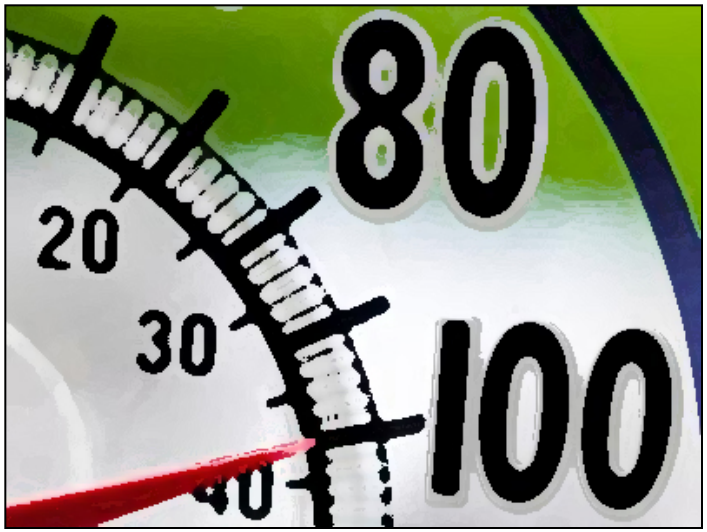
# Heat Stress/Flag Condition Training



# Heat stress

Heat stress is the buildup of heat to the point where the body's thermostat has difficulty maintaining normal internal body temperature.

When the body is unable to cool itself through sweating, serious heat illness may occur.

The most severe heat induced illnesses are heat cramps,  heat exhaustion and heal stroke.

# Mechanism of Heat stress

**Employee**
Acclimatization
Medical/ physical condition
Use of alcohol, drugs
Hydration

**Environment**
Temperature
Humidity
Air flow

HEAT STRESS

**Work**
Work load
Work rate

# Humidity

- The most important component of the body cooling system is sweat
  - BUT: evaporation is hampered by humidity
  - WHY: decrease in vapor pressure gradient decreases evaporation
- Humidity = Heat loss barrier = Increase in core temperature

# Heat Index

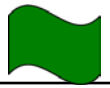
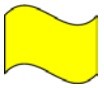
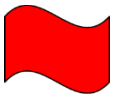
- Combined effects of temperature and humidity (what it feels like to the body)
- Air temperatures above 80° F with humidity can start to cause a decrease in performance

# Heat Safety

**Dehydration + Heat Stress= Poor Performance**

- Working or exercising in hot weather makes you lose fluid, which can lead to dehydration.
- Dehydration contributes to fatigue
- Combined effects of temperatures (above 80° F) and humidity (what it feels like to the body) can start to cause a decrease in performance

# FLAG CONDITION SUMMARY (WBGT INDEX (F))

| | |
|---|---|
|  | **<80** Low Heat Stress Risk. No work restrictions. |
|  | **80 – 84.9** Discretion required in planning heavy exercise. |
|  | **85 – 87.9** Strenuous exercise and activity should be curtailed for new and non-acclimatized personnel. |
|  | **88 - 89.9** Strenuous exercise curtailed for all personnel with less than 12 weeks training in hot weather. |
|  | **90 +** Physical training and strenuous exercise suspended for all personnel (excludes operational commitment). |

Flag Condition information on USNH Yokosuka webpage and:

- Purdy Gym
- Main CDC
- USNH

# Types of Heat Injuries

- Dehydration
- Heat Cramps
- Heat Exhaustion
- Heat Stroke

# Dehydration

- Excessive water loss from the body
  - Can lead to heat cramps, heat exhaustion or heat stroke
- Symptoms affecting flight
  - Reduced performance
  - Mental confusion
  - Weakness
  - Delirium
  - Fatigue

# Heat Cramps

- Muscle spasms, usually occur in the extremities or abdomen
- Caused by
  - Heavy exertion/fatigue
  - Heavy sweating
  - Loss of water and electrolytes
- Treatment
  - Get to a cooler place
  - Replace water
  - Massage/Stretch
  - Rest

# Heat Exhaustion

- Skin pale cool and moist
- Body temp nearly normal
- Pupils dilated
- Pulse rapid and weak
- Treatment
  - Decrease body temperature
  - Move to cooler place, loosen/remove clothing, cool body with damp towels
  - Elevate Legs (shock position)
  - Replace fluids
  - Rest

# Heat Stroke

- Skin red, hot and dry
- No sweating
- Body temp high (105°F)
- Pupils constricted
- Pulse strong and bounding
- Treatment
  - Call EMS!  LIFE THREATENING EMERGENCY!
  - Decrease body temperature
  - Move to a cooler place
  - Loosen/remove tight clothing
  - Cool with wet towels, apply ice to arm pit & groin areas
  - Elevate feet
  - Nothing to eat or drink!

# Other Heat Related Health Concerns

- Sunburn
  - Reddish discoloration of the skin
  - Pain (1st degree burn at minimum)
  - Protect with sunscreen/sun block (15 SPF min)
- Heat rash
  - Red cluster of pimples or small blisters
  - Neck, upper chest, groin, and elbow creases are most susceptible.
  - Protect by keeping areas dry and cool
  - Treat with baby/drying skin power. NO Creams

# Prevention of Heat Injury/Illness

- Hydrate (Water is life)
  - Consume sufficient water to replace sweat/urine losses
- Acclimatize
  - Maximize physical fitness and heat acclimatization before arriving in a hot environment
- Maintain physical fitness
  - Increase your fitness level through gradual means while in the acclimatization process
- Move to an area of less exposure and direct heat radiation
- Move to an area of increased conduction
  - Increased air circulation and cooler air

# QUESTIONS ???

**For Additional Information Contact CFAY Safety Office**