

# Running races during the COVID-19 pandemic: a 2020 survey of the running community

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## ABSTRACT

**Objectives** To survey runners and triathletes about their willingness to resume in-person racing during the COVID-19 pandemic, health concerns related to mass races and changes in running patterns since the start of the pandemic.

**Design** An electronic survey was distributed from 15 July to 1 September 2020 to runners and triathletes by New York Road Runners, ASICS North America, and race medical directors, and through social media.

**Participants** Runners and triathletes 18 years of age or older who participated in at least one race in 2019.

**Results** A total of 2278 surveys were received. Not all participants answered every question; the denominator represents the number of responses to each question. Most participants were from the USA (1620/1940, 83.5%), of which over half were from New York (812/1475, 55.1%). Regarding when respondents would feel comfortable returning to in-person racing, the most frequent response was 'Whenever local laws allow, but only if there are sufficient precautions' (954/2173, 43.9%), followed by 'Not until there is a vaccine' (540/2173, 24.9%). The most common concerns about in-person races were crowded starting corrals (1802/2084, 86.5%), the number of COVID-19 cases in the race location (1585/2084, 76.1%) and the number of participants (1517/2084, 72.8%). Comparing running patterns before the pandemic to Summer 2020, the mean weekly mileage decreased from 25.5 (SD 15.4) miles to 22.7 (16.2) miles ( $p < 0.001$ ).

**Conclusion** Most runners are willing to return to racing when local laws allow, though as of Summer 2020, many desired certain precautions to feel comfortable.

## INTRODUCTION

The COVID-19 pandemic altered nearly all aspects of life, including road races. In 2019, there were 17.6 million road race registrants in the USA. In March 2020, most of the major sports leagues suspended competition. This included most previously scheduled mass racing events. None of the World Marathon Majors took place in their usual format. Both the Tokyo Marathon and London Marathon only allowed elite runners to participate. At the same time, most other races were cancelled in person and moved to virtual

## Key messages

### What is already known

- ▶ The COVID-19 pandemic has deeply affected the running community and led to the cancellation of many mass racing events.
- ▶ Other sports have been able to return in modified formats. It is unclear how these examples could be applied to mass racing events.
- ▶ A previous survey of the running community had shown a desire to return to racing, but the survey timing was before much of the country experienced more widespread cases.

### What are the new findings

- ▶ The running community has a desire to return to racing, but there are some concerns and desired modifications.
- ▶ The most common concerns relate to crowded areas, including starting corrals and the racecourse.
- ▶ The most common modifications that runners would like to see would be fewer participants in the starting corrals, extended staggering of start times, volunteers wearing masks and participants wearing masks in starting corrals.
- ▶ Though there were some small changes in running patterns, there were no large changes in mileage or days of the week of running before and during COVID-19.

platform. While professional sports were able to return to competition in a modified format throughout 2020, such as a bubble environment, mass participation events have only recently started to resume. The Berlin Marathon in September 2021 was the first of World Marathon Major races to take place.

As they return to racing, there may be some amount of trepidation. Runners may have many reasons to be cautious about returning to road races, including short-term and long-term health risks to themselves and their family or close contacts due to COVID-19.<sup>1,2</sup> Early in the pandemic, Road Runners Club of America (RRCA) conducted a survey that showed 53% of respondents anticipated participating in a race during 2020, while just

**Table 1** Respondent demographics

Characteristic	Value
<b>Age</b>	n=2278
Median	44
Range	18, 82
25%, 75%	35, 53
<b>Sex</b>	n=2071
Female	1166, 56.3%
Male	892, 43.1%
Prefer not to answer	13, 0.6%
<b>Race</b>	n=2062
White or Caucasian	1677, 81.3%
Asian	154, 7.5%
Black or African American	78, 3.8%
American Indian or Alaska Native	11, 0.5%
Native Hawaiian or Pacific Islander	6, 0.3%
Other	67, 3.2%
Prefer not to answer	110, 5.3%
<b>Ethnicity</b>	n=2009
Hispanic or Latino	201, 10.0%
Not Hispanic or Latino	1430, 71.2%
Other	184, 9.2%
Prefer not to answer	194, 9.7%
<b>Country (most common listed)</b>	n=1940
USA	1620, 83.5%
Canada	43, 2.2%
Italy	40, 2.1%
UK	37, 1.9%
Brazil	20, 1.1%
France	17, 0.9%
Germany	17, 0.9%
<b>State (most common listed)</b>	n=1475
New York	812, 55.1%
New Jersey	154, 10.4%
Minnesota	57, 3.9%
California	50, 3.4%
Illinois	45, 3.1%
Massachusetts	33, 2.2%
Connecticut	31, 2.1%
<b>Setting</b>	n=2068
Major metro (>1 m)	1024, 49.5%
Large metro (250 km–1 m)	212, 10.3%
A suburb of major metro	211, 10.2%
Small metro (50–250 km)	177, 8.6%
Small city (2.5–25 km)	166, 8.0%
Small urban area (25–50 km)	137, 6.6%
Rural area (<2.5 km)	90, 4.4%
<b>Race participated, 2019</b>	n=2385
Median	5
25%, 75%	3, 9

2.3% would not participate, and 22.5% were unsure.<sup>3</sup> However, at the time many regions of the USA had not yet experienced the first wave of COVID-19.

As local restrictions are lifted, understanding the concerns of runners is important for race organisers and race medical directors to ensure a safe and comfortable environment for runners. The purpose of this study was to survey runners and triathletes' willingness to resume in-person racing during the COVID-19 pandemic, health concerns related to races and changes in running training patterns affected by COVID-19.

## METHODS

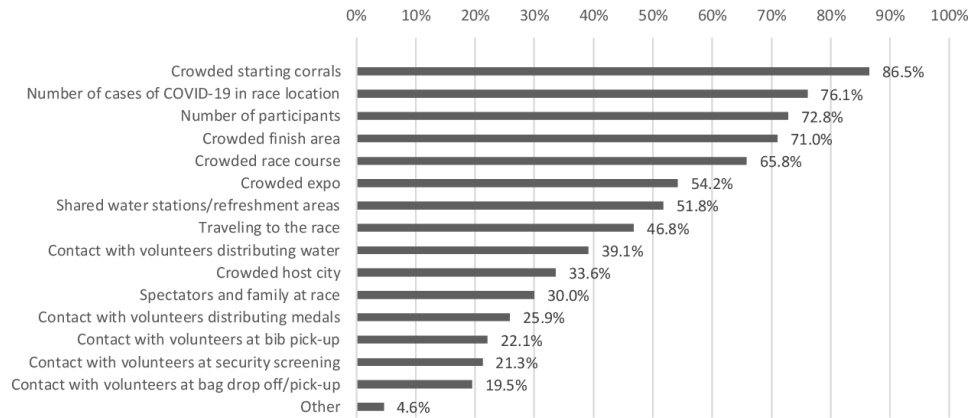
The cross-sectional survey was developed and distributed using the Research Electronic Data Capture (REDCap) system. The survey contained questions regarding the timing of return to racing, concerns about returning to racing and modifications that could be made for participants to feel more comfortable racing. The study also asked about running training patterns before and after the onset of the pandemic and demographic information. Study data were collected and managed using REDCap electronic data capture tools hosted at Weill Cornell Medicine with support from Clinical and Translational Science Center grant (UL1TR002384).<sup>4,5</sup> Runners were informed and consented to participation in study, and no protected personal information was collected. Participants were not involved in study design.

The survey was distributed from 15 July to 1 September 2020 through email to the membership of New York Road Runners (largest local running club in New York City), email to the listserv of ASICS North America, social media and direct contact with race medical directors affiliated with the American Medical Society for Sports Medicine (to distribute to their race participants). The inclusion criteria required participants to be 18 years of age or older and to have participated in at least one running or triathlon race of any distance in 2019. Runners were actively recruited for the study, but were not involved in the survey design or data collection and analysis.

## Survey content

The survey contained questions with specifically designed answers that respondents would choose. It contained questions about participants' involvement in running in the year prior to the survey (2019) including number and type of races, participants' planned involvement for 2020 prior to the COVID-19 pandemic, willingness to participate in racing after COVID-19, concerns and possible modifications related to racing after COVID-19, the importance of racing pre-COVID-19 and post-COVID-19, running patterns before and during COVID-19 and demographic information.

Descriptive statistics were used to analyse survey responses. Means and SDs, or medians and IQRs, were used to describe normally and non-normally distributed continuous variables, respectively. Wilcoxon rank-sum test was used to test for differences in non-normally



**Figure 1** Aspects of participating in a race during COVID-19 pandemic concerning respondents.

distributed continuous variables and ordinal variables. Frequencies and percentages were used to describe categorical variables. Microsoft Excel (Redmond, Washington, USA) was used for descriptive statistics. JASP (V.0.14.1, Amsterdam, Netherlands) was used for Wilcoxon's test.

**RESULTS**

A total of 2278 surveys were received and met inclusion criteria. Not all participants responded to every question. The denominator for each question is the number of participants who responded to that individual question. Respondent demographics are summarised in table 1. 83.5% of participants were from the USA, though there were runners from 52 different countries. A total of 45 states were represented, with 55.1% of respondents from New York and 10.4% from New Jersey.

**Timing of returning to races**

When asked when respondents would be comfortable participating in in-person racing again, the most frequent response was 'Whenever local laws allow, but only if there are sufficient precautions' (954/2173, 43.9%). This was followed by: 'Not until there is a vaccine' (540/2173, 24.9%); 'Whenever local laws allow, regardless of precautions' (371/2173, 17.1%); 'Not until there is an effective

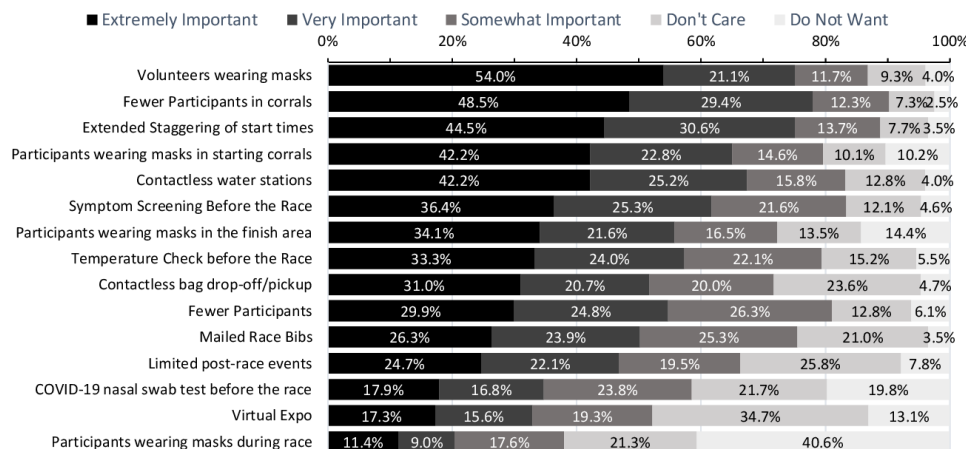
treatment for COVID-19' (266/2173, 12.2%); 'Other' (41/2173, 1.9%); and 'Never' (1/2173, 0.0%). When asked how many months from now (Summer 2020) respondents think they will participate in an in-person race again, the most frequent response was in 6–12 months (670/2093, 32.0%), followed by 4–6 months (357/2093, 17.1%), 'Unsure/Undecided' (311/2093, 14.9%), '1–2 years' (278/2093, 13.3%), 'Now' (236/2093, 11.3%), '1–3 months' (234/2093, 11.2%), '3 years or more' (7/2093, 0.3%) and 'Never' (0/2093, 0.0%).

**Race day concerns**

Runners and triathletes indicated which aspects of race participation during COVID-19 concerned them (figure 1). Crowded starting corrals were the most common concern of returning to racing (1802/2084, 86.5%), followed by the number of cases of COVID-19 in the race location (1585/2084, 76.1%) and the number of participants in the race (1517/2084, 72.8%).

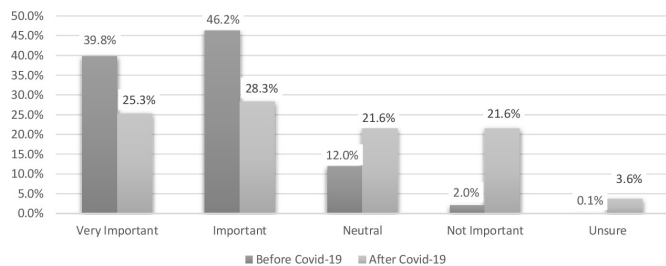
**Race precautions**

When asked about the importance of certain precautions that races could make participants feel more comfortable, most respondents rated fewer participants in corrals as extremely or very important (1603/2058, 77.9%) (figure 2). This was followed by an extended staggering of



**Figure 2** Importance of proposed infection control precautions during race.





**Figure 3** Importance of participating in races before/after COVID-19.

start times (1538/2048, 75.1%); and volunteers wearing masks (1546/2059, 75.1%). Fewer than half of participants selected the following factors as extremely or very important: limited postrace events, COVID-19 nasal swab before the race and virtual expo. Participants wearing masks during the race was the least popular option; 40.6% of respondents (826/2033) said they would not want this precaution implemented.

### Race size

Respondents indicated the maximum number of participants of a race in which they would feel comfortable participating. There were 403/2039 (17.7%) who would be comfortable with a maximum of 100 participants; 677/2039 (33.2%) with a maximum of 1000; 388/2039 (17.0%) with a maximum of 5000; 186/2039 (9.1%) with a maximum of 10 000; 83/2039 (4.1%) with a maximum of 20 000; and 302/2039 (13.3%) with a maximum >20 000.

### Running training patterns and importance of race participation

Weekly mileage decreased from a median of 22 (IQR: 15–35) before COVID-19, to 20 (IQR: 10–30) in Summer 2020 ( $p < 0.001$ ). The median number of days per week running remained the same at 4 (IQR: 3–5), but the mean was slightly lower in Summer 2020 compared with before the pandemic (mean difference  $-0.3$  days,  $p < 0.001$ ).

The difference in the importance of participating in races before COVID-19 compared with Summer 2020 is shown in figure 3. After excluding those with missing values or who marked ‘Unsure’ for either time, responses were assigned ordinal values of 1=‘very important’ through 4=‘not important’. The median importance remained 2 (‘important’), but the mean increased by 0.7 in Summer 2020, corresponding to a decrease in importance ( $p < 0.001$ ).

### DISCUSSION

As race organisers prepare to resume in-person events, understanding endurance athletes’ health concerns is vital so that race directors and organisations can appropriately modify race procedures in concert with guidance from medical experts. Based on our survey, as of Summer 2020, runners were willing to return to racing but did have some concerns. Our survey highlights factors race and medical directors might consider as in-person events resume.

The biggest concerns seem to be crowds, including crowded starting corrals, finish area and the racecourse; the number of participants; and the number of cases in the race location. Volunteers wearing masks, fewer participants in corrals, extended staggering of start times, participants wearing masks in starting corrals and contactless water stations are modifications that participants stated would make them more comfortable. Our respondents felt that running races was less important to them now than it was before COVID-19. Though our participants had some changes to their running patterns before and during COVID-19, overall there was no large change in days per week or miles per week.

Like the RRCA survey, our participants were also willing to return to racing. It appeared that our respondents were more concerned about crowds in the starting corrals while respondents from the RRCA survey had more concerns about sanitation. This could be due in part to the increased knowledge of airborne rather than surface contact spread for COVID-19.<sup>6</sup> Both surveys found the respondents did not place importance on the expo.

Our study did have some limitations that we will address. Our study participants were mainly from the USA and heavily weighted to the New York metro area. Since many concerns and fears about the pandemic may change based on the severity of the pandemic in any given location and difference in cultural responses to the pandemic, it is unclear how much our data can be generalised to the entire country or outside the USA. The median age of 44 is representative of the median age of runners. A slight female predominance to the survey respondent is also consistent with other surveys of runners. The most important limitation of the study relates to its timing. During Summer 2020, when our survey was done, there were still a lot of unknown factors about COVID-19 transmission. Since then, there have been more clarifications on the risks of indoor versus outdoor activity<sup>7</sup> and the development and distribution of effective vaccines. Testing with both PCR and rapid antigen testing has also become much more readily available. With a potentially lower risk of outdoor activity, quicker access to testing and the distribution of effective vaccines, we anticipate that even more runners would be willing to return to racing. Future surveys should gather a renewed perspective of how runners’ attitudes have changed and evolved over the last year and into the future. While our study did show a statistically significant change of a 2-mile decrease per week, this is unlikely to be a clinically relevant decrease in workload. Our cross-sectional survey did not show any large changes in running patterns; however, changes in running patterns would be better assessed using a longitudinal study. Future studies could longitudinally investigate how runner attitudes and behaviours change over the course of the pandemic and change in response to the modification made to future races.

## CONCLUSIONS

Endurance athletes want to return to racing, but as of Summer 2020, they had concerns. As race and medical directors begin to organise in-person races again, it is important to understand these concerns. While the number of COVID-19 cases in the race location is not modifiable, some precautions could make participants feel more comfortable. Based on our survey, some of these could include: limiting the overall race size, limiting the numbers in starting corrals and using more staggered start times to more effectively spread out the field of runners. Considering guidance from the Centers for Disease Control and Prevention (CDC) and the results of the study, the following modifications could reduce the risk of COVID-19 transmission and are likely to be acceptable to the majority of potential race participants: limiting the crowdedness of the start corrals (increasing the physical size of the corrals, increasing the number of corrals and extending the start time format, and/or decreasing the total number of runners), requiring masks for runners in the start and finish areas, requiring masks for volunteers and limiting the prerace and postrace gatherings.

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**Competing interests** None declared.

**Patient and public involvement** Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

**Patient consent for publication** Not required.

**Ethics approval** The study was approved by the Institutional Review Board of Hospital for Special Surgery Study (No 2020-1391).

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Data availability statement** Data are available upon reasonable request. The raw survey data and analysis are available under request to the primary author, JNR, by emailing at robinsonj@hss.edu.

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