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# Pre-Participation Injury and Illness Complaints of Elite Athletes Participating at the Munich 2022 European Championships

*Verletzungen und Krankheiten von Spitzensportlern vor der Teilnahme an der Europameisterschaft 2022 in München*

## Summary

- **Objective:** To describe the injury and illness complaints of elite athletes during the four weeks before the 2022 European championships in Munich (Germany).
- **Methods:** We conducted a cross-sectional study in athletes registered at the 2022 European championships from the 11<sup>th</sup> to the 21<sup>st</sup> August 2022, using an online pre-participation health questionnaire (PPHQ) asking about personal and training characteristics and injury and illness complaints during the four weeks preceding the championships.
- **Results:** Among the 5419 registered athletes, 239 (4.4%) completed the PPHQ. A total of 47 athletes (19.7%) reported an injury complaint during the four weeks before the championships. The most frequently reported worst symptom was pain (59.6%), location was "upper extremity" (19.1%), followed by "posterior thigh" (12.8%) and "head/trunk" (12.8%). The mean injury severity score (ranging from 0 to 100) was 39.4±20.2. About two-thirds of athletes reported performance not or only slightly affected by the injury complaint. Twenty-five athletes (10.5%) reported an illness complaint prior to the championships. The most frequently reported affected system was "respiratory tract" (52.0%), cause was infection (64.0%), and the mean illness severity score was 35.5±17.7. 80% of athletes reported that the performance was not or only slightly affected by the illness complaint.
- **Conclusion:** About 20% of included athletes reported an injury complaint and about 10% an illness complaint during the four weeks before the 2022 European championships. These results highlight the need of improving the monitoring and if needed, the management of athletes' health, in the final preparation for international championships.

## Zusammenfassung

- **Problem:** Beschreibung der Verletzungs- und Krankheitsbeschwerden von Spitzensportlern in den vier Wochen vor der Europameisterschaft 2022 in München (Deutschland).
- **Methodik:** Wir führten vom 11. bis 21. August 2022 eine Querschnittsstudie bei Athleten durch, die bei den Europameisterschaften 2022 registriert waren. Dafür nutzen wir einen Online-Gesundheitsfragebogen, in dem wir nach persönlichen und trainingsbezogenen Merkmalen sowie Verletzungs- und Krankheitsbeschwerden während der vier Wochen vor den Meisterschaften gefragt haben.
- **Ergebnisse:** Von den 5419 registrierten Athleten füllten 239 (4,4%) den Fragebogen aus. Insgesamt 47 Athleten (19,7%) gaben an, in den vier Wochen vor den Meisterschaften eine Verletzung gehabt zu haben. Das am häufigsten berichtete schwerste Symptom waren Schmerzen (59,6%), die häufigste Lokalisierung war die „obere Extremität“ (19,1%), gefolgt von dem „hinteren Oberschenkel“ (12,8%) und „Kopf/Rumpf“ (12,8%). Der mittlere Verletzungsschweregrad (von 0 bis 100) lag bei 39,4±20,2. Etwa zwei Drittel der Athleten gaben an, dass ihre Leistung nicht oder nur geringfügig durch die Verletzungsbeschwerden beeinträchtigt wurde. Fünfundzwanzig Athleten (10,5%) berichteten über eine Krankheitsbeschwerde im Vorfeld der Meisterschaften. Das am häufigsten angegebene betroffene Organsystem waren die Atemwege (52,0%), die häufigste Ursache war eine Infektion (64,0%), und der mittlere Schweregrad der Erkrankung betrug 35,5±17,7. Achtzig Prozent der Athleten gaben an, dass ihre Leistung nicht oder nur geringfügig durch die Krankheit beeinträchtigt wurde.
- **Schlussfolgerung:** Etwa 20% der eingeschlossenen Athleten gaben in den vier Wochen vor der Europameisterschaft 2022 eine Verletzung und etwa 10% eine Krankheit an. Diese Ergebnisse unterstreichen die Notwendigkeit, die Überwachung und gegebenenfalls das Management der Gesundheit der Athleten bei der abschließenden Vorbereitung der internationalen Meisterschaften zu verbessern.

## KEY WORDS:

Sports Injury Prevention, Pre-Competition Medical Assessment, Injury/Illness Surveillance, Epidemiology, Championships

## SCHLÜSSELWÖRTER:

Prävention von Sportverletzungen, medizinische Beurteilung vor Wettkämpfen, Überwachung von Verletzungen/Erkrankungen, Epidemiologie, Wettkämpfe

## Introduction

Participating in international championships, such as Olympic Games, World or Continental championships, represents one of the main goals of the athletes' season. By such, the entire athletes' season training and organisation is often planned according to these major events. However, in the four weeks prior to these major events, 19 to 32% of athletes reported having had an injury comp-

laint and 5 to 22% an illness complaint in aquatics (16, 18) and athletics (5). This is a relatively high percentage in athletes aiming an optimal health just prior to one of the most important moments of their seasons. In addition, it has been reported that an injury complaint during this final four-weeks period before an international athletics championship was associated with an increased risk of

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Table 3

Characteristics of the worst illness complaints (n=25) reported by athletes during the four weeks before the 2022 European championships in Munich according to sports (given the small number of reported illness complaints this description was not also divided by sex). n=number; %=percentage; SD=standard deviation.

	TOTAL	ATHLETICS	CANOE SPRINT	CYCLING	GYMNASTICS	ROWING	SPORT CLIMBING
Number of athletes with injury complaints (n (%))	25 (10.5)	18 (11.4)	2 (14.3)	1 (11.1)	2 (18.2)	1 (5.6)	1 (12.5)
<b>AFFECTED SYSTEMS (N (%))</b>							
Upper respiratory tract (nose. sinuses. pharynx. larynx)	10 (40.0)	8 (44.4)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	1 (100.0)
Lower respiratory tract (trachea. bronchi. lungs)	3 (12.0)	3 (16.7)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Gastro-intestinal	4 (16.0)	3 (16.7)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)
Cardio-vascular	1 (4.0)	1 (5.6)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
'Blood' (Hematologic or immune)	1 (4.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)
Cardio-vascular	1 (4.0)	1 (5.6)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Endocrine or metabolic	1 (4.0)	1 (5.6)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Musculo-skeletal	1 (4.0)	1 (5.6)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Dental	1 (4.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Other	3 (12.0)	1 (5.6)	1 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)
<b>CAUSES (N (%))</b>							
Pre-existing disease (exacerbations of allergy. asthma. diabetes. degenerative. systemic inflammatory disorders. congenital. etc)	1 (4.0)	1 (5.6)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Infectious (viral. bacterial. fungal...)	16 (64.0)	12 (66.7)	1 (50.0)	0 (0.0)	1 (50.0)	1 (100.0)	1 (100.0)
Environmental (heat. cold. altitude...)	2 (8.0)	1 (5.6)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)
Exercise related (dehydration. exhaustion...)	1 (4.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Drug related or toxic reaction	1 (4.0)	1 (5.6)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Nutritional. endocrine or metabolic disturbance	3 (12.0)	3 (16.7)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Other/idiopathic	1 (4.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)
Pre-participation illness severity score (mean (SD))	35.5 (17.7)	34.4 (18.6)	34.4 (4.4)	68.8 (0)	25.0 (0.0)	31.3 (0)	50.0 (0)
Pre-participation illness duration that affected performance (in days) (mean (SD))	6.7 (6.1)	5.7 (5.8)	10.0 (0.0)	14.0 (0)	3.0 (0.0)	4.0 (0)	21.0 (0)
Affected championships preparation (mean (SD))	45.4 (31.3)	48.9 (33.1)	47.4 (35.9)	50.6 (0)	9.9 (5.9)	25.4 (0)	64.3 (0)
<b>PRE-PARTICIPATION AFFECTED PERFORMANCE AT START OF CHAMPIONSHIP (N (%))</b>							
Not at all	1 (4.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)
Minor	11 (44.0)	9 (50.0)	1 (50.0)	(0.0)	0 (0.0)	1 (100.0)	0 (0.0)
Moderate	2 (8.0)	1 (5.6)	0 (0.0)	(0.0)	0 (0.0)	0 (0.0)	1 (100.0)
Major	2 (8.0)	2 (11.1)	0 (0.0)	(0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Missing	9 (36.0)	6 (33.3)	1 (50.0)	(0.0)	2 (100.0)	0 (0.0)	0 (0.0)

sustaining an injury during the following championship (5). Hence, in-championships injuries, as well as in-championships illnesses, have negative consequences on athletes' sporting performance, especially regarding winning medals (7, 8). This information highlights the need of better understanding the health status of athletes in their final preparation for an international championships for health and performance. Information on injuries and illnesses occurring during the Olympic Games (9, 10, 19), and other major championships (6, 16) are available, rarely during the entire athletes season (3, 12, 13, 15, 20), and not regarding elite athletes' health sta-

tus in final championships preparation except in athletics (5), aquatics (16, 18) and wheelchair basketball (11). However, such an information would be of great help for athletes' health protection as the first step of the injury and illness prevention sequence (14), as well as for athletes' performance enhancement.

Therefore, we aimed to determine the injury and illness complaints of elite athletes during the four weeks before the start of the 2022 European championships in Munich (Germany). The European championships is a continental event, every four years, gathering on the same period and location the

European Championships of several sports: athletics, beach volleyball, canoe sprint, cycling, gymnastics, rowing, sport climbing, table tennis and triathlon.

## Methods

### Study Design, Overall Procedure and Population

We conducted a cross-sectional study in athletes registered at the 2022 European championships from the 11<sup>th</sup> to the 21<sup>st</sup> August 2022 in Munich (Germany), using an online pre-participation health questionnaire (PPHQ) inspired from previous studies performed during international athletics (5), swimming (16, 18) and wheelchair basketball championships (11) and asking about personal and training characteristics and injury and illness complaints during the four weeks preceding the championships. Athletes were included if they completed the PPHQ.

All data were collected anonymously so that no individual participant can be directly identified. The study was reviewed and approved by the Saint-Etienne University Hospital Ethical Committee (Institutional Review Board: IORG0007394; IRBN792022/CHUSTE). All athletes were informed about the study aim and procedure and that their data were used for research, as well as about their rights to refuse that their data are used for research. No signed informed consent was required by the Ethical Committee.

### Patient and Public Involvement

The public participated at the development of the dissemination of information about the study and at the recruitment of participants; the patient and public did not participate at the development of the study methods and PPHQ, nor at the data analyses and manuscript writing. A summary of the study results will be disseminated to the public.

### Equity, Diversity, and Inclusion Statement

All athletes registered at the 2022 European championships in Munich were eligible to this study without any restriction based on gender, race/ethnicity/culture, socioeconomic level, or representation from marginalized groups. Apart from sex, no other characteristics were collected from the participants, and were thus considered in the analysis and interpretation of results. The author team unfortunately did not include any women, although several women helped in the study and are mentioned in the acknowledgement. The author team include a junior researcher (PED is PhD Student).

### Data Collection Procedure

All athletes registered at the 2022 European championships in Munich were informed about the study one month before the championships by an e-mail sent by the study team to the 2022 European championships organising committee, who were asked to forward it to the European Sports Federations, and then to their national member sports Federations with the final aim to forward to their athletes as well as coaching and medical staff participating at the 2022 European championships.

At the start of the 2022 European championships, coaching and medical staff were asked during the delegates meetings in each sport to encourage their athletes to participate in this study and have received information material to handout to interested athletes.

During the period of the 2022 European championships in Munich from the 11<sup>th</sup> to the 21<sup>st</sup> August 2022, registered ath-

letes were informed about the present study and were asked to complete the PPHQ by i) poster displayed on the different venues of the championships (hotels, restaurants, medical centres, training area, warm-up areas, accreditation centre, bus, toilets), ii) a flyer given to each athlete with the accreditation, iii) emails sent by their national federations, iv) volunteers at the different venues during the whole period of the championships and informing the athletes about the present study, with the goal to arouse interest in participating in the study and how to participate.

Athletes registered at the 2022 European championships were thus invited to complete the PPHQ on personal and training characteristics (sex, age, country, height, weight, discipline, time spent in training) and injury and illness complaints during the four weeks preceding the championships (Supplementary material S1) (1, 4, 5, 21).

Pre-participation injury complaints were defined as “injuries or physical complaints (such as pain, ache, stiffness, swelling, instability/giving way, locking or other symptoms) that athletes have had in the 4 weeks prior to the championship, even if this has not had major consequences for athlete’s participation in normal training and/or competition” (5). Pre-participation illness complaints were defined as “a physical or psychological complaint or manifestation of an athlete not related to injury, that athletes have had in the 4 weeks prior to the championship, even if this has not had major consequences for athlete’s participation in normal training and/or competition” (5).

Athletes who reported an injury complaint and/or an illness complaint, were asked further questions on their worst injury and/or illness complaint: symptom, location/affected system, mode of occurrence (for injury complaint only), causes (for illness complaint only), consequences on athletics practice (to calculate a severity score), duration of affected performance, amount of affected preparation, and affected performance at the start of championship (5). The injury and illness severity scores were calculated based on the results of four questions adapted from the OSTRC Overuse Injury Questionnaire by Clarsen et al. (2) (Supplementary material S1). The injury and illness severity scores ranged between 0 (no problem) and 100 (maximal functional consequences) (5). The amount of affected preparation ranged between 0 (not at all) and 100 (totally), and the domain (physical, psychological/mental and social/environmental) scored by a Likert scale from 0 (not at all) to 5 (totally). The affected performance at the start of championship was classified for “not at all” to “major”.

There were additional questions regarding the COVID-19, asking athletes if they were diagnosed with COVID-19 / or tested positive for a SARS-CoV-2 infection, and if so when, what were the symptoms, if they stopped sports, and if they are vaccinated with how many doses.

The PPHQ was available only in English, in paper, pdf formats and online using a website application through QR code (IprevApp, <https://iprevapp.emse.fr>). Athletes were asked to complete the questionnaire themselves or, if needed seek help of team physicians or the study team at the venues, and return it to their team physician or to the designated desk in the warm-up area (paper format), or through email to their team physician or the principal investigator (pdf format).

### Statistical Analyses

Descriptive analyses performed were frequency and percentages for categorical data, means and standard deviations (SD) for continuous variables, as well as prevalence (with 95% confidence

Table 4

History of COVID-19/SARS-CoV2 and COVID-19 vaccination among the 239 included athletes according to sports.

	TOTAL	ATHLETICS	BEACH VOLLEYBALL	CANOE SPRINT	CYCLING	GYMNASTICS	ROWING	SPORT CLIMBING	TABLE TENNIS	TRIATHLON
Number of athletes experienced the COVID-19/SARS-CoV2 (n (%))	104 (43.5)	64 (40.5)	0 (0.0)	8 (57.1)	4 (44.4)	1 (9.1)	9 (50.0)	5 (62.5)	12 (70.6)	1 (33.3)
Number of athletes experienced the COVID-19/SARS-CoV2 that stopped sports during the covid-19 (n (%))	94 (90.4)	55 (85.9)		7 (87.5)	4 (100.0)	1 (100.0)	9 (100.0)	5 (100.0)	12 (100.0)	1 (100.0)
Duration in days of sports arrest due to the covid-19 (mean (SD))	10.6 (6.6)	10.2 (6.8)		8.0 (4.5)	11.8 (3.3)	1.0 (0)	14.2 (7.4)	10.2 (5.7)	11.8 (7.4)	7.0 (0)
Time in months from the championships that athletes experienced the COVID-19/SARS-CoV2 (mean (SD))	8.6 (7.1)	8.2 (7.3)		6.3 (1.7)	9.0 (7.7)	6.4 (0)	13.0 (9.3)	5.9 (3.0)	10.6 (7.5)	3.4 (0)
Number of athletes vaccinated for the COVID-19 (n (%))	228 (95.4)	153 (96.8)	1 (100.0)	14 (100.0)	9 (100.0)	5 (45.5)	18 (100.0)	8 (100.0)	17 (100.0)	3 (100.0)
Number of doses for each athlete vaccinated for the COVID-19 (n (%))	2.6 (0.6)	2.5 (0.6)	3.0 (0)	2.7 (0.5)	2.6 (0.5)	2.8 (0.4)	2.5 (0.6)	2.9 (0.4)	2.6 (0.5)	3.0 (0.0)

intervals) for injury and illness complaints. Statistical analyses were conducted using R (version 4.0.2, © Copyright 2020 The Foundation for Statistical Computing (Comprehensive R Archive Network)).

## Results

### Population

Among the 5419 athletes registered at the 2022 European championships in Munich, 239 (4.4%) completed the PPHQ and were included in the present study (table 1; see supplemental material online). The characteristics of these athletes are presented in table 1 (see supplemental material online). None of the participating athletes refused to allow their data to be used for scientific research.

### Pre-Participation Injury Complaints

Almost one out of five athletes (n=47; 19.7%) reported an injury complaint during the four weeks before the championships. The most frequently reported worst symptom was pain (59.6%) (table 2, see supplemental material online). The most frequently reported location was "upper extremity" (19.1%), followed by "posterior thigh" (12.8%) and "head and trunk" (12.8%), the most frequently reported mode of onset was sudden onset (46.8%) followed by gradual (42.6%), the mean injury severity score was 39.4±20.2, and the mean duration of affected performance by the injury complaint was 10.1±8.2 days, with differences between sports (table 2, see supplemental material online). At the start of the championship, 10.6% of athletes reported that their performance was majorly affected by the injury complaint, with differences between sports, and none did not participate (table 2, see supplemental material online). Athletes reported that this injury affected their preparation on average by 41.4±25.5%, mainly involving the physical domain (table 2, see supplemental material online).

### Pre-Participation Illness Complaints

About one out of ten athletes (n= 25; 10.5%) reported an illness complaint during the four weeks before the championships. The most frequently reported symptom was fatigue (36.0%), the most frequently reported affected system was "respiratory tract" (52.0%), followed by "gastro-intestinal" (16.0%), the most frequently reported cause was infection (64.0%), the mean illness

severity score was 35.5±17.7, and the mean duration of affected performance by the illness complaint was 6.7±6.1 days, with differences between sports (table 3). At the start of the championship, 8.0% of athletes reported that their performance was majorly affected by the illness complaint, with differences between sports, and none did not participate (table 3). Athletes reported that this injury affected their preparation on average by 45.4±31.3%, involving the three domains (table 3).

### COVID-19/SARS-CoV2

Among the 239 athletes participating at the 2022 European Championships and this study, 104 (43.5%) already had experienced COVID-19/SARS-CoV2, of them 90.4% stopped due to the COVID-19/SARS-CoV2 from 1 to 30 days and an average of 10.6±6.6 days (table 4). This occurred on average 8.6±7.1 months before the 2022 European Championships (table 4). A total of 95.4% of athletes were vaccinated against COVID-19 with on average 2.6±0.6 doses (table 4).

## Discussion

The main findings of the present study were that 1) about 20% of athletes reported an injury complaint and about 10% an illness complaint during the four weeks of preparation before the 2022 European championships. This is the first study on pre-participation injury and illness complaints during multi-events championships. Although these results should be interpreted with caution given the small sample of athletes, they are of great interest for elite athletes' health protection and performance enhancement.

### About 10-20% of Athletes are Preparing the Championships with Health Problems

Our present study reported that 10 to 20% registered at the 2022 European championships and accepting to participate in this study reported an injury and/or illness complaint during the four weeks before the championships, respectively. These values are close to that reported during the 2015 FINA World Championships (Aquatics; injury complaint: 19%; illness complaint: 5%) (18), and slightly lower than those reported during the 2013 FINA World Championships (Aquatics; injury complaint: 33%) (16) and during athletics international championships >

(injury complaint: 31%; illness complaint: 22%) (5). These values are also close to the proportion of injured or ill athletes reported at any time of a season in prospective cohort studies, in eight years of follow-up of Norwegian all-sports Olympic athletes (injury complaint: 24%; illness complaint: 9%) (3) and Norwegian all-sports Paralympic athletes (injury complaint: 20%; illness complaint: 19%) (20). These results again highlight that injury belongs to the athletes' life (5), as well as illness, and the need of efforts to reduce injury and illness risk.

### Limitations

We have to acknowledge some limitations. First, although important strategies were implemented to disseminate information about the study and the PPHQ (e.g., emails to athletes through federations, information through medical and coaching staffs, posters, flyers, social media, volunteers on site to present the study to the athletes), the sample of athletes was small in absolute ( $n=239$ ) and in comparison to the population of eligible athletes (4.4%). Some hypotheses of explanation can be suggested, which also represent proposals for improvement: athletes were focused on their championships and did not want to think about previous health problems, the PPHQ could have been considered as too long, for online format if athletes stopped the PPHQ before the end they had to do it again from the start which can have discouraged them, the PPHQ was only available in English, the athletes could have been not interested by the topic of injury/illness, the Munich 2022 European Championships was a big event with lot of communications and events at the same time which can have diluted the present study into the mass. Thus, the results should be interpreted with caution as well as its generalisation. Second, methodological considerations, such as metrological characteristics of the PPHQ (e.g., validity, reliability, consistency), injury definition, self-reported information, recall bias, underestimation of the health problems, inappropriate period for asking athletes about injuries, previously discussed in article analysing preparticipation health status in athletics (1, 4, 5, 21) and swimming (16, 18) are still valid. Third, we have to acknowledge some weakness in the equity, diversity and inclusion approach. Apart gender, no other characteristics were collected from the participants, and were thus considered in the analysis and interpretation of results. The author team unfortunately did not include any women, but include a junior researcher.

### Perspectives and Practical Implications

Our results show that the period of preparation for the European Championships was a period at risk of injuries and illnesses. Knowing this, a first implication is to improve management of any complaint whatever their severity and impact in the preparation period of a championships. This could be done by encouraging the athletes to immediately contact health professionals for diagnosis and adequate management of their problem, adapting training to health problem and allowing complete healing (although it is complex in such period), improving communication between all stakeholders (5). Long-term health monitoring, such as done for Norwegian Olympic and Paralympic athletes (3,20), could also be relevant to help in this rapid health problem management. As injuries can lead to long-term sequelae in elite athletes (17), there is a need to manage each injury soon and adequate. All these results also support the need to improve injury/illness prevention strategies during this period.

Given the small number of responders in the present study, there is a need to continue such study in future European Championships, and other championships and especially multi-event championships such as Olympic Games. There will also be a need to improve the implementation of the study to increase athletes' participation. This can be done by, for example, providing the PPHQ in more language than English only, this would also be of help for equity, diversity and inclusion. Furthermore, we are aware that the period is not the most appropriate to ask athletes about the health problems (4, 5). Therefore, a balance should be found so that the athlete can express himself/herself in his/her practice without too much apprehension. Replying to the PPHQ after athlete's competition participation could be an option.

As perspectives, there is a need to better understand the potential influence of these injuries and/or illnesses on the sporting performance during the championships, as well as analysing if this can be considered as in-championships injury and/or illness risk factors of injuries as for Athletics (5). If this results from athletics (5) is confirmed for other sports, it can be suggested to screen athletes arriving at the championships using the PPHQ in order to improve the health management of the athletes by their medical team (5).

### Conclusions

Our present study shows that about 20% of athletes reported an injury complaint and about 10% an illness complaint during the four weeks before the 2022 European championships. Therefore, we suggest i) improving the monitoring and if needed, the management of athletes' health, in the final preparation of the international championships, and ii) screening the athletes at the start of the championships to gather information that could be useful to improve their health management by medical teams. ■

### Conflict of Interest

*The authors have no conflict of interest.*

### Funding

*The authors have subsequently received a grant of 800€ for uniform clothing for the study team from the Association of Alumni and Friends of the Technical University Munich.*

### Ethics Approval

*The study was reviewed and approved by the Saint-Etienne University Hospital Ethical Committee (Institutional Review Board: IORG0007394, IRBN792022/CHUSTE).*

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