



Heat Disorders Prevention & UV Protection Guide

Think Safe. Play Safe. Stay Safe.

Sport
SINGAPORE

LIVE BETTER THROUGH SPORTS

A Sports Safe Singapore

Sport Singapore (SportSG) recognises that safety must be a fundamental component of our sporting culture and a prerequisite for every healthy lifestyle. Therefore, SportSG has set a corporate goal of zero injuries, in belief that all accidents are preventable. Emphasising the need for personal accountability, SportSG also urges people to be responsible for the safety of others. ActiveSG's first Sports Safety Division was formed in 2006 directly under the purview of the CEO's office. It is tasked to promote safety throughout Singapore's sporting community and to inculcate a safety-first mentality in the minds of every stakeholder. For more information, please visit sportsingapore.gov.sg/sports-education/sports-safety

Acknowledgement

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Singapore Armed Forces



Singapore Sports School
sportsschool.edu.sg



Raffles Girl's School (Secondary)
rgs.edu.sg



Sports Medicine Australia
sma.org.au

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Another initiative by the Safety Management Division, ActiveSG

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WHAT ARE HEAT DISORDERS?

While exercising or taking part in sports activities under hot weather conditions, you have to take precautions to prevent heat disorders. Heat disorders may be fatal in many incidents if left unattended. Children are more likely to suffer from heat disorders than adults.

Heat disorders can be classified as one or more of the following serious conditions:

Heat Cramps are the mildest form of heat disorders. Painful intermittent muscles cramps are experienced in the larger muscle groups (calves, thighs and abdomen). They occur when there is an excessive loss of water and salt caused by profuse sweating when your body attempts to lose heat quickly.

Heat Exhaustion refers to the overheating of your body due to excessive loss of fluids or, in rare cases, salt depletion. Heat exhaustion is not fatal but, if left unattended, can result in heat stroke.

Heat Stroke is a more severe condition that occurs when your body's thermoregulatory system stops working. Heat stroke can bring about an irreversible coma and even death.



CAUSES OF HEAT DISORDERS

Heat disorders occur when your body absorbs more heat than it can lose. When your body is unable to cool down through sweating, it causes your body's core temperature to rise.

You are at greater risk of suffering from heat disorders when you:

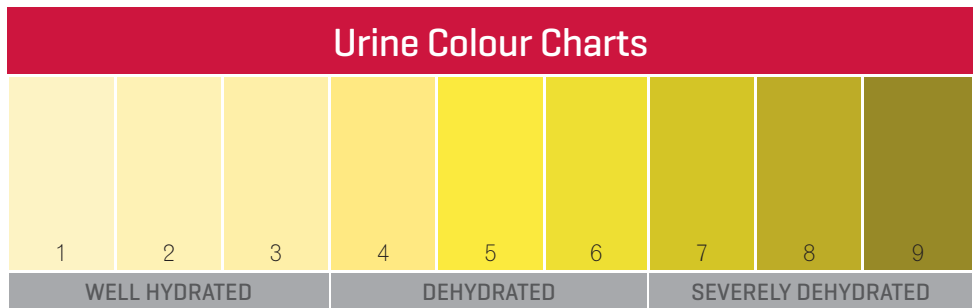
- do not drink enough water before, during and after sports activities
- are unaccustomed to training or competition in high temperature
- are suffering from illness
- are physically unfit
- wear thick or excessive clothing or padding
- have previous occurrences of heat disorders



THE SYMPTOMS

It is important to identify the symptoms of heat disorders so that actions can be taken before matters escalate beyond control. Symptoms include:

- Headache
- Nausea
- Dizziness
- Fainting
- Discomfort or uneasiness
- Excessive sweating
- Lack of sweating
- Rising body temperature
- Rapid pulse
- Poor concentration
- Red and hot skin
- Muscle ache
- Muscle cramps
- Blurred vision
- Loss of co-ordination
- Disorientation or confusion
- Seizures or fits
- Fatigue
- Vomiting
- Decreased and dark-coloured urine
- Pale and clammy skin



*Adapted from Lew, Slater, Nair, and Miller 92010)
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Disclaimer: colours listed may vary slightly from actual colour due to printing*

- Lightly coloured urine (1 - 3)
- Continue the drinking habit
- Darker coloured urine (4 - 6)
- Drink more fluid during and after training
- Very dark coloured urine (7 - 9)
- Seek advice from Sports Nutritionist or Sports Physiologist

PREVENTION IS BETTER THAN CURE

Keep Drinking

Adequate hydration is important before, during and after all sporting activities as it can help cool down your body's core temperature. Drink as much as you can. Your body can lose up to 1 litre of fluid per hour in hot conditions. Thirst is not a good indication of your body's fluid needs. Do not wait until you are thirsty before you drink.



You should drink about 500ml of water half an hour before and 250 - 500 ml of water every half hour during sports activities. Weigh yourself before and after the sports activity. For every kilogram that you have lost, it means that your body has lost 1 litre of fluid. Replace the fluid loss by drinking 1.5 times the amount of fluid lost.

Wear appropriate attire

Loose clothing can help reduce the heat build-up surrounding your body. It also helps improve the ventilation around your body. Choose clothing made from breathable or heat-wicking material to help remove heat from your body.



Acclimatise

Your body takes at least 7 - 10 days to get used to a hot environment. So before you start on a sport activity at a new location and environment, take it slow and easy to allow your body to get used to the new surroundings.



Watch what you eat or drink

Heavy meals add extra heat to your body and divert blood flow away to aid digestion while alcoholic and caffeinated drinks cause your body to dehydrate. Avoid taking such food and drinks before doing any sports activities as they can increase the risk of heat disorders



WHAT YOU CAN DO

Buddy up

When exercising or playing sports, you should always do so with a buddy. Keep a lookout for each other. Should your buddy show any symptoms of heat disorders, take him/her to a shady area and try to cool him/her down. Call for help immediately. While waiting for help to arrive, use a wet towel to wrap around the neck, armpits and groin area or splash some water on him/her to help cool down his/her body temperature. Have your buddy drink some cool water if he/she is conscious and not nauseous.

You may end up saving his or her life!



Be aware of your environment

As the temperature increases, take more frequent breaks to cool down your body. If the weather gets too hot, get out of the sun and under a shade to rest!



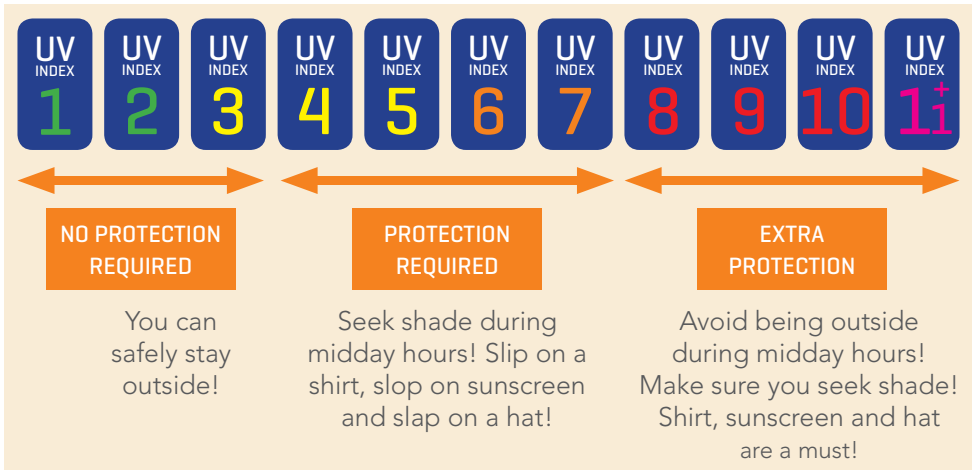
THE 7-R HEAT DISORDERS FIRST AID MANAGEMENT

Recognise Symptoms	<ul style="list-style-type: none">• Recognise symptoms of heat disorders and report them early
Rest Casualty	<ul style="list-style-type: none">• Lie or sit casualty down in cool, shaded area with good air circulation
Remove Clothing	<ul style="list-style-type: none">• Loosen any clothing to assist in cooling whenever possible, only when there is a dire need to
Reduce Temperature	<ul style="list-style-type: none">• Douse the casualty in cool water. Use fans and other cooling devices to reduce body temperature
Re-Hydrate	<ul style="list-style-type: none">• If the casualty is conscious and alert, give him/her lots of fluids to drink. If unconscious, do not administer fluids by mouth as this may cause choking
Resuscitate	<ul style="list-style-type: none">• Resuscitate unconscious casualty if you are trained. Protect the airway, support breathing and give intravenous fluids. Otherwise, rush the casualty to a nearest hospital as soon as possible
Rush to a Hospital	<ul style="list-style-type: none">• Do not delay!

UV RADIATION IN SINGAPORE

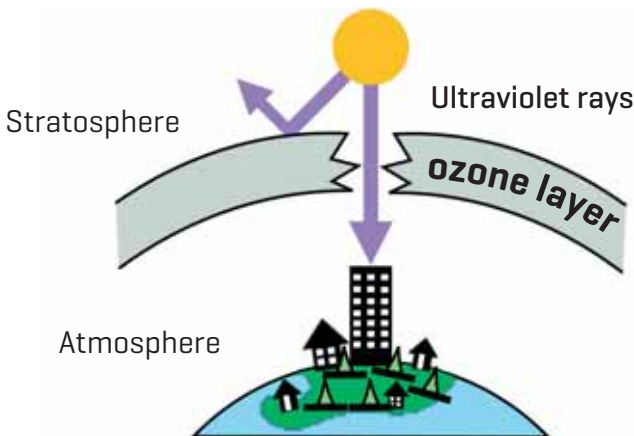
High UV Index

Singapore is in close proximity to the equator and hence has a high UV index averaging between 6 to 9. The World Health Organisation (WHO) has established that indexes of more than 6 indicate risk of harm through unprotected sun exposure. Thus, Singaporeans are prone to suffering health damages caused by exposure to strong ultraviolet rays.



Depleting Ozone Layer

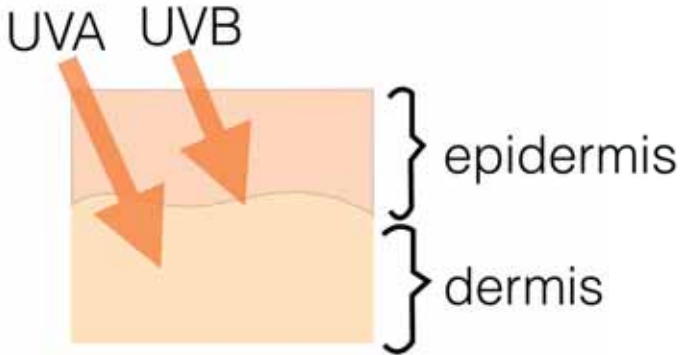
The ozone layer, a thin layer in Earth's atmosphere which filters the sun's UV radiation, has been depleting rapidly. This resulting loss of stratospheric ozone has been associated with increasing levels of some types of ultraviolet radiation reaching the Earth's surface. The incidence of non-melanoma skin cancer is expected to increase by approximately 2% for every persistent 1% loss in average ozone concentration.



TYPES OF UV RADIATION

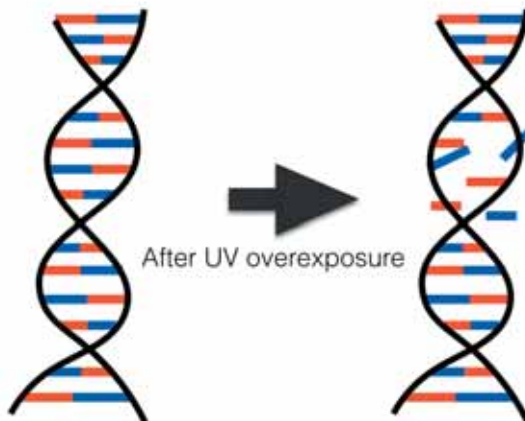
UVA rays

- Accounts for 95% of the UV radiation reaching the Earth's surface
- Penetrates the skin deeper than UVB rays and causes premature ageing
- 30 - 50 times more prevalent than UVB rays though less intense



UVB rays

- Main cause of skin reddening and sunburn
- Plays a key role in the development of skin cancer by causing direct DNA damage
- Plays a contributory role in skin ageing and wrinkling



HARMFUL EFFECTS OF UV RAYS

Overexposure to UV radiation has harmful effects on the:

Skin	<ul style="list-style-type: none">• Sunburn Severe reddening of the skin which can develop into swelling and blisters.• Premature Ageing Structural changes in the dermis, including dryness, wrinkles, accentuated skin, furrows, sagging, loss of elasticity, and mottled pigmentation. These are the result of degenerative changes in elastin and collagen, which can accumulate over time and are largely irreversible.• Skin Cancer Uncontrolled growth of abnormal skin cells which occurs when unrepaired DNA in skin cells trigger mutations, or genetic defects, that result in skin cells multiplying rapidly to form malignant tumours.
Eyes	<ul style="list-style-type: none">• Chronic effects such as corneal damage, cataracts, macular degeneration, which can ultimately lead to blindness as the front of the eyes absorb more than 99% of UV radiation.
Immune System	<ul style="list-style-type: none">• Suppression of the proper function of the body's immune system and the skin's natural defences, reducing skin's ability to protect against pathogens.

METHODS OF UV PROTECTION: SUNSCREEN

Choosing The Right Sunscreen

- Use sunscreens of SPF 30 and above as Sun Protection Factor (SPF) is a measure of how well a sunscreen/sunblock will protect the skin from UV radiation
- Look out for the label "Broad-spectrum", meaning that the product offers protection from both UVA and UVB rays

Applying Sunscreen

- Apply sunscreen preferably 20 minutes before going out into the sun
- Apply sunscreen everyday because UV radiation is always present whether rain or shine
- Apply sunscreen sufficiently, ensuring that there is no uncovered area of exposed skin (about 1 ounce of sunscreen should be used to cover the arms, legs, neck, and face of the average adult)
- Wipe off sweat or water before reapplying sunscreen with water-resistant factor every 2 hours, especially if doing water sports like swimming



METHODS OF UV PROTECTION: CAPS AND HATS



Wear a cap/hat, especially when you are participating in outdoor activities.

Type of hats/caps

- A hat with at least a 2 to 3-inch brim all around is ideal because it protects areas that are often exposed to intense sun, such as the ears, eyes, forehead, nose, and scalp
- A dark, non-reflective underside of the brim can also lower the amount of UV rays reaching the face from reflective surfaces such as water. These are often sold in sports and outdoor supply stores

METHODS OF UV PROTECTION: SUNGLASSES



Putting on sunglasses is important to reduce the amount of UV radiation reaching the eyes and protecting the delicate skin around the eyes, reducing risks of contracting eye diseases. Research has shown that long hours in the sun without protecting your eyes from UV radiation increases your chances of developing certain eye diseases.

Type of Sunglasses

- Sunglasses with large frames and those that protect the eyes against UV protection are effective in protecting your eyes from UV radiation

METHODS OF UV PROTECTION: DRESSING TO LIMIT SUN EXPOSURE



When you are out in the sun, wear clothing to protect yourself from UV radiation and cover as much skin as possible.

Preferable types of clothing

- Long-sleeved shirts, long pants, and long skirts cover the most skin and are the most protective
- Clothing with Ultraviolet Protection Factor (UPF)
- Bright, lustrous and dark-coloured clothes reflect more UV radiation than pastel coloured and bleached cottons
- Tightly-woven, loose-fitting clothes prevent penetration of UV radiation as compared to tight-fitting clothes

METHODS OF UV PROTECTION: SEEKING SHADE



Avoid being outdoors in direct sunlight for too long. This is particularly important between the hours of 11am and 3pm, when UV index levels are highest. During these times, they are in the Very High to Extreme range. On average, UV index figures at 10am and 4pm are below 8.

If unsure how strong the UV rays are, use the shadow test: if your shadow is shorter than you are, the UV rays are the strongest.

Be especially careful on the beach and in areas with snow because sand, water, and snow reflect sunlight, increasing the amount of UV radiation received.



Partners in Sports



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