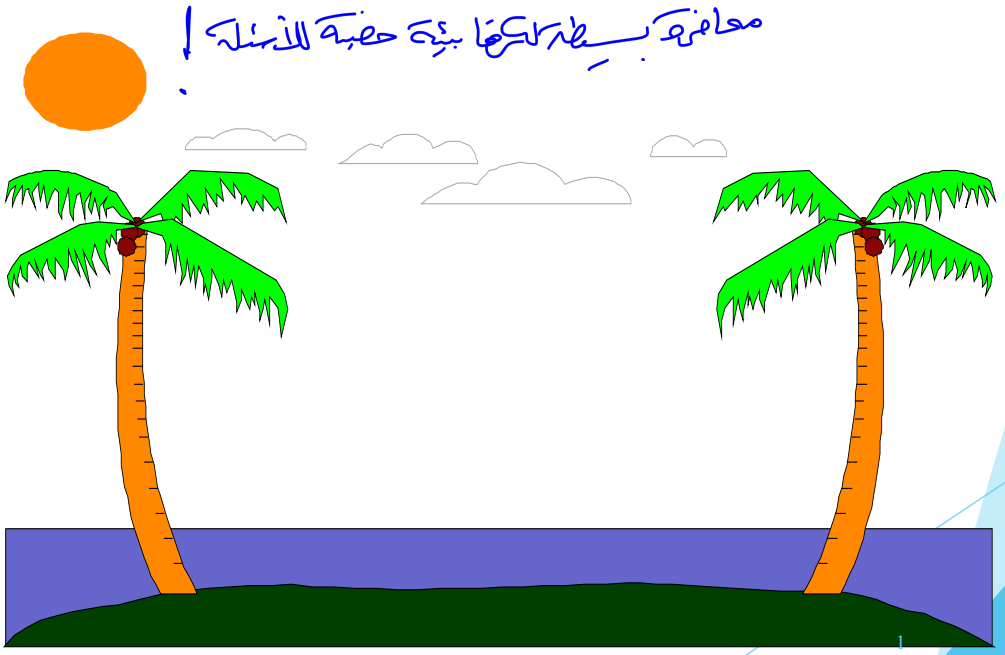
Occupational health/3rd year
Dr. Nedal/ L3-HEAT INJURY PREVENTION



WHY IS HEAT PREVENTION IMPORTANT

- Combat capability is dependent upon the ability to adapt to the environment

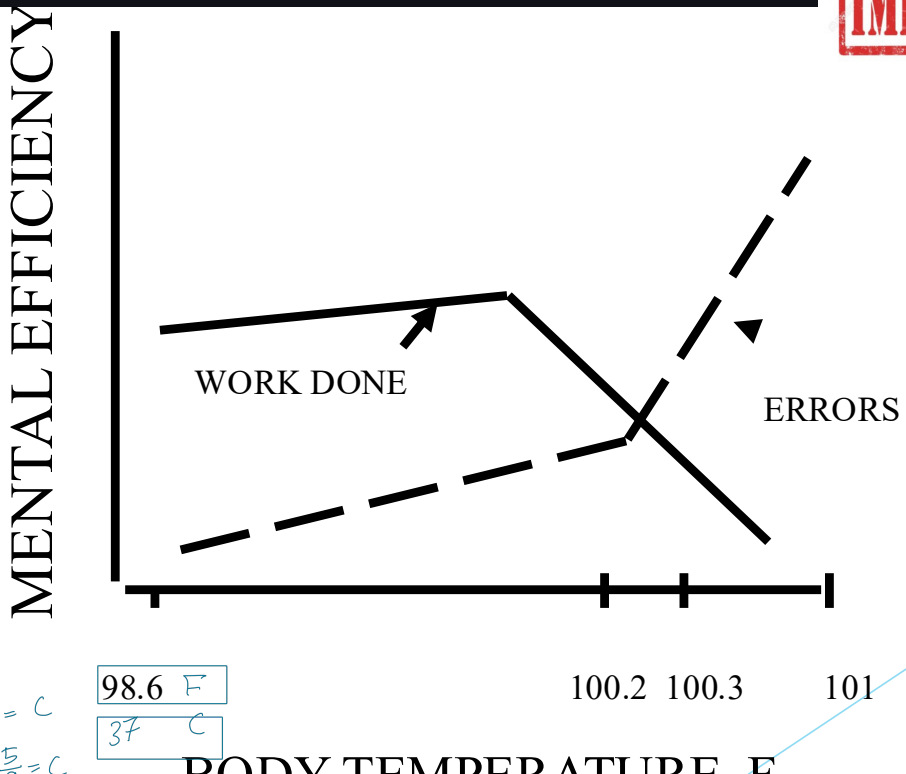
Adaptation
Accomodation
Actimatization

- The body can survive only at a narrow range of core temperatures

EFFECTS OF HEAT ON THE BODY

Formula (100°F − 32) × 5/9 = 37.778°C

VERY IMPORTANT



$(F-32)\frac{5}{9}=C$

$(98.6-32)\frac{5}{9}=C$

$(66.6)\frac{5}{9}=C$

$37=C$

HOW THE BODY RELEASES HEAT

1. Radiation: transfer of heat from a hotter object to a cooler object though space by radiant energy Sun light

2. Conduction: transfer of heat from molecule to molecule of adjacent objects

HEAT RELEASE CONTINUED

3. Convection: transfer of heat in liquids or gases in which molecules are free to move

4. Evaporation: heat lose involves the changing of a substance from its liquid state to its gaseous form

INFLUENCING FACTORS

1. Air temperature درجة حرارة الهواء
2. Temperature of surrounding objects
3. Sun's radiant heat اشعة الشمس
4. **Relative humidity** الرطوبة
5. Air movement اتجاه سرعة الرياح وحركتها
6. **Amount and type of clothing worn** الأواني
7. Heat produced by the body "الشي معروف"

TYPES OF HEAT INJURIES

لغرقة بينهم !

1. **Heat Cramps** التشنجات الحرارية

أعراض تعريض الأملاح

السبب خارجي الأملاح

Acclimatization + Nutrition + Hydration تجنب

2. **Heat Exhaustion** Skin is cool + Moist

في خارجي الحياة + الأملاح

work → rest + Hydration تجنب

3. **Heat Stroke** Skin is Hot + Dry

حار + جاف sun

work → rest + Hydration تجنب

Emergency 106°F الحرارة حتى توصل

HEAT CRAMPS

1. Excessive salt lose
2. Painful cramps of muscles usually in arms, legs and stomach area
3. Heat exhaustion may be present
4. Body temperature may be normal
5. Avoided by acclamation, proper nutrition and hydration

acclimatization) refers to the process by which an individual organism, such as a human, adjusts its physiological, morphological, or biochemical traits in response to changes in its environment, such as altitude, temperature, humidity, or pressure

HEAT EXHAUSTION

1. Excessive salt and water loss
2. Skin is cool and moist; pulse is rapid and blood pressure may be low
3. Other symptoms are profuse sweating, headaches, tingling in hands and feet, paleness, difficulty breathing, irregular heart beat, loss of appetite, nausea and vomiting
4. Oral temperature may be lower than normal if the person is hyperventilating

بس لما تقيسها — rectal تكون الحرارة العالية
axillary

HEAT EXHAUSTION CONT.

5. Trembling, weakness, lack of coordination and a slight clouding of senses to momentary loss of consciousness complete the classic picture
6. Avoided by proper work/rest cycles and good hydration

!!!!CAUTION!!!!

Those that suffered from heat exhaustion are 'fragile' and can have another episode easily

HEAT STROKE

1. A medical emergency and death rate is high
2. The body's heat regulatory mechanism stops functioning and the main avenue of heat loss is blocked
3. Early signs are headache, dizziness, delirium, weakness, nausea, vomiting and excessive warmth
4. Skin is usually hot, red and dry
5. Body temperature may be as high as 106 F

HEAT STROKE CONT.

6. The casualty (Victim) may go through heat cramps or heat exhaustion; a sudden collapse and loss of consciousness followed by coma and convulsions may occur → coma → death
7. Sweating may or may not be present may be not الاحتمال
8. Avoided by proper work/rest cycles and full hydration

!!!!CAUTION!!!!

Heat stroke casualties are more susceptible to a second attack

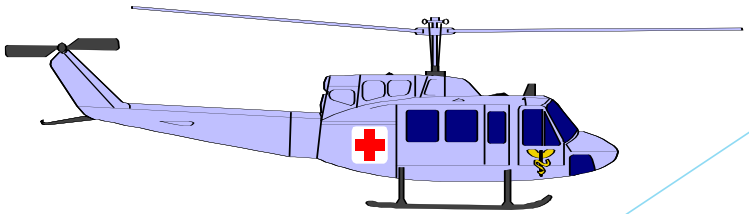
يعني عنده قابلية بالمستقبل

FIRST AID FOR HEAT CRAMPS AND EXHAUSTION

1. Move patient to a shady area and loosen clothing if possible
2. Slowly give large amounts of cool water
3. Pour water on patient and fan
4. Elevate legs for exhaustion
5. Watch patient, if possible release from strenuous activity
6. Get medical help if symptoms continue

FIRST AID FOR HEAT STROKE

- Lower casualty's body temperature ASAP
- Elevate patient's legs
- Have patient drink water if possible
- **GET MEDICAL HELP**

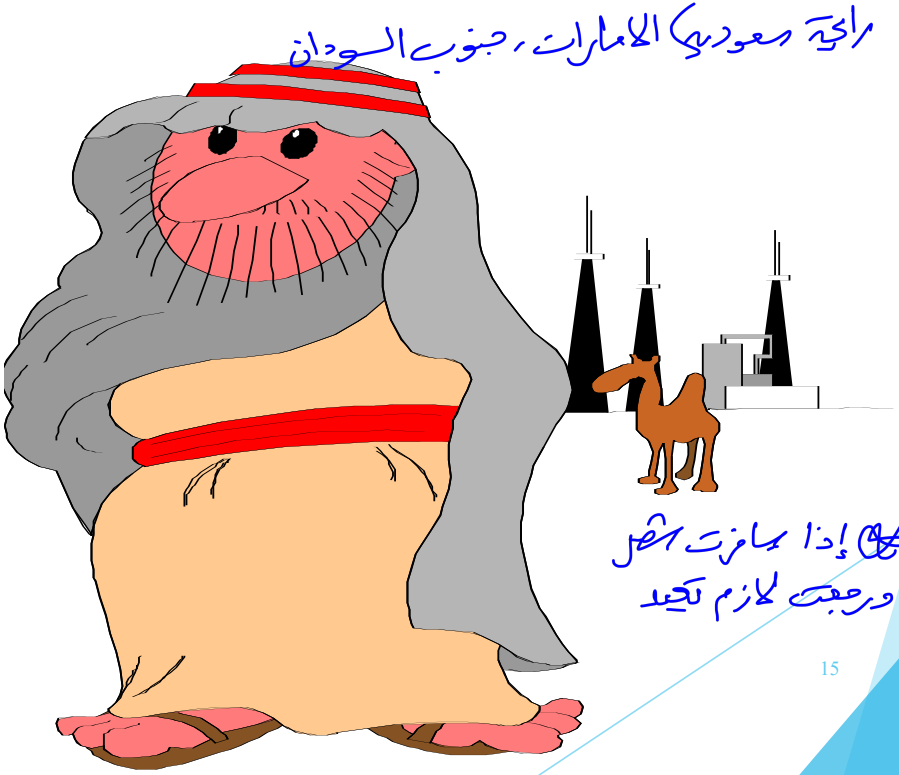


PREDISPOSING FACTORS

VERY IMPORTANT

Acclimatization; 7-14 days, 2 hours a day

أسبوعين لساعتين

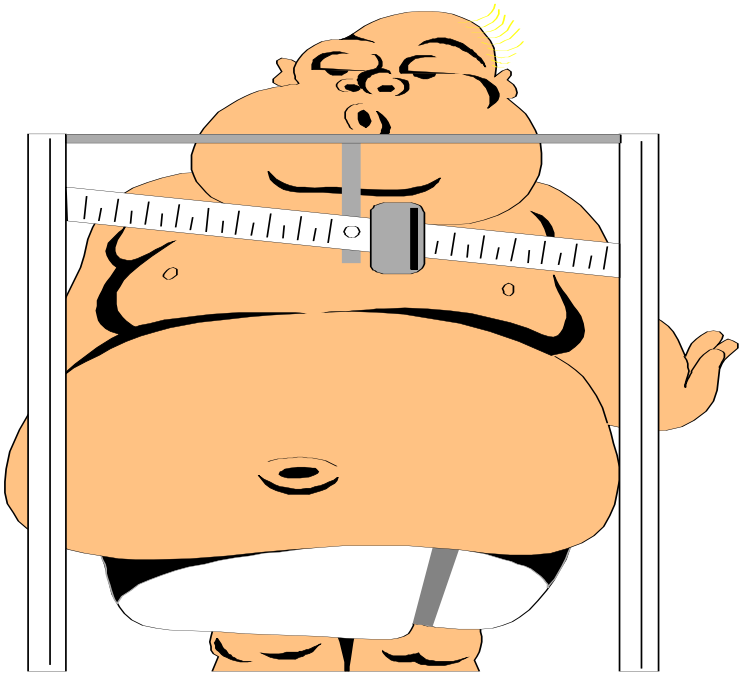


راحة سعودي الامارات، جنوب السودان

إذا مارست رياضة ورجعت لازم تكيف

PREDISPOSING FACTORS

Overweight and fatigue



PREDISPOSING FACTORS

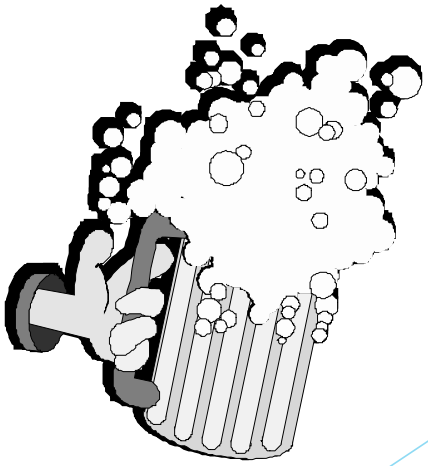
Heavy meals and hot food

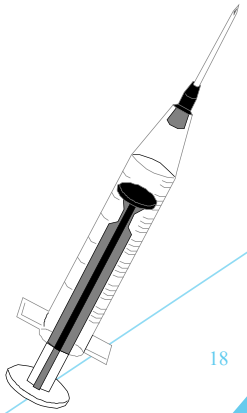
بعد الشغف بالذات اذا تتطلب الحراب

PREDISPOSING FACTORS

Alcohol and drugs

- Drugs that inhibit sweating are atropine, antihistamines, some tranquilizers, cold medicine and some antidiarrheal medicines

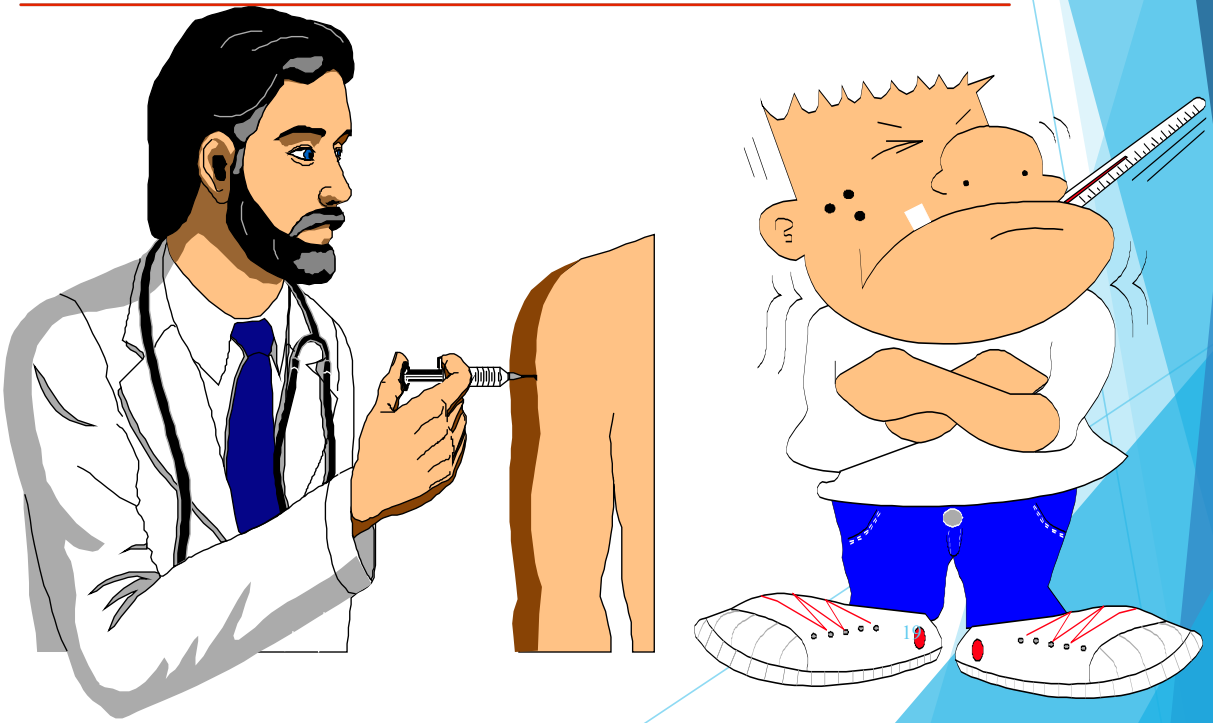




PREDISPOSING FACTORS

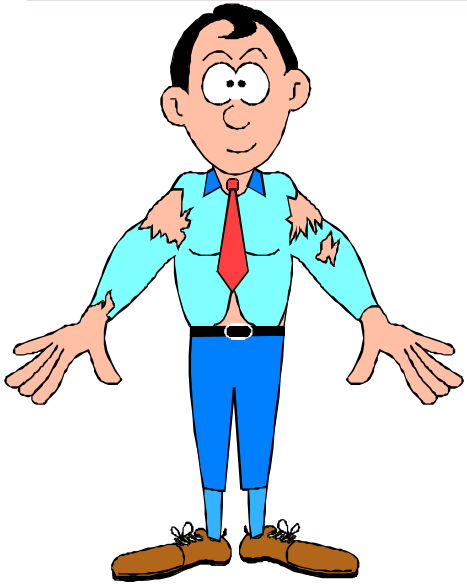
Fevers

Many immunizations produce fevers



PREDISPOSING FACTORS

Tight clothing



PREVENTING HEAT INJURIES

1. Replace water loss; by sweating a person can lose more than 1 quart per hour. *= 0.95 liters in the US* لتر إلا اشي بسيط
2. Drink small amounts of water frequently regardless of thirst
3. Use heat injury prevention chart as a guide
4. Provide adequate water at all times

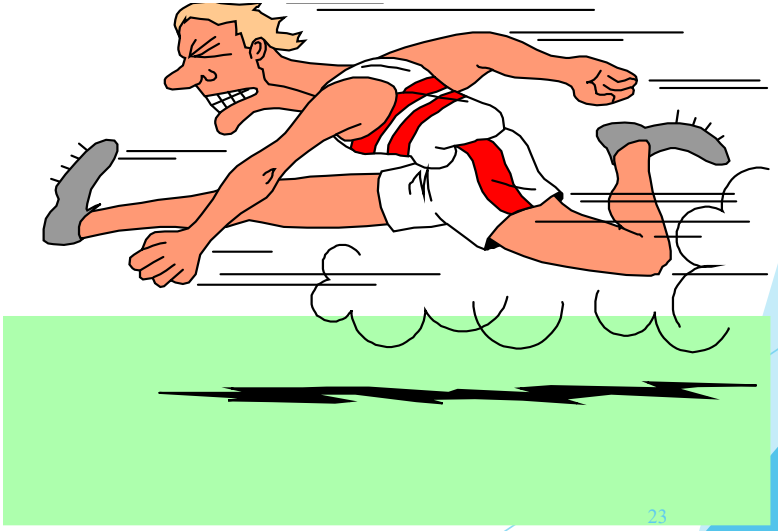
PREVENTING HEAT INJURIES

5. Maintain acclimatization

- Begin acclimatization with first exposure
- Continue with two 50 minutes periods daily
- Limit intensity and time of exposure for those not acclimatized
- Acclimatization can be lost if remove from the hot environment for 1 month

PREVENTING HEAT INJURIES

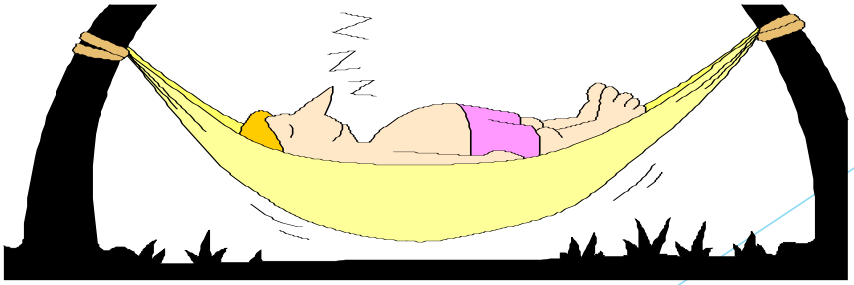
6. Maintain good physical condition



PREVENTING HEAT INJURIES

7. Establish a good work/rest schedule; must be tailored to fit climate, physical condition of personnel and military situation

- Work in cooler hours
- Avoid working in direct sunlight
- Slowly increase exposure to those becoming acclimatized
- Use heat injury prevention chart as a guide



"لفضل انكي تعرفوها"

VERY IMPORTANT

!!!CAUTION!!!

الاجهاد الحراري

Overexertion can cause heat injuries at temperatures lower than 75 degrees F on the WBGT index

درجة حرارة الكرة الارضية الرطبة

The WetBulb Globe Temperature (WBGT) is a measure of the heat stress in direct sunlight, which takes into account: temperature, humidity, wind speed, sun angle and cloud cover (solar radiation). This differs from the heat index, which takes into consideration temperature and humidity and is calculated for shady areas.

العزو

الاجهاد الحراري

V.S

	WBGT wet bulb globe temp	Heat index
عندما تكون	بأشعة الشمس	صيوها بالظل
بالحسبان	• درجة الحرارة الرطوبة • سرعة الرياح • زاوية الشمس • الاشعاع الشمسي	• درجة الحرارة الرطوبة

PREVENTING HEAT INJURIES

8. Use proper clothing to protect yourself
    1. Loose clothing
    2. Wear least amount when possible
    3. Obtain the WBGT

احصل على
اعرف