

Science Behind Winter Sports Guidance

What we know about COVID-19 transmission that affects all winter sports:

- COVID-19 spreads by contact transmission and also by inhalation of large enough numbers of airborne virus particles ([Vuorinen et al., 2020](#)).
- Among 201 events that led to SARS-CoV-2 transmission clusters, the vast majority were predominantly associated with indoor settings ([Leclerc et al., 2020](#)).
- People produce more potentially virus-containing aerosols during deep exhalation and rapid inhalation ([Blocken et al., 2020](#)), like what happens when playing sports.
- People infected with COVID-19 emit more virus by breathing during heavy exercise or loud speaking ([Buonanno, Stabile, & Morawska, 2020](#); [Vuorinen et al., 2020](#)).
- Warm, moist atmospheres in sports facilities coupled with turbulent air flow generated by intense physical exercise can cause more dense transmission of respiratory droplets ([Bourouiba, 2020](#)).
- What we know from the sport-specific evidence that does exist is that when played indoors, sports that (a) require vigorous physical exertion accompanied by deep, heavy breathing; and (b) involve frequent or numerous contacts with other players can facilitate transmission of COVID-19 ([Atrubin, Wiese, & Bohinc, 2020](#); [Jang, Han, & Rhee, 2020](#); [Brlek et al., 2020](#); [Blocken et al., 2020](#)).

Questions IDPH asks questions about sports to assess risk:

- [American Academy of Pediatrics, American Medical Society for Sports Medicine, & National Athletic Trainers' Association, 2020](#)
- [CDC, 2020](#)
 - Does the sport allow for physical distancing from other players?
 - How long are athletes in contact with other players?
 - Does the sport use shared equipment that can carry the virus between players?

BASKETBALL

IDPH assessed the risk for SARS-CoV-2 transmission associated with basketball according to the evidence-based framework and finds the sport to be higher risk.

- Basketball is played indoors (higher risk) with frequent close contacts to other players (higher risk), which includes 10 on the court and often just as many on both benches (higher risk), a single piece of shared equipment that is difficult to clean during the game (higher risk), and an intensity level that makes masking more difficult (higher risk) ([AAP, 2020](#); [WHO, 2020](#); [CDC, 2020](#))

- At least two other states – Massachusetts ([2020](#)) and New York ([2020](#)) – and one sports organization, NCAA, also found basketball to be higher risk

In addition to our assessment according to the evidence-based framework, we also know of basketball-associated outbreaks and deaths in our region.

- Consider Minnesota. Minnesota Department of Health reported 62 outbreaks associated with sports activities from June 1 to September 16, which exposed 3,965 people and led to 1,769 cases of COVID-19. Basketball was the single sport associated with the greatest number of outbreaks (16, 26%). ([Klauda, 2020](#)).

OTHER SPORTS

- Baseball: October 23, 2020, report in the CDC *Morbidity and Mortality Weekly Report (MMWR)* on SARS-CoV-2 outbreak among 20 Major League Baseball players, some of whom engaged in 11 hours of on-field play over five games with two other teams in Philadelphia, Pennsylvania ([Murray et al., 2020](#))
- Hockey: October 16, 2020, report in the CDC *MMWR* on one infected and asymptomatic player who spread SARS-CoV-2 to 13 of 21 (62%) other players, men aged 19-53 years, and 1 rink staff member following a 60-minute indoor recreational hockey game in Tampa Bay, Florida ([Atrubin, Wiese, & Bohinc, 2020](#))
 - <https://www.cdc.gov/mmwr/volumes/69/wr/mm6941a4.htm>
- Fitness Dance: August 2020 research letter published in CDC *Emerging Infectious Diseases* journal on SARS-CoV-2 outbreak among 54 women, average age of 42 years, in South Korea who participated in “high aerobic intensity” Zumba fitness dance classes over 24 days from February 15 through March 9 in South Korea ([Jang, Han, & Rhee, 2020](#))
- Squash: March 2020 article in *Epidemiology & Infection* on cluster of 5 COVID-19 cases associated with playing squash for 45 minutes in the same space as a mildly symptomatic player in Slovenia ([Brlek et al., 2020](#))