

# Air Quality and Exercise

**FOR AIR QUALITY IN YOUR AREA PLEASE SEE LINK BELOW**

[https://www.colorado.gov/airquality/air\\_quality.aspx](https://www.colorado.gov/airquality/air_quality.aspx)

Information provided by Michael C. Koester M.D., ATC- Taken from NFHS Sports Medicine Handbook 4<sup>th</sup> Edition

- Athletes are at special risk of inhaling air pollutants during exercise.
- The two key pollutants that may exacerbate asthma or affect lungs during exercise are ozone and particle pollution.
- Smoke from late summer forest and grass fires is a special concern in Colorado, often causing severe air pollution with the beginning of fall sports season.
- Increase in respirations during exercise result in the intake of 10 to 20 times the normal volume of air per minute.
- A larger fraction of air is inhaled through the mouth during exercise, bypassing nasal filtration.
- Increased velocity of respiration forces air deeper into the lungs.

Suggestions guidelines for managing potential air quality problems-

- Distance runners should avoid running next to busy roadways.
- Ozone exposure can be lessened by early morning workouts.
- Athletes with asthma must be carefully monitored when AQI is above 100 and have a rescue inhaler readily available. Asthma symptoms may not worsen until the following day after exposure to air pollution.
- Practices and contests should be modified or moved indoors when AQI is above 100 and consideration given to rescheduling or moving them when AQI is greater than 200.

Information and Charts provided by Colorado Department of Health and Environment

To check Air Quality in your area go to [www.airnow.gov/](http://www.airnow.gov/)

The AQI is an index for reporting daily air quality. It tells you how clean or polluted your air is, and what associated health effects might be a concern for you. The AQI focuses on health effects you may experience within a few hours or days after breathing polluted air. EPA calculates the AQI for five major air pollutants regulated by the Clean Air Act: ground-level ozone, particle pollution (also known as particulate matter), carbon monoxide, sulfur dioxide, and nitrogen dioxide. For each of these pollutants, EPA has established national air quality standards to protect public health. Ground-level ozone and airborne particles are the two pollutants that pose the greatest threat to human health in this country.

## **How Does the AQI Work?**

Think of the AQI as a yardstick that runs from 0 to 500. The higher the AQI value, the greater the level of air pollution and the greater the health concern. For example, an AQI value of 50 represents good air quality with little potential to affect public health, while an AQI value over 300 represents hazardous air quality.

An AQI value of 100 generally corresponds to the national air quality standard for the pollutant, which is the level EPA has set to protect public health. AQI values below 100 are generally thought of as satisfactory. When AQI values are above 100, air quality is considered to be unhealthy-at first for certain sensitive groups of people, then for everyone as AQI values get higher.

Air Quality Index Levels of Health Concern	Numerical Value	Meaning
Good	0 to 50	Air quality is considered satisfactory, and air pollution poses little or no risk.
Moderate	51 to 100	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
Unhealthy	151 to 200	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
Very Unhealthy	201 to 300	Health alert: everyone may experience more serious health effects.
Hazardous	301 to 500	Health warnings of emergency conditions. The entire population is more likely to be affected.

*Note: Values above 500 are considered Beyond the AQI. Follow recommendations for the "Hazardous category." Additional information on reducing exposure to extremely high levels of particle pollution is available [here](#).*

EPA has assigned a specific color to each AQI category to make it easier for people to understand quickly whether air pollution is reaching unhealthy levels in their communities. For example, the color orange means that conditions are "unhealthy for sensitive groups," while red means that conditions may be "unhealthy for everyone," and so on.

### Understanding the AQI

The purpose of the AQI is to help you understand what local air quality means to your health. To make it easier to understand, the AQI is divided into six categories:

Each category corresponds to a different level of health concern. The six levels of health concern and what they mean are: Each category corresponds to a different level of health concern. The six levels of health concern and what they mean are:

- "Good" AQI is 0 to 50. Air quality is considered satisfactory, and air pollution poses little or no risk.

- "Moderate" AQI is 51 to 100. Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people. For example, people who are unusually sensitive to ozone may experience respiratory symptoms.
- "Unhealthy for Sensitive Groups" AQI is 101 to 150. Although general public is not likely to be affected at this AQI range, people with lung disease, older adults and children are at a greater risk from exposure to ozone, whereas persons with heart and lung disease, older adults and children are at greater risk from the presence of particles in the air.
- "Unhealthy" AQI is 151 to 200. Everyone may begin to experience some adverse health effects, and members of the sensitive groups may experience more serious effects.
- "Very Unhealthy" AQI is 201 to 300. This would trigger a health alert signifying that everyone may experience more serious health effects.
- "Hazardous" AQI greater than 300. This would trigger a health warnings of emergency conditions. The entire population is more likely to be affected.

Air Quality Index	Who Needs to be Concerned?	What Should I Do?
Good 0-50	It's a great day to be active outside.	
Moderate 51-100	Some people who may be unusually sensitive to particle pollution.	<p><b>Unusually sensitive people:</b> Consider reducing prolonged or heavy exertion. Watch for symptoms such as coughing or shortness of breath. These are signs to take it easier.</p> <p><b>Everyone else:</b> It's a good day to be active outside.</p>
Unhealthy for Sensitive Groups 101-150	Sensitive groups include <b>people with heart or lung disease, older adults, children and teenagers.</b>	<p><b>Sensitive groups:</b> Reduce prolonged or heavy exertion. It's OK to be active outside, but take more breaks and do less intense activities. Watch for symptoms such as coughing or shortness of breath.</p> <p><b>People with asthma</b> should follow their asthma action plans and keep quick relief medicine handy.</p> <p><b>If you have heart disease:</b> Symptoms such as palpitations, shortness of breath, or unusual fatigue may indicate a serious problem. If you have any of these, contact your health care provider.</p>
Unhealthy 151 to 200	<b>Everyone</b>	<p><b>Sensitive groups:</b> Avoid prolonged or heavy exertion. Move activities indoors or reschedule to a time when the air quality is better.</p> <p><b>Everyone else:</b> Reduce prolonged or heavy exertion. Take more breaks during all outdoor activities.</p>
Very Unhealthy 201-300	<b>Everyone</b>	<p><b>Sensitive groups:</b> Avoid all physical activity outdoors. Move activities indoors or reschedule to a time when air quality is better.</p> <p><b>Everyone else:</b> Avoid prolonged or heavy exertion. Consider moving activities indoors or rescheduling to a time when air quality is better.</p>
Hazardous 301-500	<b>Everyone</b>	<p><b>Everyone:</b> Avoid all physical activity outdoors.</p> <p><b>Sensitive groups:</b> Remain indoors and keep activity levels low. Follow tips for keeping particle levels low indoors.</p>

References-

Michael C. Koester, MD.,ATC- National Federation of State High School Associations – Sports Medicine Handbook – Fourth Edition



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