International School Bangkok Heat Management Guidelines

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INTERNATIONAL SCHOOL BANGKOK HEAT MANAGEMENT GUIDELINES.

PURPOSE

The ISB Heat Management Guidelines have been developed to ensure that all students and staff in International School Bangkok are protected from Heat Related illness, ranging from heat cramps, to exhaustion and potential heat stroke, a life-threatening emergency due to the body's inability to cool oneself due to extreme heat.

BACKGROUND

Heat Related Illnesses

When the body heats too quickly to cool itself safely, or when too much fluid or salt is lost through dehydration or sweating, body temperature rises and heat-related illness may develop. There are three stages of Heat related illness that all staff teaching at ISB need to be aware of:

1. **Heat Cramps** are experienced from fluid loss due to heavy sweating and usually occur in the abdomen or legs.
2. **Heat Exhaustion** derives from prolonged exposure in hot conditions with high fluid loss due to heavy sweating and an elevated body temperature below 40 degrees Celsius (104 Fahrenheit)
3. **Heat Stroke** is a condition when the core body temperature is higher than 40 degrees Celsius (104 Fahrenheit) and is potentially fatal.

Heat Stroke is a serious condition, with complications involving the central nervous system that occur after prolonged exposure to high temperatures. Heat cramps and Heat Exhaustion can quickly turn to heat stroke if signs and symptoms are not recognised and treatment is not administered quickly.

Thailand has a hot and humid climate for at most of the year, with the temperature and humidity combining to make the temperature feel considerably hotter. At ISB, we monitor weather conditions via our on-campus weather station that allows us to gauge actual temperatures and humidity on campus.

Some sporting activities can continue in conditions of high temperatures if risk factors are identified and managed. Those at risk of suffering from heat related illnesses are the very young, elderly, obese, diabetics, persons recovering from illness and diarrhoea or suffering from chronic conditions. Other risk factors include poor hydration, high temperatures and humidity, excessive physical exertion, insufficient recovery time, and inappropriate uniform and clothes. Students new to the country and environment are particularly vulnerable. A combination of these risk factors elevates the chance of someone suffering from a heat related illness.

Ambient Temperature

Temperature	Medical Conditions
26-32C 80–90F	Fatigue is possible with prolonged exposure and activity. Continuing activity could result in heat cramps.
26-40C 90–105F	Heat cramps and heat exhaustion are possible. Continuing activity could result in heat stroke
40-54C 105–130 F	Heat cramps and heat exhaustion are likely. heat stroke is probable with continued activity
Over 54 C Over 130 F	Extreme danger — heat stroke is imminent

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SIGNS AND SYMPTOMS OF THE THREE STAGES OF HEAT RELATED ILLNESS

1. Signs and Symptoms of Heat Cramps

- Profuse Sweating
- Fatigue
- Thirst
- Muscle Cramps
- Treatment:
    - Move to cool environment
    - Sip a drink containing electrolyte solution (or water if electrolyte not available)
    - Massage area that has cramped
    - When cramp resolves may continue exercise as long as drinking plenty of fluids and all symptoms have resolved
    - Call Nurse if not improving with the above measures

2. Signs and Symptoms of Heat Exhaustion

- The signs and symptoms of Heat Cramps and…
- Headache
- Dizziness and Lightheadedness
- Weakness
- Nausea and Vomiting
- Cool Moist Skin
- Dark Urine
- Treatment:
    - Call Nurse
    - Move to a cool environment
    - Apply cool wet cloths to the patient's skin rotating them regularly. Fan the patient
    - Sip a drink containing electrolyte solution (or water if electrolyte not available). Do not drink too quickly
    - Encourage them to rest in a comfortable position
    - Inform parents and parents must pick up from school
    - Ensure they do not return to physical activity for several hours
    - Call for ambulance if condition does not improve or any deterioration and Nurse not available

3. Signs and Symptoms of Heat Stroke

- Throbbing headache
- Dizziness and lightheadedness
- Lack of sweating despite the heat
- Red, hot, and dry skin
- Muscle weakness or cramps
- Nausea and vomiting
- Seizures
- Rapid, shallow breathing
- Unconsciousness
- Rapid heartbeat-strong or weak
- Confusion, disorientation, or staggering
- Treatment:

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- Call Nurse immediately (if Nurse not available call ambulance). Transfer to hospital
- Rapid cooling with the use of iced towels or ice packs over entire body rotating frequently for 20 mins or until condition improves

EDUCATION & PREVENTION

- **Provide Staff Training (Yearly)**
  - Sun Protection Guidelines
  - Signs, symptoms and treatment of heat related illnesses and Hyponatremia
  - Risk factors associated with onset of heat related illnesses
  - First Aid -All teachers to be certified

- **Educate students and parents regarding sun and heat exposure (Yearly)**
  - Sun Protection Awareness through PE/Health
  - Banners/poster/screen campaign
  - Education through the curriculum
  - Make parents aware of our Sun Protection Guidelines and meet annually with PTA

- **Ensure students are protecting themselves (Daily)**
  - Lower school students are required to wear sun hats
  - Spare hats and water bottles made available
  - Have a school uniform and PE kit that is appropriate for hot conditions
  - Encourage the daily application of sunscreen in physical activity

- **Encourage students to avoid dehydration (Daily)**
  - Students to have water bottles in class, PE, activities and trips
  - Students engaging in physical activity should be encouraged to drink 100 to 250ml of water every 20 minutes

- **Ensure this Policy is reflected in the planning of outdoor classes, activities, events and capital development projects (Yearly)**
  - Tree planting for shade is actively considered and encouraged
  - Current and future projects consider use of shading
  - Physically energetic sports, competitive games during the cooler periods of the day/months
  - Musical, class photos, sporting events, trips planned for cooler months
  - ES play time limited to 20 minutes outside to reduce risk of heat illness

- **Monitor the weather and issue advice**
  - Weather Station to monitor temperature and humidity on a real time basis
  - Auto Generated warnings of extreme temperatures issued to key staff
  - Temperature, humidity and measurements displayed

- **Adhere to standard operating procedure**
  - Ensure all staff are aware of procedure
  - Display standard operating procedure
  - Ensure activity providers and external companies adhere to SOP

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HEAT MANAGEMENT GUIDELINES FOR OUTDOOR ACTIVITIES & SPORTS

- The Heat Index will be automatically calculated from the ISB weather station. Staff involved in outside activities need to check readings prior to engaging in these activities to be aware of the zone they are currently in.
- Heat Index will be displayed in the Athletics Area on the Athletics Screen
- PE Staff and Athletic Staff should monitor temperature on a regular basis and adjust based on the zone they are in
- Staff who are on duty should make themselves aware of the Heat Index status

Heat Index below 33°C	The following actions are standard practice for all ISB Outdoor Activities • The School shall provide adequate water supply at all teaching stations. • Staff should inform students to apply sun lotion before lessons, games and activities. • Students should be encouraged to wear hats in MS and HS and compulsory in ES for recess, lunch, PE lessons • All athletes and students should bring water bottles to trainings and PE classes • Recommended water breaks every 30 minutes. • Where possible spend transitions, rest periods and direct teaching moments in shade provided around facilities. • Students that want to take a break should do so at any time. • Staff to watch/monitor players carefully.
ISB Central Heat Index 33-40°C	All actions as per Heat Index Ratings under 33°C additionally: • During competitive and training matches, students should be rotated out on a regular basis • Staff identify students who present a higher risk of suffering from heat related illnesses and provide these students with an alternative to training in heat • Staff should brief students of increased risk at beginning of practices and lessons of increased heat illness risk within and above this zone. • Students showing signs and symptoms of heat related illness should withdraw from the activity and be escorted to the nurse • Recommended water breaks every 20 minutes. • Misting Fans/Iced Towels should be utilized for outdoor activities • Suggestion is that lessons take place in shade as much as possible • Modify training and/or games to allow for regular hydration and rest
Heat Index 41-54°C	All actions as per Heat Index Ratings under 33-40°C additionally: • Staff should clearly brief students of extreme risk of heat illness within this zone and exclude students who have not hydrated throughout the day. • Recommended water breaks **every 15 minutes** • Elementary and Younger athletes outdoor activities cancelled • Outside activities with a high physical exertion nature moved to shaded areas where possible or indoors • Lessons should be moved to shaded areas or indoors where possible • Students showing signs and symptoms of heat related illness should withdraw from the activity and be escorted to the nurse • Electrolyte consumption should be encouraged and utilized for athletes practicing and competing in this zone • Maximum duration of exposure in this temperature is one hour. • ***Practices and or fixtures can be cancelled at the discretion of the Athletics Director/Head of Safety***
Heat Index above 54°C **Heat Stroke Imminent & Extreme Risk**	• All non airconditioned activities are cancelled

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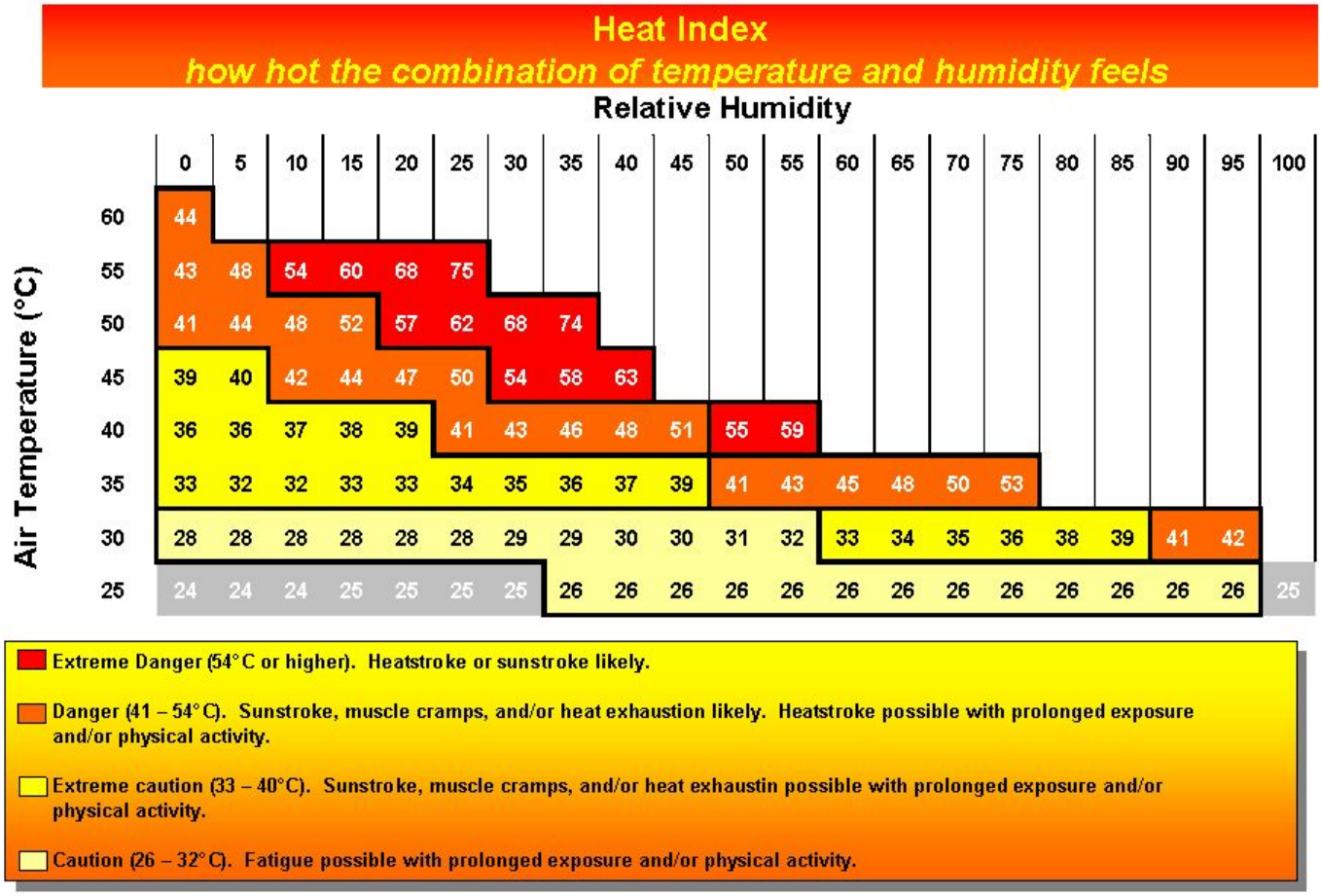

Based upon Formulation by National Weather Service El Paso Forecast Office

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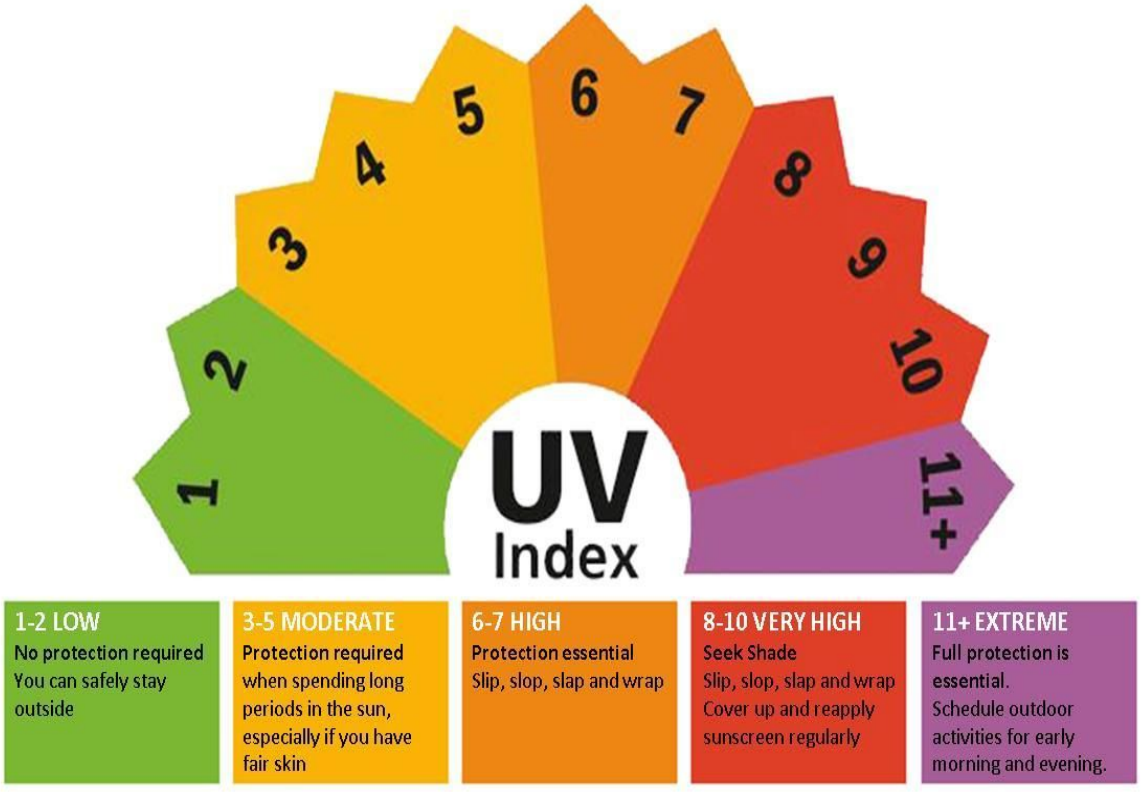
Appendix

The Heat Index
The Heat Index is an accurate measure of how hot it really feels when the effects of humidity are added to high temperature. The chart above illustrates various combinations of air temperature versus relative humidity. To use the chart, locate the **air temperature** along the left column and the **relative humidity (RH)** along the top right row. The cell where the two intersect is the **heat index**. For example, an air temperature of 32.2 degrees Celsius and a relative humidity of 60 per cent intersect at a heat index of 42 degrees Celsius. It is also worth noting that direct and prolonged exposure to sun can increase humidity/temperature combination.

Skin Cancer
Skin cancer is one of the most common forms of cancer and the number of cases is rising at an alarming rate. Most skin cancers are caused by ultraviolet (UV) radiation from the sun. This is particularly important for children and young people whose skin is more delicate and easily damaged. Studies have found that sunburn during early childhood can increase the risk of skin cancer later in life.

The UV Index in Thailand
The International UVI is a measure of the level of UV radiation. The values of the index range from zero upward. The higher the UVI, the greater the potential for damage to the skin and eye, and the less time it takes for harm to occur.



World Health Organisation measurements place Bangkok as VERY HIGH or EXTREME on the International UV Index all year round.

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Other Heat Related Notes:

• Heat emergencies can afflict any age patient, with or without underlying health problems, in a variety of ambient temperatures
• High temperatures, high humidity, and high exertion are often factors that lead to a heat emergency
• Heat emergencies are most common in elderly patients, infants and young children, morbidly obese patients, athletes, and other patients with underlying health problems
• Heat exhaustion is a circulatory system problem. It presents as hypovolemia. The patient has a normal or slightly elevated core temperature problem. .
• Heat stroke is a life threatening neurological problem. The patient has an extremely high core temperature problem.
• 50% of heat stroke patients have hot, red, dry skin. 50% of heat stroke patients have hot, red, moist skin.
• Hyperthermia may be a result of illegal drug use
• Many medications and illnesses compromise bodies ability to thermoregulate
• Water intake and urination frequency are key history findings to differentiate hyponatremia and heat exhaustion

Problem	Cause	Core Temperature	Clinical Findings and History
Heat Cramps	Dehydration Electrolyte imbalances	99-101.3 F	Most common in children and athletes Severe localized cramps in abdomen or extremities Normal vital signs Usually occur suddenly during or after strenuous physical activity
Heat Exhaustion	Inadequate fluid intake and excessive fluid loss	99-104 F	**General:** fatigue, weakness, anxiety, intense headaches, profuse sweating, nausea and vomiting, and limited to no urine output **Compensated:** Altered mental status--lethargy or irritability, Elevated pulse and respirations, Normal blood pressure **Decompensated**: Decreased level of consciousness, Decreased blood pressure, elevated pulse and respirations
Heat Stroke	Dangerous Core Temperature	> 105 F	**Altered mental status**, decreased level of consciousness, skin color temperature and moisture is not a reliable finding, increased pulse and respirations, hypotension,
Hyponatremia	Electrolyte depletion or dilution		Inadequate food or electrolyte intake, excessive water intake, frequent urination, altered mental status, ataxia, nausea and vomiting, headache