

Safety Alert

July 2023

No. 23-03

PREPARE FOR EXTREME HEAT

ANY QUESTIONS?

—

Please contact us:

RiskManagement@sausd.us

(714) 558-5856 - Main Line

(714) 480-5320 - Fax

[Risk Management Home Page](#)

—

Be reminded to prepare and stay safe. Orange County regularly experiences heat waves, which can be particularly hazardous for our students and staff.



Take these 5 steps to prevent heat illness:

1. **Water** - Access to fresh water. Everyone needs to be reminded to drink water or another beverage.
2. **Rest** - A preventative cool-down rest in the shade is allowed to give body a chance to recover.
3. **Shade** - Access to shade when outdoors. Shade structures must be erected if no other shade is readily available when working outdoors.
4. **Plan** - Implement the District's Heat Illness Prevention Plan, and initiate high-heat procedures and Emergency Action Plan for when the temperature equals or exceeds 95 degrees.
5. **Training** - All employees and supervisors must be effectively trained on heat illness prevention. Training should include the signs and symptoms of heat illness and procedures for responding to possible heat illness.

These steps are not to be considered exhaustive. Each school or facility must determine with good judgement in modifying activities or operations to avoid heat stress related illnesses and be aware of injuries related to contact with hot outdoor surfaces.

In the event of heat emergency, consult also with the updated [CDPH Heat Guidance for Schools on Sports and Strenuous Activities](#), [National Weather Service Heat Index Chart](#), County's Hot Weather Guidelines for Schools and Athletic Practice, and Cal/OSHA's Heat Safety Supervisor's Daily Checklist as attached herewith.

WEATHER CONDITIONS

Risk Management will continue to monitor air quality and weather conditions and provide updates as necessary. However, whether or not a heat advisory has been distributed, all school sites and facilities must comply with the District's Heat Illness Prevention Program.

CONTACT: If you have any questions or need assistance, please contact Risk Management's Safety Manager at Ginette.Commins@sausd.us.

REFERENCE: CDPH Health Guidance for Schools on Sports and Strenuous Activities During Extreme Heat. 8 California Code of Regulations §3395 - Heat Illness Prevention in Outdoor Places of Employment.

CDPH Health Guidance for Schools on Sports and Strenuous Activities During Extreme Heat

Revised June 30, 2023.

Guidance subject to change

If a school, local health department, or other local or Tribal jurisdiction has an existing heat emergency, adverse weather, or emergency action plan, consult the existing plan first. This CDPH health guidance provides additional or supplemental information and guidance, but does not replace your local plans.

Updates as of June 30, 2023:

- Incorporated updated guidance from the latest version of the “HeatRisk” tool.
- Removed “Interim” from title, and modified title to reflect outdoor activities and indoor activities in spaces without cooling.
- Added a “Key Sections” summary list (to click and jump to different sections).
- Reordered sections, and revised headers and text, to improve clarity, content, and flow.
- Included new “Spotlight” section on youth football and risk of exertional heat illness.
- Revised list of heat sensitive groups to be more focused on youth / student populations.
- Expanded section on proactive actions to take, including information on heat acclimatization, planning and preparing for heat emergencies, and built environment and nature-based solutions.
- Included additional resources and references.

[What Is the Risk of Exercising During Extreme Heat?](#)

Climate change is leading to higher temperatures, more often, and of longer duration – and high temperatures can kill. Heat-related deaths and illnesses are preventable, yet more than 700 people die from extreme heat every year in the United States.[1] Among teenage athletes, heat-related illness (or heat illness), is a leading cause of death.[2] All youth and student athletes are susceptible to the risks of exercising in a hot environment, particularly those participating in high-exertion sports.

Key Take-Aways:

- **Know your location's "HeatRisk" level to determine who is at risk and what actions to take.** Find your HeatRisk level here: [National Weather Service \(NWS\) HeatRisk forecast](#). The NWS HeatRisk tool provides a seven-day forecast of the potential level of heat risk for a specific location.[3] For guidance on actions to take, see the next section.

○ **HeatRisk Levels:**

Value	Risk of Heat-Related Impacts
0 (Green)	Little to no risk from expected heat.
1 (Yellow)	Minor - This level of heat affects primarily those individuals extremely sensitive to heat, especially when outdoors without effective cooling and/or adequate hydration.
2 (Orange)	Moderate - This level of heat affects most individuals sensitive to heat, especially those without effective cooling and/or adequate hydration.
3 (Red)	Major - This level of heat affects anyone without effective cooling and/or adequate hydration.
4 (Magenta)	Extreme - This level of rare and/or long-duration extreme heat with little to no overnight relief affects anyone without effective cooling and/or adequate hydration.

○ Source: NWS [HeatRisk](#): Understanding HeatRisk.

- Be aware that **multiple days of extreme high temperatures will make students and athletes more vulnerable to heat illness.**
- **Always monitor for exertional heat illness.** Air temperature, humidity, direct sunlight, and other factors can increase risk of heat illness. See below for more information.
- **Be aware that exertional heat stroke is life-threatening.** Exertional heat stroke (EHS) can occur within the first 60 minutes of exertion and may be triggered without exposure to high ambient temperatures.[4] Learn more below about how to recognize and properly treat EHS, and ways to prevent it. Other heat-related illnesses include heat exhaustion, heat cramps, sunburn, and heat rash.[5] For more information about heat-related illnesses, please see the relevant sections below.
- **Proceed with extra caution in scenarios where extreme heat occurs suddenly, lasts an extended period of time, and/or reaches new high temperatures. Generally, in these scenarios, very few outdoor activity participants (or those participating in indoor spaces without cooling) are “acclimatized.”** Heat acclimatization is the body's process of adapting to or “getting used to” the heat that occurs gradually (usually requiring 1 to 2 weeks) when a person is exposed to a hotter setting. Students and athletes face higher risk of heat illness when they are not acclimatized to hotter and/or more humid conditions. Certain geographic areas (such as coastal areas) not accustomed to higher temperatures will have more persons that are not acclimatized. See below for more information on heat acclimatization.

Spotlight: Youth Football

Rates of exertional heat illness (EHI) among high school athletes are higher in American football than all other sports combined.[6] The intensity and duration of practices and games, the timing of the practice season in the summer, heat-trapping uniforms and protective equipment, and other factors can all contribute to increased risk of EHI among youth football players.[7] To help prevent EHI[8]:

- *Have athletes undergo a period of heat acclimatization (see below for more information)*
- *Encourage athletes to arrive at practice hydrated*
- *Allow athletes unlimited access to hydration*
- *Modify practice when environmental conditions become extreme*
- *Use weather forecasting for heat stress preparation (see below)*
- *Allow regular rest and hydration breaks*
- *Reduce the intensity of practice, time of practice, and equipment worn*

Learn more at [USA Football - Heat Preparedness and Hydration](#)

What Can Be Done to Protect School Communities from Extreme Heat?

Start by determining your school community's risk of heat impacts. Use the [National Weather Service \(NWS\) HeatRisk forecast tool](#) to find your location's risk level. *Additional information about the HeatRisk tool is available below and on the [NWS website](#).*

Once you determine HeatRisk level, **use the [CDPH Heat Risk Grid](#) (PDF; screenshot below -- click on) to understand what each risk level means, who is at risk, and what general actions can be taken to protect those in your school community.**

Value	Risk	What does this mean?	Who / What is at risk?	What actions can be taken?
0 (Green)	Little to None	<ul style="list-style-type: none"> This level of heat poses little to no risk from expected heat 	<ul style="list-style-type: none"> No elevated risk 	<ul style="list-style-type: none"> No preventative actions necessary
1 (Yellow)	Minor	<ul style="list-style-type: none"> Heat of this type is tolerated by most; however, there is a minor risk for extremely heat-sensitive groups to experience negative heat-related health effects 	<ul style="list-style-type: none"> Primarily those who are extremely sensitive to heat, especially when outdoors without effective cooling and/or adequate hydration 	<ul style="list-style-type: none"> Increase hydration Reduce time spent outdoors or stay in the shade when the sun is strongest Open windows at night and use fans to bring cooler air inside buildings
2 (Orange)	Moderate	<ul style="list-style-type: none"> Heat of this type is tolerated by many; however there is a moderate risk for members of heat-sensitive groups to experience negative heat-related health effects, including heat illness Some risk for the general population who are exposed to the sun for longer periods of time Living spaces without air conditioning can become uncomfortable during the afternoon and evening, but fans and leaving windows open at night will help 	<ul style="list-style-type: none"> Primarily heat-sensitive or vulnerable groups, especially those without effective cooling or hydration Those not acclimated to this level of heat (i.e. visitors) Otherwise healthy individuals exposed to longer duration heat, without effective cooling or hydration, such as in the sun at an outdoor venue Some transportation and utilities sectors Some health systems will see increased demand, with increases in emergency room visits 	<ul style="list-style-type: none"> Reduce time in the sun during the warmest part of the day Stay hydrated Stay in a cool place during the heat of the day (usually 10 a.m. to 5 p.m.) Move outdoor activities to cooler times of the day For those without air conditioning, use fans to keep air moving and open windows at night
3 (Red)	Major	<ul style="list-style-type: none"> Heat of this type represents a major risk to all individuals who are 1) exposed to the sun and active or 2) are in a heat-sensitive group Dangerous to anyone without proper hydration or adequate cooling Living spaces without air conditioning can become deadly during the afternoon and evening. Fans and open windows will not be as effective. Poor air quality is possible Power interruptions may occur as electrical demands increase 	<ul style="list-style-type: none"> Much of the population, especially anyone without effective cooling or hydration Those exposed to the heat/sun at outdoor venues Health systems likely to see increased demand with significant increases in emergency room visits Most transportation and utilities sectors 	<ul style="list-style-type: none"> Cancel outdoor activities during the heat of the day (usually 10 a.m. to 5 p.m.), and move activities to the coolest parts of the day* Stay hydrated Stay in a cool place especially during the heat of the day and evening If you have access to air conditioning, use it, or find a location that does. Even a few hours in a cool location can lower risk. Fans may not be adequate.
4 (Magenta)	Extreme	<ul style="list-style-type: none"> This is a rare level of heat leading to an extreme risk for the entire population Very dangerous to anyone without proper hydration or adequate cooling This is a multi-day excessive heat event. A prolonged period of heat is dangerous for everyone not prepared Poor air quality is likely Power outages are increasingly likely as electrical demands may reach critical levels 	<ul style="list-style-type: none"> Entire population exposed to the heat is at risk For people without effective cooling, especially heat-sensitive groups, this level of heat can be deadly Health systems highly likely to see increased demand with significant increases in emergency room visits Most transportation and utilities sectors 	<ul style="list-style-type: none"> Cancel outdoor activities* Stay hydrated Stay in a cool place, including overnight If you have access to air conditioning, use it, or find a location that does. Even a few hours in a cool location can lower risk. Fans will not be adequate. Check on your neighbors

Click on the CDPH Heat Risk Grid (PDF) above for a high-resolution version.

The CDPH Heat Risk Grid is adapted from the NWS HeatRisk tool[9].

When to Cancel Sports and Other Strenuous Activities

Review the guidance below. If a circumstance is unclear or uncertain, cancel. Note, an unconditioned space is an enclosed space within a school or other building that is not cooled by a cooling system.[10]

When the HeatRisk level is forecast to be "**Extreme**" (Magenta / Level 4):

Cancel all outdoor and unconditioned indoor activities

AND

(if feasible)

Reschedule all outdoor activities and unconditioned indoor activities to a different day when the HeatRisk level is no longer "Extreme" (Magenta / Level 4) or "Major" (Red / Level 3)

OR

Move to alternative activities in an air-conditioned or cooled indoor environment

When the HeatRisk level is forecast to be "Major" (Red / Level 3):

Cancel all outdoor and unconditioned indoor activities *during the heat of the day* (usually 10 a.m. to 5 p.m.)

AND

(if feasible)

Reschedule all outdoor activities and unconditioned indoor activities to a cool time of the day if there is one *(for example, very early morning)*

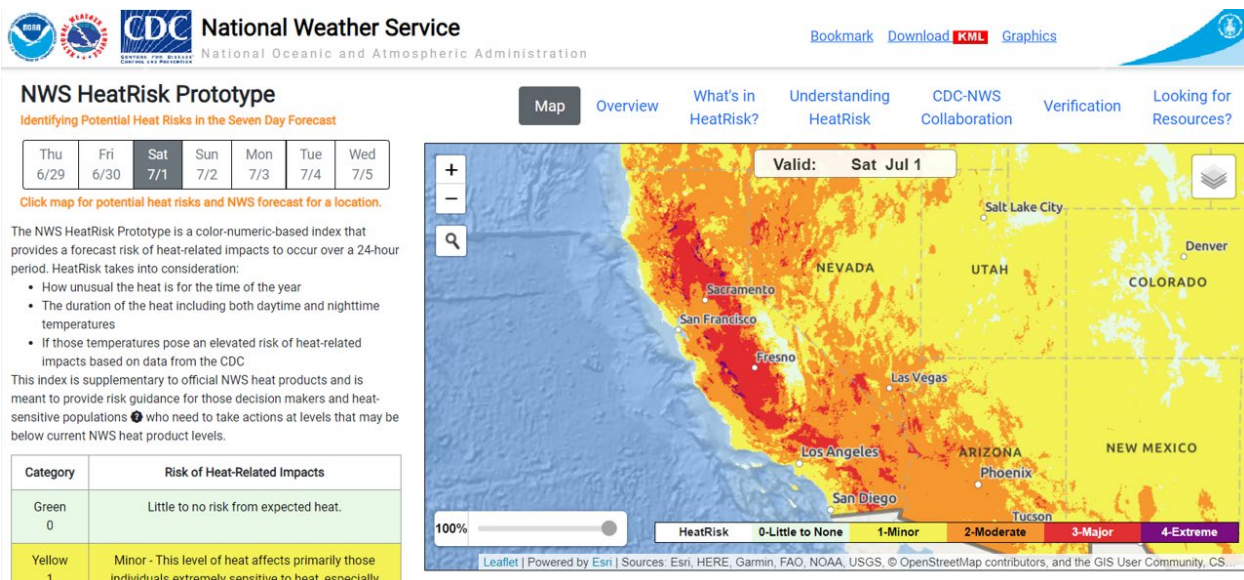
OR

Reschedule all outdoor activities and unconditioned indoor activities to a different day when the HeatRisk level is no longer "Extreme" (Magenta / Level 4) or "Major" (Red / Level 3)

OR

Move to alternative activities in an air-conditioned or cooled indoor environment

What Is the "HeatRisk" Forecast and How Do I Use It?



Screenshot of NWS HeatRisk forecast tool. Accessed June 29, 2023.

Identifying Potential Heat Risks in a Seven-Day Forecast

Information below adapted from the [NWS HeatRisk Overview](#).

Why Use HeatRisk?

- HeatRisk is a better indicator than using temperature alone
- HeatRisk takes into consideration how unusual the heat is for your location and time of the year

- HeatRisk accounts for how long the heat will last (including both daytime and nighttime temperatures) and for humidity
- HeatRisk incorporates data from the Centers for Disease Control and Prevention (CDC) to determine if temperatures pose an elevated risk of heat-related health impacts

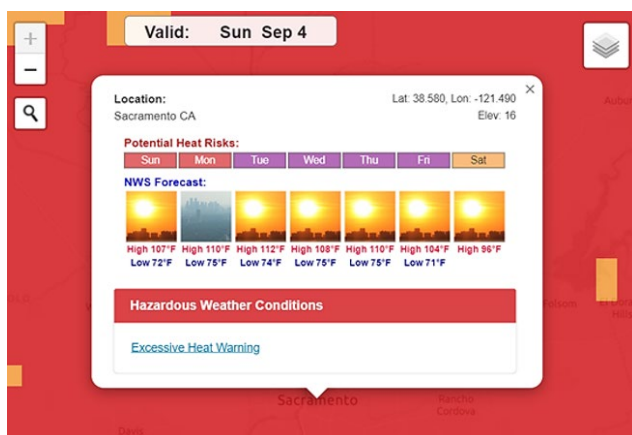
Understanding the HeatRisk Forecast:

The National Weather Service (NWS) HeatRisk tool is a color-numeric-based index that provides a forecast of the potential level of risk for heat-related impacts to occur over each day (24-hour period). The latest version of the HeatRisk tool incorporates heat-health data from the Centers for Disease Control and Prevention (CDC) to influence the local thresholds and inform the approach. That level of risk is illustrated by a color/number along with identifying the groups potentially most at risk at that level. Each HeatRisk level is also accompanied by recommendations for heat protection and can serve as a useful tool for planning for upcoming heat and its associated potential risk. Based on the NWS high resolution national gridded forecast database, a daily HeatRisk value is calculated for each location from the current date through seven days in the future.

This HeatRisk tool can be used to protect lives and property from the potential risks of excessive heat, and may be especially useful for those who are more easily affected by heat or those who provide support to those communities of heat-vulnerable individuals. Weather extremes generally affect historically underserved and marginalized communities the most, and the HeatRisk forecast service ensures that communities have the right information at the right time to be better prepared for upcoming extreme heat.

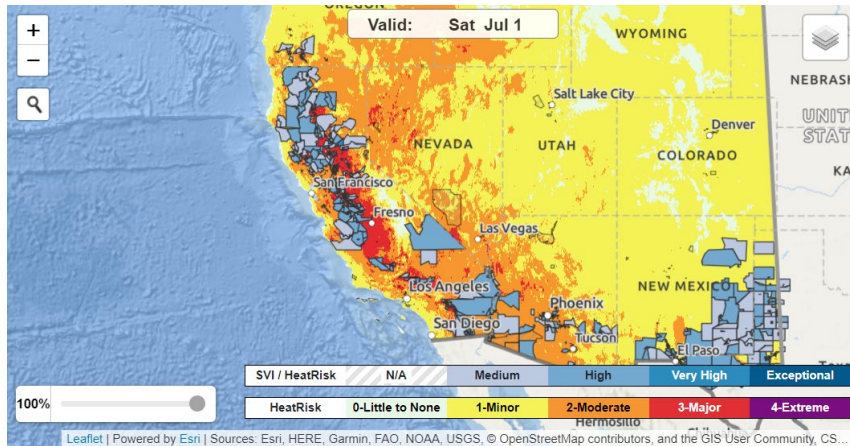
How to Access the HeatRisk Tool:

- Go to the [NWS HeatRisk tool webpage](#)
- Click the magnifier icon and type in your address or location
- Once address / location entered, the tool will display a seven-day forecast starting with the current day, including high and low temperatures, and potential heat risk (with HeatRisk levels indicated by the colors green / yellow / orange / red / magenta). Additionally, information about hazardous weather conditions will be provided (for example, excessive heat warnings). See example screenshot for Sacramento, California below during the September 2022 heat wave:



NWS HeatRisk forecast, Sacramento, California. Accessed September 4, 2022.

The HeatRisk tool also provides additional decision-support layers (see the “layers” icon at the upper right of the map) that allow users to view geographic boundaries (including US Counties and Tribal Lands), other NWS heat information (i.e., Heat Advisory, Excessive Heat Watch or Warning), and social vulnerability (based on the [CDC/ATSDR Social Vulnerability Index](#)) as an overlay layer.



HeatRisk map showing US County boundaries and Social Vulnerability Index overlay. Accessed June 26, 2023.

What Are the Signs of Exertional Heat-Related Illness?

Signs and Symptoms of Exertional Heat-Related Illness

- Muscle cramping
- Dizziness
- Headache
- Weakness
- Hot and wet or dry skin
- Flushed face
- Rapid heartbeat, low blood pressure
- Breathing very fast (hyperventilation)
- Vomiting, diarrhea
- **Behavioral / cognitive changes*** (confusion, irritability, aggressiveness, hysteria, emotional instability, impaired judgement, inappropriate behavior)
- **Drowsiness, loss of consciousness***
- **Staggering, disorientation***
- **Difficult speaking, slurred speech***
- **Seizures***

**These are signs of the most severe form of exertional heat-related illness, heat stroke, which is life threatening and requires immediate, aggressive body cooling and medical attention (see next section for more information).*

For general information on signs, symptoms, and treatment of heat-related illness, visit the [CDC website](#).

Treatment Of Exertional Heat Stroke

When exertional heat stroke (EHS) is suspected for an athlete, **cool first and transport second**. Cooling treatment must be provided immediately, before being transported by emergency medical services (EMS).[11,12]

- Remove all equipment and extra layers of clothing
- Cool the athlete as quickly as possible within 30 minutes via whole body cold or ice water immersion (place the athlete in a tub with ice and water approximately 35-58 degrees F).*
- Stir water and add ice throughout cooling process.
- If cold-water immersion is not possible (no tub), aggressively douse the athlete's whole body with cold water. Or if that's not possible, take the athlete to a shaded, cool area and use rotating cold, wet towels to cover as much of the body surface as possible.
- After cooling has been initiated, activate emergency medical system by calling 9-1-1.

Exertional heat stroke has a high survival rate when **immediate cooling via cold water immersion or aggressive whole-body dousing in cold water** is initiated. Immediate means within 10 minutes of collapse.[11,13]

*The Inter-Association Task Force for Preventing Sudden Death in Secondary School Athletics Programs recommends schools having a cold-water immersion tub if a risk of EHS exists.[11]

Learn more about preventing, recognizing, and treating EHS at [UConn Korey Stringer Institute – Heat Stroke](#)

What Factors Increase the Risk of Heat-Related Illness?

- **Personal factors.** Age, obesity, dehydration, heart disease[14], mental illness, poor circulation, sunburn, pregnancy, and prescription drug and alcohol use all can play a role in whether a person can cool off enough in very hot weather.
- **Exertion level.** Even young and healthy people can get sick from the heat if they participate in strenuous[15] physical activities such as Physical Education during hot weather without gradually acclimatizing to hot conditions over a period of 1–2 weeks.
- **High humidity.** When the humidity is high, sweat won't evaporate as quickly. Evaporation of sweat is the main way the body can cool itself.

Who is most vulnerable to heat?

Extreme heat can affect anyone, but there are a number of factors that increase a person's risk from extreme heat. People with greater heat sensitivity or heat vulnerability are at an increased risk of heat illness and death, and include (but are not limited to) youth populations who:

- Are exercising or doing strenuous activities outdoors (or indoors in spaces without adequate cooling) during the heat of the day – especially those not used to the level of heat expected, those who are not drinking enough fluids, or those new to that type of activity

- Attend schools or engage in school-based activities in urban areas (due to urban heat island effect), particularly at schools with more asphalt and dark surfaces, and less shade, tree canopy, or green spaces
- Attend schools without air conditioning, including in under-resourced communities or geographic areas where buildings historically have not needed air conditioning (for example, coastal communities)
- Are very young (infants and children up to four years of age are at greatest risk)
- Are living with disabilities and/or have access and functional needs
- Are affected by certain chronic health conditions or other illnesses
- Are affected by certain mental health conditions
- Are taking [certain medications](#) (like antidepressants) or substances (like alcohol)
- Are limited English proficient (LEP)
- Otherwise do not have access to a reliable source of cooling and/or hydration
- Otherwise already experience social and health inequities

What Other Proactive Steps Can Be Taken?

Administrators, coaches, or other organizers should take measures to make sure participants **stay cool, stay hydrated, stay connected, and stay informed**. Make sure water is available during outdoor activities, including water activities. Encourage regular breaks and hydration. Evaluate conditions regularly and make appropriate adjustments – for example, postpone or reschedule practices whenever possible to be held early in the morning or late in the evening to avoid times when heat is more severe.

Closely monitor participants and ask yourself these questions:

- Are they drinking enough water?*
- Do they have access to air conditioning?
- Do they need help keeping cool?
- Are they exhibiting signs and symptoms of heat-related illness (see information above)?

Remind participants:

- Getting too hot can make them sick.
- Limit their outdoor activity, especially midday when the sun is hottest.
- Pace their activity. Start activities slowly and pick up the pace gradually.
- Drink more water than usual and don't wait until they're thirsty to drink more.*
- Muscle cramping may be an early sign of heat-related illness.
- Wear loose, lightweight, light-colored clothing.

- Use sunscreen and reapply as needed (follow package directions).

[For Everyone] Take these steps to prevent heat-related illnesses, injuries, and death during hot weather:

- Stay in an air-conditioned indoor location as much as you can.
- Assess your hydration and be aware of your individual hydration needs (urine color, body mass changes, thirst).*
- Schedule outdoor activities carefully.
- Wear loose, lightweight, light-colored clothing and sunscreen.
- Pace yourself.
- Take cool showers or baths to cool down.
- Check on other participants or teammates and have someone do the same for you.
- Monitor the environmental conditions on site using a Wet Bulb Globe Temperature (WBGT) device**
- Check the local news for health and safety updates.
- Check the National Weather Service [HeatRisk forecast](#).

**Learn more about maintaining an appropriate level of hydration before, during, and after exercise by visiting the [University of Connecticut \(UConn\) Korey Stringer Institute's "Hydration" webpage](#).*

***Learn more at [UConn Korey Stringer Institute – Wet Bulb Globe Temperature Monitoring](#)*

The California Interscholastic Federation provides a free "Heat Illness Prevention" training as well as web pages outlining the identification and treatment of heat exhaustion, heat stroke, heat syncope, exertional hyponatremia, and heat cramps. See: [Heat Illness - California Interscholastic Federation](#)

Protect students through heat acclimatization:

Adapted from the Korey Stringer Institute (KSI), University of Connecticut (UConn)

Acclimatization or acclimation to heat is an important factor in how a person's body responds to and is able to cope with heat exposure. Acclimatization can be broadly defined as "a complex series of changes or adaptations that occur in response to heat stress in a controlled environment over the course of 7 to 14 days." These changes can improve a student athlete's ability to handle heat stress during practice or exercise.[16]

For additional information on heat acclimatization for athletes, visit the [UConn KSI "Heat Acclimatization" webpage](#).

Plan and prepare for heat and other emergencies:

Schools and organizations that sponsor athletics can develop an Emergency Action Plan (EAP) for managing heat and other emergencies before they occur. Having an EAP in place prepares your school community to respond immediately when an emergency happens.

For more information, explore the resources here:

- [The Inter-Association Task Force for Preventing Sudden Death in Secondary School Athletics Programs: Best-Practices Recommendations](#)
- [National Athletic Trainers' Association Position Statement: Emergency Planning in Athletics \(PDF; Andersen, et al., 2002\)](#)
- [Emergency Action Plans \(UConn Korey Stringer Institute\)](#) – including example EAP template
- [Emergency Action Planning Program \(AnyoneCanSaveALife.org\)](#)
 - [Emergency Action Planning Guide for After-School Practices and Events \(PDF\)](#)

Address heat in schools through built environment and nature-based solutions:

School districts and schools can help reduce heat exposure in schools and schoolyards through engineered and nature-based solutions. Examples include the following (adapted from [UCLA Luskin Center for Innovation – Protecting Californians with Heat-Resilient Schools \[PDF\]](#)):

- Improve school building envelopes (for example, insulation, double-paned windows, window shading, and air sealing). From a broader climate resiliency perspective, these improvements would ideally be completed in combination with other health and safety upgrades to ensure healthy air and indoor environmental quality (for example, lead, mold, and asbestos remediation).
- Install cool roofs on schools.
- Plant trees to provide shade outdoors, both for the buildings and play areas.
- Install other outdoor shade structures, such as shade sails over playground equipment, outdoor dining, and other outdoor common areas.
- Decrease asphalt cover and increase permeable surfaces and natural ground cover, like gardens.
- Transition toward schoolyards with more trees and other greenery to reduce heat burden.
- Install or improve cooling equipment (like air conditioners or heat pumps), prioritizing energy-efficient equipment whenever possible.

[Where Can I Learn More?](#)

Additional Resources:

- [Heat Stress \(CDC National Institute for Occupational Safety and Health\)](#)
- [Tips for Preventing Heat-Related Illness | Natural Disasters and Severe Weather \(CDC\)](#)
- [Excessive Heat - School Disaster and Emergency Management \(CA Dept of Education\)](#)

- [National Athletic Trainers' Association Position Statement: Exertional Heat Illnesses \(Casa, et al., 2015\)](#)
- [Heat-Related Illness in Sports and Exercise \(Nichols, 2014\)](#)
- [Regional heat safety thresholds for athletics in the contiguous United States \(PDF; Grundstein et al., 2015\)](#)
- [Heat Illness - California Interscholastic Federation \(CIF\)](#)
- National Federation of State High School Associations (NFHS)
 - [NFHS Heat Acclimatization and Heat Illness Prevention Position Statement \(PDF\)](#)
 - [NFHS online "Heat Illness Prevention" course](#) [free]
- [Preseason Heat-Acclimatization Guidelines for Secondary School Athletics \(Casa and Csillan, 2009\)](#)
- [Heat and Hydration \(PDF; USA Football and University of Connecticut – Korey Stringer Institute\)](#)
- [Preventing and Treating Heat Illness in Young Athletes \(Children's Hospital of Colorado\)](#)
- [Model Policy for Managing Heat and Humidity \(PDF; Michigan High School Athletic Association / MHSAA\)](#)
- [Managing Extreme Heat Recommendations for Schools: Pilot Version \(PDF; Arizona Department of Health Services\)](#)
- [HeatReady Schools \(Healthy Urban Environments Initiative – Arizona State University\)](#)

Heat Illness Prevention for School (and Other) Workers:

From Cal/OSHA / California Department of Industrial Relations (DIR)

- [99Calor](#) – Cal/OSHA will send any employer free materials
- [Heat illness prevention](#)
- DIR regulation: [Heat Illness Prevention in Outdoor Places of Employment](#)
- [Acclimatization](#) – guidelines and best practices for workers (including school workers)

Further Reading

- [Heat risk and young athletes — rising temperatures lead to lawsuits and environmental injustice \(theconversation.com\)](#)

References

- [1] [Vaidyanathan A, Malilay J, Schramm P, Saha S. Heat-Related Deaths — United States, 2004–2018. Morbidity and Mortality Weekly Report \(MMWR\). 2020.](#)
- [2] [Heat Illness Among High School Athletes --- United States, 2005--2009. MMWR. 2010.](#)
- [3] [HeatRisk Overview.](#)

- [4] [Epstein Y & Yanovich R. 2019. Heatstroke. New England Journal of Medicine, 380\(25\), 2449-2459.](#)
- [5] [CDC. Warning Signs and Symptoms of Heat-Related Illness.](#)
- [6] [Kerr Z, Casa D, Marshall S, and Dawn Comstock, R. 2013. Epidemiology of Exertional Heat Illness Among U.S. High School Athletes. American Journal of Preventive Medicine. Vol. 44; Issue 1; P8-14.](#)
- [7] [Bergeron M, McKeag D, Casa D, et al. 2005. Youth Football: Heat Stress and Injury Risk. Medicine & Science in Sports & Exercise. 37\(8\):p 1421-1430.](#)
- [8] [USA Football - Heat Preparedness and Hydration.](#)
- [9] National Weather Service (NWS). [HeatRisk - Understanding HeatRisk.](#)
- [10] [U.S. Department of Energy - Office of Energy Efficiency and Renewable Energy. What Are Space Conditioning Types?](#)
- [11] [The Inter-Association Task Force for Preventing Sudden Death in Secondary School Athletics Programs: Best-Practices Recommendations.](#)
- [12] [UConn KSI - Exertional Heat Stroke Treatment.](#)
- [13] [McDermott B, Casa D, Ganio M, et al. 2009. Acute Whole-Body Cooling for Exercise-Induced Hyperthermia: A Systematic Review. Journal of Athletic Training. Jan-Feb; 44\(1\): 84–93.](#)
- [14] Note that common illnesses can also be exacerbated by extreme heat including autoimmune conditions; asthma, COPD, and allergies; migraines; heart disease; and autoimmune diseases including multiple sclerosis (MS), lupus, and rheumatoid arthritis (RA).
- [15] Vigorous activity is defined by the Centers for Disease Control as activities greater than 6.0 METs. [Specific examples can be found here \(PDF\).](#)
- [16] [UConn KSI - Heat Acclimatization.](#)



National Weather Service Heat Index Chart



Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110	
	40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
	45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
	50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
	55	81	84	86	89	93	97	101	106	112	117	124	130	137			
	60	82	84	88	91	95	100	105	110	116	123	129	137				
	65	82	85	89	93	98	103	108	114	121	128	136					
	70	83	86	90	95	100	105	112	119	126	134						
	75	84	88	92	97	103	109	116	124	132							
	80	84	89	94	100	106	113	121	129								
	85	85	90	96	102	110	117	126	135								
	90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127											
100	87	95	103	112	121	132											

Likelihood of Heat Disorders with Prolonged Exposure and/or Strenuous Activity

■ Caution ■ Extreme Caution ■ Danger ■ Extreme Danger



Hot Weather Guidelines

for Schools



Children take longer to adjust to hot environments than adults do, and their bodies reach core temperature much faster. Children's bodies have greater surface area to body mass ratio, so they absorb more heat on a hot day (and lose heat more rapidly on a cold day). Also, children have considerable lower sweating capacity than adults, and so they are less able to dissipate body heat by evaporative sweating and cooling.

Children are less likely to feel thirsty during prolonged play and exercise, and sometimes they just don't want to be interrupted. They need to be reminded to drink water or another beverage.

The Orange County Department of Education in collaboration with the Orange County Health Care Agency have created the following guidelines for schools to increase student safety during periods of hot weather.

- * When outdoors, stay in the shade whenever possible. Limit time outdoors when temperatures and UV radiation are most intense, between 11 a.m. and 4 p.m.
- * Ensure children are well hydrated. Provide or encourage frequent drinks to ensure adequate hydration. Plain water is the liquid of choice.
- * Monitor children in wheelchairs and check the temperature of metal and vinyl parts.
- * Check the temperature of metal and plastic playground equipment.
- * Staff should be aware of the signs and symptoms of heat cramps, heat exhaustion, and heat stroke. Follow first aid procedures promptly.
- * Limit strenuous activity outdoors
- * Check regularly on young children and those children who are physically challenged or in wheelchairs and those who have chronic illnesses such as asthma.



Heat Illness Signs and Symptoms

Sunburn: Redness, pain, swelling of skin, blisters, fever and headaches.

Treatment: leave water blisters intact to speed healing and avoid infection. If blisters break, apply a dry sterile dressing. Refer serious cases to a physician.

Heat Cramps: heavy sweating can cause painful muscle cramps, usually in the legs, but possibly in the abdomen.

Treatment: apply firm pressure on cramping muscles or gently massage to relieve spasm; give sips of water, if nausea occurs discontinue sips of water, move person to a cooler place to rest. Observe the person carefully for changes in condition.

Heat Exhaustion: heavy sweating, weakness, cold, pale and clammy skin; weak pulse, fainting and vomiting.

Treatment: get person out of sun, move person to a cooler environment, lay person down and loosen clothing, apply cool wet cloths, give sips of water. If nausea occurs, discontinue sips of water; if vomiting continues, seek immediate medical attention.

Heatstroke: severe medical emergency, hot, dry skin, rapid and strong pulse, possible unconsciousness.

Treatment: **Call 911, if unable to get person to medical help immediately, do the following:**

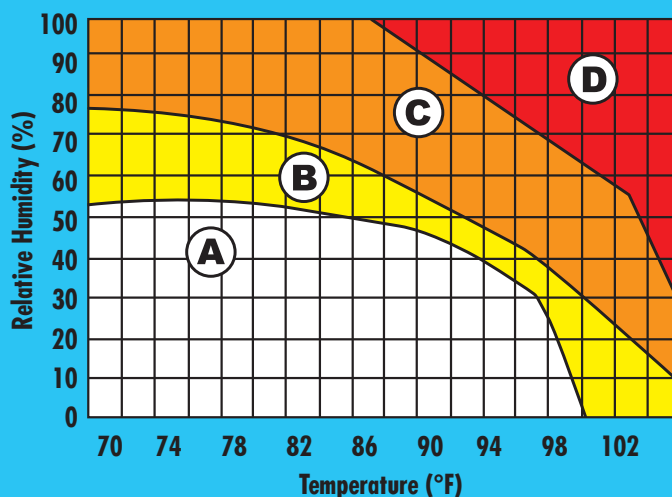
- * Move person to a cooler environment
- * Remove outer clothing
- * Reduce body temperature using lukewarm (not cold) water to bathe/sponge the person
- * Do not give fluids

Activity Guidelines

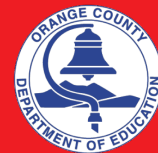
Fluid breaks should be scheduled for all practices and become more frequent as the heat and humidity levels rise.

Add 5°F to the temperature between 10:00 a.m. and 4:00 p.m. from mid-May to mid-September on bright, sunny days.

- A. Children should receive a 5-10 minute rest and fluid break after every 25 to 30 minutes of activity.
- B. Children should receive a 5-10 minute rest and fluid break after every 25 to 30 minutes of activity. Children should be in shorts and t-shirts (with helmet and shoulder pads only, not full equipment, if worn for activity).



- C. Children should receive a 5-10 minute rest and fluid break after every 15 to 20 minutes of activity. Children should be in shorts and t-shirts only (with all protective equipment removed, if worn for activity).
- D. Cancel or postpone all outdoor practices/games. Practice may be held in an air conditioned space.



Hot Weather Guidelines

for Athletic Practice



What's Inside...

- > Heat Related Terms
- > Heat Illnesses
- > Prevention of Heat Illnesses
- > Guidelines for Fluid Replacement for Athletes

The Orange County Department of Education in collaboration with the Orange County Health Care Agency have created the following guidelines for parents and coaches to increase the safety and performance of children who play sports in hot weather.

People suffer heat-related illness when the body's temperature control system is overloaded. The body normally cools itself by sweating. But under some conditions, sweating just isn't enough. In such cases, a person's body temperature rises rapidly. Very high body temperatures may damage the brain or other vital organs. Several factors affect the body's ability to cool itself during extremely hot weather. When the humidity is high, sweat will not evaporate as quickly, preventing the body from releasing heat quickly.

Children sweat less than adults, making it harder for them to cool off. Therefore, children who play sports or are physically active in hot weather can be at risk for heat illnesses. In addition, dehydration also puts children at risk for more dangerous heat illnesses.

Heat Related Terms

Heat Wave: More than 48 hours of high heat (90 degrees or higher) and high humidity (80 percent relative humidity) are expected.

Heat Index: A number in degrees Fahrenheit that tells how hot it really feels with the heat and humidity. Exposure to full sunshine can increase the heat index by 15 degrees F. Temperature and heat index readings for individual locations may be found at www.weather.com.

Heat Illness: A person's natural cooling system may begin to fail, allowing internal heat to build up to dangerous levels. The result may be heat illness, which can come in the form of heat cramps, heat exhaustion, or heatstroke.



Heat Illnesses

Heat Cramps: Brought on by exercise and the resulting loss of sodium and moisture.

- * Muscle pains or spasms (usually in the abdomen, arms or legs)

Treatment:

- * Stop all activity and sit in a cool place
- * Drink clear juice or a sports beverage
- * Do not return to strenuous activity for a few hours after the cramps subside
- * Seek medical attention if cramps do not subside in 1 hour

Heat Exhaustion: A moderate heat illness that develops after several days of exposure to high temperatures and inadequate replacement of fluids. The skin may be cool and moist, the pulse rate will be fast and weak, and breathing will be fast and shallow.

The warning signs of heat exhaustion are:

- * Heavy Sweating
- * Paleness
- * Muscle cramps
- * Tiredness
- * Weakness
- * Dizziness
- * Headache
- * Nausea/vomiting
- * Fainting

Treatment:

- * Drink cool, nonalcoholic beverages
- * Rest
- * Take a cool shower, bath or sponge bath
- * Seek an air-conditioned environment
- * Wear lightweight clothing

Heat Stroke: The most serious heat-related illness. It occurs when the body becomes unable to control its temperature. Heat stroke can cause death or permanent disability if emergency treatment is not provided.

The warning signs of a heat stroke vary, but may include the following:

- * An extremely high body temperature (above 103° F)
- * Red, hot, and dry skin (no sweating)
- * Rapid, strong pulse
- * Throbbing headache
- * Dizziness
- * Nausea
- * Confusion
- * Unconsciousness

Treatment:

Heat stroke can be a life-threatening emergency. Have someone call for immediate medical assistance while you begin cooling the victim.

Do the following:

- * Get the victim to a shady area
 - * Cool the victim rapidly, using whatever methods you can; Apply ice packs in the armpits, groin and neck areas, place the victim in a tub of cool water, place the person in a cool shower, spray the victim with cool water from a garden hose, sponge the person with cool water or wrap the victim in cool, wet sheet and fan them vigorously
- * Monitor body temperature and continue cooling efforts until the body temperature drops to 101-102° F
- * If emergency medical personnel are delayed, call the hospital emergency room for further instructions
- * Do not give the victim alcohol to drink
- * Get medical assistance as soon as possible



Guidelines for Fluid Replacement for Athletes

The effects of dehydration include decreased athletic performance and an increased risk of heat illness. Athletes should not lose more than 3% of body weight as a result of one training session. Athletes should be educated in the process of hydrating themselves as a 24 hour a day practice, and should begin every athletic activity well hydrated.

Signs and Symptoms of Dehydration:

- | | |
|------------------------------------|--|
| <input type="checkbox"/> Thirst | <input type="checkbox"/> Irritability |
| <input type="checkbox"/> Headache | <input type="checkbox"/> Weakness |
| <input type="checkbox"/> Dizziness | <input type="checkbox"/> Cramps |
| <input type="checkbox"/> Nausea | <input type="checkbox"/> Decreased performance |

What to drink during exercise include:

- ☐ WATER
- ☐ Carbohydrate drinks with 6-8% carbs (Gatorade) if exercise greater than 45 min (if carb concentration is greater than 6-8% absorption rate will be decreased)
- ☐ Cool beverages at 50-59°F recommended, if beverage is too cold the absorption rate will be decreased

What not to drink includes:

- ☐ Fruit juice, carbohydrate gels, sodas, carbonated sport drinks
- ☐ >8% Carbohydrate level drinks
- ☐ Drinks with caffeine, alcohol, or carbonation

Hydration tips:

- ☐ By the time you are thirsty, you are already dehydrated
- ☐ Drink before, during and after games
- ☐ Avoid soft drinks and juice during play, high carbs may cause stomach problems
- ☐ Urine should be light yellow or clear and odorless

Fluid guidelines:

- ☐ 2-3 hours before exercise drink 17-20 oz of water/sports drink
- ☐ 10-20 min before exercise drink 7-10 oz of water/sports drink
- ☐ Continue drinking water or sports drinks throughout exercise (generally 7-10 oz every 10-20 min)
- ☐ Within 2 hours after exercise drink enough fluid to replace lost fluids during exercise

Prevention of Heat Illnesses

The best management of heat related illness is PREVENTION.

- ☐ Ensure the athlete is well hydrated prior to the start of any and all activity.
- ☐ Allow frequent periods of rest and hydration during activity.
- ☐ Allow unrestricted fluid replacement; encourage fluids before, during and after activity.
- ☐ Weigh athletes before and after activity to monitor body water loss from the activity and to insure adequate rehydration has occurred prior to next session.
- ☐ Gradually increase activity in the heat over a period of 7-10 days to allow adequate acclimatization.
- ☐ Wear light-weight and light-colored clothing.
- ☐ Protect against sun exposure, i.e., use sun screen.
- ☐ Schedule activities at the coolest time of day.
- ☐ Routinely perform mandatory temperature and humidity readings on playing surfaces (indoor/outdoor).
- ☐ Routinely monitor changing weather conditions with close attention to temperature and humidity on playing surfaces (indoor/outdoor).
- ☐ Strongly consider postponing or canceling for extreme heat and humidity conditions.



Activity should be altered and / or eliminated based on the Heat Index as follows:

<p>Under 95 degrees Heat Index</p> <p>“Green Flag”</p>	<p>*All Sports</p> <ul style="list-style-type: none"> ➤ Provide ample amounts of water. This means that water should always be available at regular intervals and athletes should be able to take in as much water as they desire. ➤ Optional water breaks approximately every 30 - 45 minutes for approximately 10 minutes duration. ➤ Ice-down towels for cooling. ➤ Watch / monitor athletes carefully for necessary action.
<p>95 degrees to 99 degrees Heat Index</p> <p>“Yellow Flag”</p>	<p>*All Sports</p> <ul style="list-style-type: none"> ➤ Provide ample amounts of water. This means that water should always be available at regular intervals and athletes should be able to take in as much water as they desire. ➤ Optional water breaks approximately every 30 - 45 minutes for approximately 10 minutes duration. ➤ Ice-down towels for cooling. ➤ Watch / monitor athletes carefully for necessary action. <p>*Contact Sports</p> <ul style="list-style-type: none"> ➤ Helmets and other possible equipment removed if not involved in contact or necessary for safety. ➤ Reduce time of outside activity. RECOMMENDATION: Practice should not exceed 2-1/2 hours. Consider moving practice to morning or later in the day. ➤ Re-check temperature and heat index approximately every 30 minutes to monitor for increased risks.
<p>100 degrees to 105 degrees Heat Index</p> <p>“Red Flag”</p>	<p>*All Sports</p> <ul style="list-style-type: none"> ➤ Provide ample amounts of water. This means that water should always be available at regular intervals and athletes should be able to take in as much water as they desire. ➤ Optional water breaks approximately every 30 - 45 minutes for approximately 10 minutes duration. ➤ Ice-down towels for cooling. ➤ Watch / monitor athletes carefully for necessary action. ➤ Alter uniforms by removing items where feasible. ➤ Allow for changes to dry T-shirts and shorts. ➤ Reduce time of outside activity as well as indoor activity if air conditioning is not available. RECOMMENDATION: Practice length should be 2 hours or less. Consider moving practice to morning or later in the day. Limited conditioning. <p>*Contact Sports and Activities With Additional Equipment</p> <ul style="list-style-type: none"> ➤ Helmets and other possible equipment removed if not involved in contact or necessary for safety. RECOMMENDATION: Football wears helmets, t-shirts and shorts. ➤ Re-check temperature and heat index approximately every 30 minutes for increased risks.
<p>Above 105 degrees Heat Index</p> <p>“Black Flag”</p>	<p>*All Sports</p> <p>Stop all outside activity in practice and / or play and stop all inside activity if air conditioning is unavailable.</p>

Heat Safety Supervisor's Daily Checklist

☐ **WATER**

- Is there plenty of fresh, cool drinking water located as close as possible to the workers?
- Is there a plan for refilling water coolers throughout the day?

☐ **SHADE AND REST**

- Is a shade structure available at all times (regardless of the weather) for workers to rest and cool down?
- Is the shade structure up and ready when the weather forecast is 80°F or higher?
- Do you have a plan in place for checking the weather forecast?

☐ **TRAINING**

- Have workers been trained to recognize and prevent heat illness BEFORE they start working outdoors?
- Can workers identify symptoms of heat illness?
- Is there a special plan in place to allow workers to get used to the heat?

☐ **EMERGENCY PLAN**

- Does everyone know who to notify if there is an emergency?
- Can workers explain their location if they need to call an ambulance?
- Does everyone know who will provide first aid?

☐ **WORKER REMINDERS**

Have workers been reminded to:

- Drink water frequently?
- Rest in the shade for at least 5 minutes as needed?
- Look out for one another and immediately report any symptoms?

The work can't get done without them.



Disclosure of Federal Participation (Stevens Amendment), go to <https://www.dir.ca.gov/federal-funding-disclosure.html>

© 2022 California Department of Industrial Relations

Seguridad cuando hace calor

Lista de verificación diaria para los supervisores

☐ **AGUA**

- ¿Hay suficiente agua fresca ubicada lo más cerca posible de los trabajadores?
- ¿Hay un plan para volver a llenar los envases de agua según sea necesario a lo largo del día?

☐ **SOMBRA Y DESCANSO**

- ¿Está disponible a todas horas la estructura de sombra, sin importar el clima, para que los trabajadores puedan descansar y refrescarse?
- ¿Está lista la estructura de sombra, si el pronóstico del tiempo indica que la temperatura sobrepasará los 80°F?
- ¿Tiene un plan para revisar el pronóstico del tiempo?

☐ **CAPACITACIÓN**

- ¿Reciben capacitación los trabajadores para poder reconocer y prevenir las enfermedades causadas por el calor, ANTES de empezar a trabajar al aire libre?
- ¿Pueden los trabajadores identificar los síntomas de las enfermedades causadas por el calor?
- ¿Hay un plan especial para permitir que los trabajadores se acostumbren al calor?

☐ **PLAN DE EMERGENCIA**

- ¿Saben todos con quién comunicarse en una emergencia?
- En caso de que tengan que llamar para pedir una ambulancia, ¿pueden los trabajadores dar instrucciones precisas para llegar al lugar de trabajo?
- ¿Saben todos quién les dará primeros auxilios?

☐ **RECORDATORIOS PARA LOS TRABAJADORES**

Se les ha recordado que deben:

- ¿Tomar agua con frecuencia?
- ¿Descansar en la sombra – por lo menos 5 minutos, cada vez que lo necesiten?
- ¿Estar pendientes los unos de los otros y reportar cualquier síntoma de inmediato?

Sin ellos no se puede trabajar.

