence was calculated as the number of triathletes with the analyzed outcome divided by the number of triathletes treated (percentage). Odds of an outcome occur were calculated as the ratio between the number of triathletes with the analyzed outcome for every 100 triathletes without it. The variables of interest were: triathletes who sought the recovery sector, absence of pain, pain complaints and cramps occurrence. All of the triathletes that started the races were the population used to calculate the prevalence and odds ratios of triathletes who sought the recovery sector.

3. Results

Of the 16,101 triathletes that started the races (1.789 ± 50 triathletes/race), 5,292 (91% men) sought treatment in the recovery sector (588 ± 153 triathletes/race), corresponding to a prevalence of 33%. The odds of a triathlete who starts the race seeking the recovery sector were 49:100 (95% CI 47–51).

In all, 1.4% of the treated triathletes did not report pain, indicating that the odds of a pain-free triathlete seeking treatment in the recovery sector are 1:100 (95% CI 1–2).

Pain complaints were most prevalent in the anterior thigh (63%) (Fig. 1). The body regions with pain prevalence lower than 1% were: elbow (0.2%), abdomen (0.1%), forearm (0.1%), and wrist (0.04%). The odds of pain complaints are presented in Table 1.

The prevalence of cramps occurrence was in the posterior thigh (6%), anterior thigh (6%), posterior leg (5%), anterior leg (0.8%), foot (0.8%), arm (0.2%) and lumbar region (0.2%).

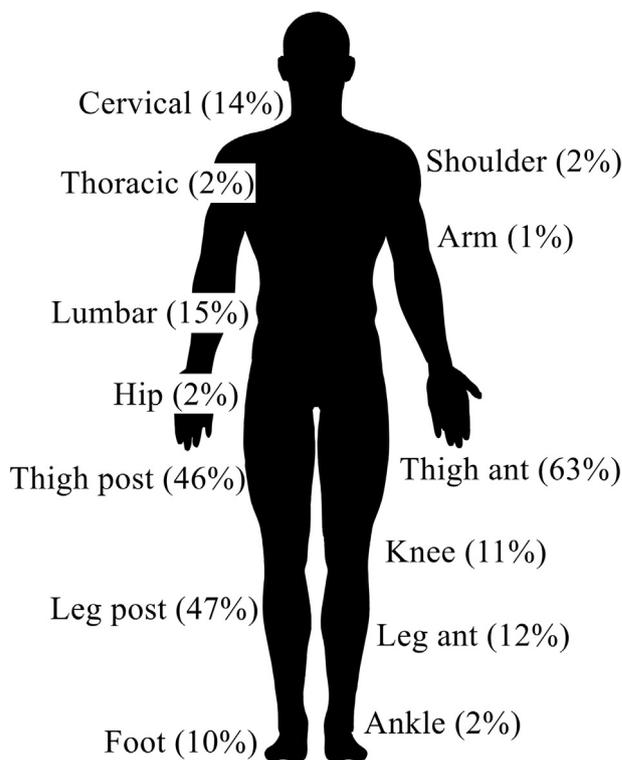


Figure 1 Prevalence of pain complaints (ant: anterior; post: posterior).

Table 1 Odds of pain complaint.

Body regions	Odds ^a (95% CI)
Anterior thigh	174 (164–184)
Posterior leg	88 (84–93)
Posterior thigh	84 (79–88)
Lumbar region	17 (16–19)
Cervical region	16 (14–17)
Anterior leg	13 (12–14)
Knee	13 (12–14)
Foot	11 (10–12)
Hip	2 (2–3)
Thoracic region	2 (2–3)
Ankle	2 (2–3)
Shoulder	2 (2–3)
Arm	1 (1–2)
Elbow	0.2 (0.1–0.4)
Abdomen	0.1 (0.1–0.3)
Forearm	0.1 (0–0.2)
Wrist	0.04 (0–0.1)

^a Ratio to 100 triathletes without the outcome.

The odds of a triathlete seeking treatment in the recovery sector after experiencing cramps during the race are 7:100 (95% CI 6–8) for the posterior thigh, 7:100 (95% CI 6–7) for the anterior thigh, 6:100 (95% CI 5–6) for the posterior leg, 1:100 (95% CI 0–1) for the anterior leg, and 1:100 (95% CI 0–1) for the foot.

4. Discussion

The present study is the first to report the prevalence of pain complaints after Ironman races. The high prevalence of post-race pain complaints was expected due to the exhaustive characteristics of this type of competition. The lower limbs were expected to be the most affected, based on previous findings regarding the higher prevalence of lower limb injuries in triathletes [1]. Our findings showed that some lower limb structures are more affected than others and, as such, require more attention during physical preparation in order to avoid injuries. Future studies should evaluate the effect of preventive interventions on thigh muscle pain and fatigue after exhausting competitions.

Although our data are from Ironman races, the ratios may be similar in other strenuous modalities, such as marathons. For example, if a marathon has 2000 registered participants, clinicians and event organizers can expect more than 600 participants seeking treatment and the recovery sector should have approximately 40 treatment tables with at least one therapist per table, with most pain complaints related to the lower limbs. However, extrapolation of these results to other Ironman races and modalities should be done with caution. Other factors including weather, altitude, training status, knowledge of the recovery sector, may influence the number of athletes seeking post-race recovery assistance.

Due to the strenuous nature of the Ironman, a considerable number of triathletes who experienced cramps during the race were expected to seek recovery assistance, but this did not occur. Triathletes may pay special attention to hydration and electrolyte replacement during the races, which could explain the low rate of triathletes seeking cramp-related recovery assistance [5].

The presence of pain-free triathletes seeking assistance is a noteworthy occurrence, even few in number. This may indicate a concern with preventing delayed onset muscle soreness and injuries. Further research to investigate the effectiveness of therapies applied immediately after exhausting competitions could provide new prevention insights.

The present study exhibits some limitations. The body regions with the worst pain were deemed important, but the prevalence of affected areas may have been different if pain intensity had been considered. Additionally, since previous injuries and complaints could influence performance

on the day of competition, we cannot confirm that pain complaints resulted solely from the race. Nevertheless, the large number of triathletes assessed after nine races using the same measurement techniques was sufficient to represent the target population.

5. Conclusion

The present study found that approximately one-third of the triathletes starting a long-distance Ironman race visited the recovery sector for treatment. There was a high prevalence of pain in the thigh (anterior and posterior) and the posterior leg, as well as a low prevalence of cramps occurrence compared to pain prevalence. Few pain-free triathletes sought treatment.

Disclosure of interest

The authors declare that they have no competing interest.

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