

EMERGENCY PREPAREDNESS AND LEADERSHIP 2017

WALT SHIELDS
FRANK EARNEST

*AN OLDER AGE GROUP IN A
HOSTILE ENVIRONMENT*

COURSE SCHEDULE

- REAL WORLD SCENARIOS
 - PHYSIOLOGY OF AGING
 - COMMON ACCIDENTS AND INJURIES
 - MEDICAL EMERGENCIES
 - LEADERSHIP AND DECISION MAKING
 - EMERGENCY KIT
 - KEY POINTS
-

COMMON SCENARIOS

- WHILE DESCENDING PUSCH RIDGE, ROY SLIPS AND FALLS TO THE SIDE, TWISTING HIS ANKLE. HE EXPERIENCES IMMEDIATE PAIN AND SWELLING, BUT IS ABLE TO STAND AND PLACE SOME PRESSURE ON IT. WHILE BREAKING THE FALL WITH HIS HAND, HE DISLOCATES HIS RIGHT INDEX FINGER.
 - ON A HIKE TO DEER CAMP, LAURA FALLS ON SOME LOOSE ROCK AND HITS HER ELBOW CAUSING PAIN AND PROFUSE BLEEDING. SHE MENTIONS SHE IS TAKING ONE BABY ASPIRIN A DAY.
 - ON A LOOP AROUND HIDDEN CANYON, CHERYL TRIPS AND FALLS INTO A CHOLLA CACTUS. SHE EMERGES WITH MULTIPLE PODS AND THORNS IN HER SIDE AND BACK.
-

COMMON SCENARIOS

- DURING A LUNCH BREAK AT SEVEN FALLS, DAVE SITS DOWN FOR LUNCH ON A ROCK AND EXTENDS HIS HAND BEHIND HIM. HE SEES A FLASH OF MOVEMENT AND JERKS HIS HAND BACK. TOO LATE! A DIAMOND BACK HAS BITTEN HIM ON THE WRIST AND SLITHERED OFF.
- WALT IS ON A FOURTEEN MILE LOOP AROUND WEAVER'S NEEDLE. SIX MILES INTO THE HIKE HE SLIPS OFF A ROCK ON A DESCENT, MISSTEPS AND GOES DOWN HARD WITH AN AUDIBLE SNAP. HE EXPERIENCES IMMEDIATE PAIN AND SWELLING ALONG HIS RIGHT SHIN. WHEN HE TRIES TO STAND HE COLLAPSES, GRASPING HIS LEG. THERE IS NO CELL SERVICE IN THE AREA. COULD THIS BE HANDLED DIFFERENTLY IF AN ARM RATHER THAN A LEG WAS INJURED?

COMMON SCENARIOS

- ON THE DESCENT FROM PICACHO PEAK, GREG DEVELOPS SEVERE CHEST PAIN RADIATING INTO HIS LEFT ARM AND JAW, HE BECOMES SHORT OF BREATH AND SITS DOWN IMMEDIATELY. HE IS ANXIOUS AND SWEATING PROFUSELY.
 - ONE MILE INTO A HIKE TO THE MAIDEN POOLS, SUSAN IS STUNG BY A BEE BELOW THE EYE. SHE DEVELOPS SWELLING AT THE SITE AND THEN RED WELTS BEGIN TO APPEAR. SHE RELATES THAT HER REACTION TO BEE STINGS HAS BECOME INCREASINGLY WORSE OVER TIME.
 - ITS MID-SEPTEMBER AND HOT! MICHAEL HAS JUST RETURNED FROM PENNSYLVANIA AND JOINS A HIKE TO ROMERO POOLS. HE IS SWEATING PROFUSELY. ON THE LAST CLIMB TO THE POOLS, HE BECOMES NAUSEATED AND APPEARS PALE. HE IS UNABLE TO STAND WITHOUT BECOMING DIZZY.
-

COMMON SCENARIOS

- ON THE NORTH FIFTY YEAR TRAIL LOOP, LARRY DECIDES TO CLIMB OVER THE BARB WIRE FENCE AND SLIPS, RESULTING IN A DEEP PUNCTURE WOUND AND SEVERAL LACERATIONS ALONG HIS LOWER LEG.
- ON THE ASCENT TO WASSON PEAK, GREG STARTS TO BECOME ANXIOUS, IRRITABLE AND ACTS CONFUSED. HE MENTIONS SOMETHING ABOUT HIS SUGAR LEVEL.
- ON A DESCENT FROM JOSEPHINE SADDLE, KATHY SUDDENLY LOSES CONSCIOUSNESS AND FALLS FORWARD STRIKING HER FACE. SHE SLOWLY REGAINS CONSCIOUSNESS BUT IS DISORIENTED AND IS BLEEDING FROM HER NOSE WITH BRUISING AND SWELLING BELOW HER RIGHT EYE.

COMMON SCENARIOS

- DICK JOINS YOUR HIKE TO CLIMB MT. WRIGHTSON. AT BALDY SADDLE HE BEGINS TO EXPERIENCE DIFFICULTY SPEAKING. HE CANNOT HOLD HIS RIGHT ARM UP, AND HIS SMILE IS CROOKED.

PHYSIOLOGY OF AGING

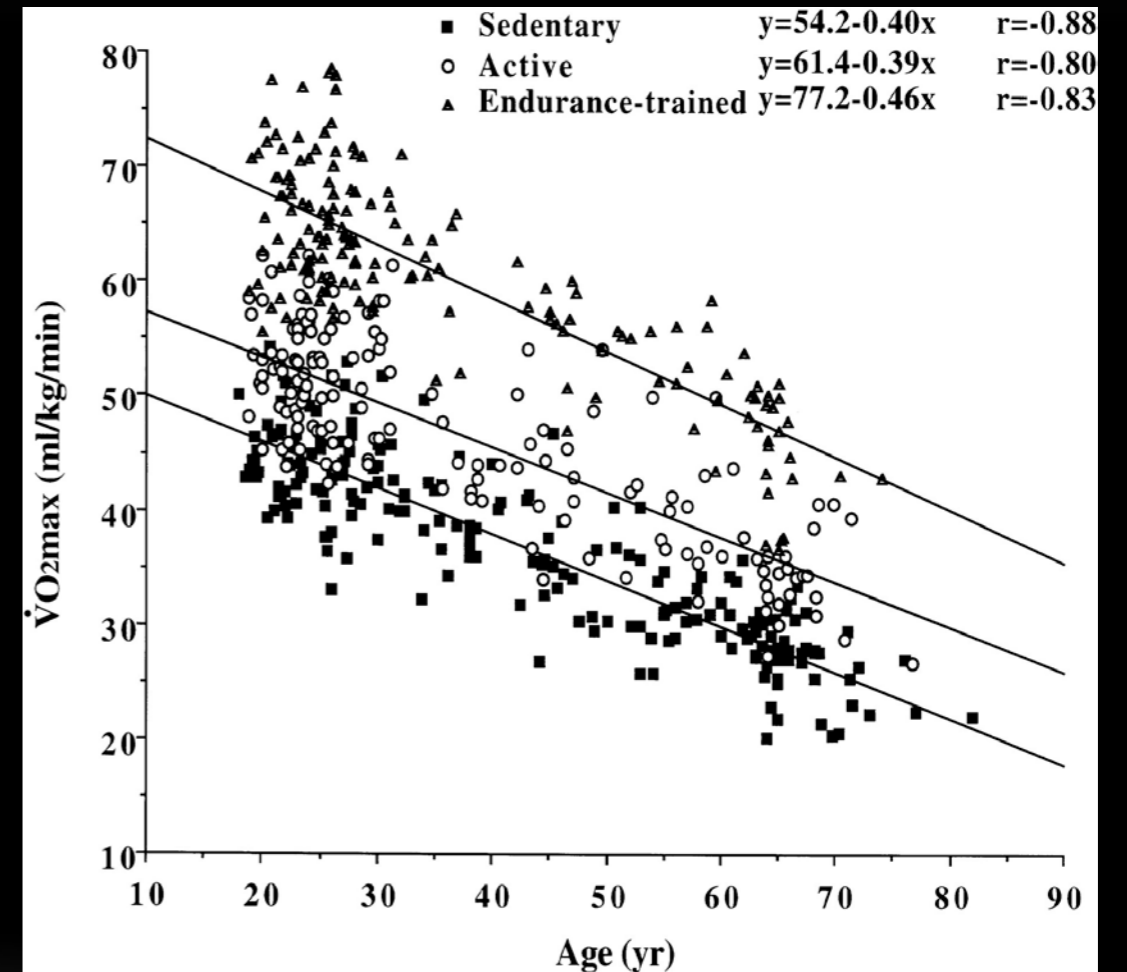
- CARDIAC
 - DECREASED CARDIAC OUTPUT, DECREASED MAXIMAL HEART RATE, MORE ARRHYTHMIAS, DECREASED VENTRICULAR ELASTICITY
- PULMONARY
 - DECREASED ELASTICITY OF THORAX, DECREASED GAS EXCHANGE AREA
- MUSCULOSKELETAL
 - DECREASED MUSCLE MASS AND BONE MINERAL LOSS
- NEUROLOGIC
 - SENSORY – DIMINISHED HEARING AND VISION
 - BALANCE – DECREASED BALANCE

EXERCISE CAPACITY AND AGING

COMPLICATED SLIDE WITH SIMPLE MESSAGE!

#1 AGING DECREASES YOUR ABILITY TO MOVE OXYGEN TO YOUR BRAIN, ORGANS AND MUSCLES. YOU CAN'T COMPETE WITH A SEDENTARY 30 YEAR OLD.

#2 TRAINING DOES IMPROVE YOUR EXERCISE CAPACITY, SO TRAINING AND REGULAR EXERCISE ARE IMPORTANT.



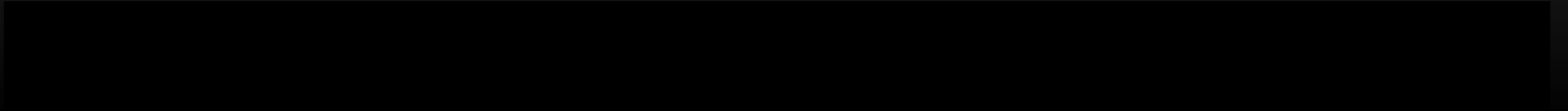
AGING MAKES US MORE PRONE TO HEAT EXHAUSTION

- DECREASED CNS (CENTRAL NERVOUS SYSTEM) RESPONSE TO HEAT
- DECREASED SWEATING
 - NOT ACCLIMATED TO HOT ENVIRONMENT
 - DECREASED SWEAT OUTPUT DUE TO MEDICATIONS
 - DIURETICS AND/OR DEHYDRATION
- DECREASED PERCEPTION OF THIRST

COMMON ACCIDENTS AND INJURIES

- BLISTERS
 - BRUISES AND HEMATOMAS
 - SUPERFICIAL ABRASIONS (ROAD RASH)
 - LACERATIONS
 - PUNCTURE WOUNDS
 - SPRAINS AND FRACTURES
 - DISLOCATIONS
 - CACTUS ENCOUNTERS
 - BEE STINGS
 - SNAKE BITES
 - LIGHTNING STRIKES
-

BLISTERS



BLISTERS

- DUE TO REPETITIVE FRICTIONAL FORCES. USUALLY IMPROPERLY BROKEN IN OR POORLY FITTING SHOES.
- TYPICALLY PRECEDED BY A "HOT SPOT" - A TENDER, ERTHEMATOUS AREA (REDDENED AREA).
- CAN BECOME INFECTED
- TREATMENT
 - CATCH IT EARLY! MOLESKIN, DUCT TAPE, PAPER TAPE OR BLIST-O-BAN.
 - TO RUPTURE OR NOT TO RUPTURE (NO BEST ANSWER). MAY RUPTURE LARGER BLISTERS FOR MANAGEMENT.
 - IF DRAINED, CAN DEBRIDE EXTERNAL FLAP, WASH AND APPLY ANTIBIOTIC OINTMENT.
 - IF IT BECOMES INFLAMED AND POSSIBLY INFECTED, SEEK TREATMENT!

SOME IMPORTANT DEFINITIONS

- SUPERFICIAL ABRASION - A wound caused by superficial damage to the skin no deeper than the superficial layer of skin. Less severe than a laceration which goes through the skin. Bleeding is minimal.
 - HEMATOMA - A solid swelling of clotted blood within soft tissues.
 - LACERATION – Irregular tear-like wound through the skin caused by blunt trauma. They may be linear or irregular. May bleed profusely.
 - PUNCTURE WOUND – A wound through the skin caused by a needle like object such as a nail, needle or thorn.
-

HEMATOMAS

- WRAP SECURELY WITH A COMPRESSION BANDAGE IF POSSIBLE AND WALK OUT. CHECK PULSE AND AVOID CUTTING OFF CIRCULATION
- ASK IF THE HIKER IS TAKING A BLOOD THINNER INCLUDING ASPIRIN
- TREAT WITH "RICE" PROTOCOL AT HOME
 - REST
 - ICE
 - COMPRESSION
 - ELEVATION
- MAY NEED TO SEEK MEDICAL CARE IF:
 - HEMATOMA CONTINUING TO EXPAND (ESPECIALLY IF ON ANTICOAGULANT)
 - IF THERE IS POSSIBLE HEMORRHAGE OR SWELLING INTO A JOINT.

SUPERFICIAL ABRASIONS AND "ROAD RASH"

- SIT HIKER DOWN. PUT ON GLOVES. CONTROL ANY BLEEDING WITH PRESSURE APPLIED DIRECTLY TO THE WOUND USING A GAUZE PAD. THIS MAY REQUIRE 15-20 MINUTES OF CONTINUOUS PRESSURE, PARTICULARLY FOR THE SCALP. IF YOU PEEK TOO EARLY, YOU HAVE TO START OVER!
- IF AN EXTREMITY IS INVOLVED, ELEVATE THE EXTREMITY.
- IF STILL BLEEDING AFTER 10 MINUTES, USE HEMOSTATIC GAUZE .
- CLEAN THE WOUND AND IRRIGATE LIBERALLY, IF POSSIBLE, TO REMOVE ANY DEBRIS. PLACE ANTIBIOTIC OINTMENT ON GAUZE AND APPLY TO WOUND. WRAP WITH SELF ADHERENT BANDAGE. DO NOT USE TAPE OR BAND AIDS. IRRIGATION WATER DOES NOT HAVE TO BE STERILE.
- ADVISE HIKER TO SEEK CARE FOR MORE THOROUGH DEBRIDEMENT AND WOUND DRESSING. THOROUGH DEBRIDEMENT (WOUND CLEANSING) REDUCES SCARRING.

LACERATIONS

- SIT HIKER DOWN. PUT ON GLOVES. CONTROL BLEEDING WITH PRESSURE APPLIED DIRECTLY TO THE WOUND USING A GAUZE PAD
 - IF AN EXTREMITY IS INVOLVED, ELEVATE THE EXTREMITY.
 - WASH AND IRRIGATE THE WOUND
 - SUPERFICIAL OR DEEP? PACK WITH MOIST GAUZE IF DEEP OR GAPING WOUND.
 - COVER WITH DRESSING, ANTI-BACTERIAL OINTMENT AND WRAP WITH SELF ADHERENT BANDAGE.
 - DO YOU HAVE TO CLOSE THE WOUND? NO. INFECTION ACTUALLY DECREASED WITH DELAYED CLOSURE.
 - ADVISE HIKER TO SEEK CARE IF WOUND NEEDS CLOSURE, IS SUPERFICIAL BUT LATER BECOMES RED AND SWOLLEN (MAY BE INFECTED), OR IF IN NEED OF A TETANUS BOOSTER.
-

PUNCTURE WOUNDS

- HIGHER RISK OF INFECTION.
 - CAUSE IS IMPORTANT FOR INFECTION
 - ANIMAL BITE
 - WIRE, NAIL OR OTHER SHARP OBJECT
- DO NOT RECOMMEND FORCED IRRIGATION OF PUNCTURE WOUNDS IN THE FIELD AS IT MAY PUSH CONTAMINANTS INTO DEEPER TISSUE.
- APPLY A SIMPLE DRESSING AND HIKE OUT.
- MOST PUNCTURE WOUNDS NEED MEDICAL ATTENTION AND OFTEN REQUIRE ANTIBIOTIC TREATMENT TO PREVENT DEEP TISSUE INFECTION. HIKER MAY ALSO NEED A TETANUS BOOSTER.

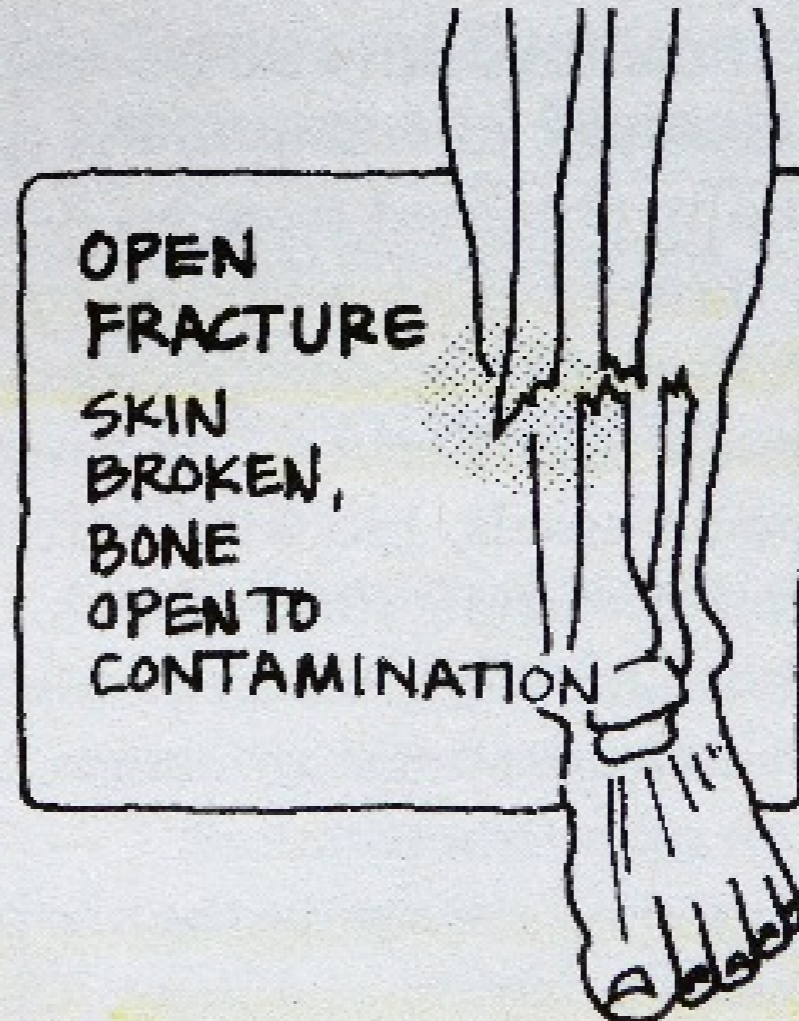
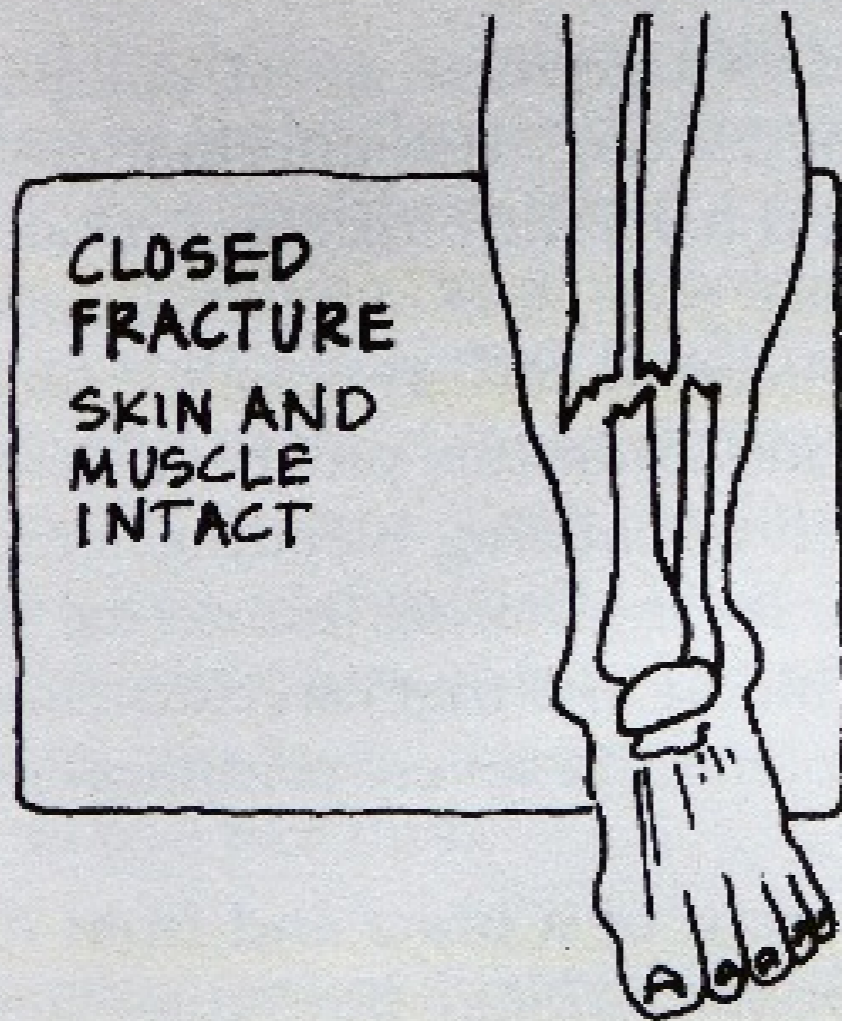
KEY POINTS REGARDING WOUND CARE

- SIT HIKER DOWN
- GLOVE UP
- ELEVATE IF POSSIBLE
- APPLY PRESSURE AND CONTINUE UNTIL BLEEDING STOPS
- ASK IF THE HIKER IS TAKING A BLOOD THINNER INCLUDING ASPIRIN?
- THOROUGH IRRIGATION
- APPLY DRESSING AND BANDAGE/WRAP
- REASSURE AND PROCEED SLOWLY
- REMEMBER – EVERY INJURY HAS A PHYSIOLOGICAL AND AN EMOTIONAL COMPONENT. TREAT BOTH!

FRACTURES AND SPRAINS

- DEFINITIONS
 - SPRAIN – STRETCHING OR TEARING OF LIGAMENTS
 - FRACTURES – BROKEN BONE
 - UNDISPLACED (CRACK)
 - DISPLACED OR ANGULATED
 - OPEN FRACTURE – FRACTURE WITH LACERATION OF OVERLYING SOFT TISSUES EXPOSING BONE (ALSO CALLED A COMPOUND FRACTURE)
- DIAGNOSIS
 - SPRAIN OR UNDISPLACED FRACTURE MAY HAVE SIMILAR SYMPTOMS
 - DEFORMITY, ANGULATION – FRACTURE VERY LIKELY
 - BONE PROTRUDING THROUGH THE SKIN OR VISIBLE IN WOUND – OPEN FRACTURE

CLOSED VS. OPEN FRACTURE



UPPER EXTREMITY INJURIES

- WRIST
- ELBOW
- SHOULDER

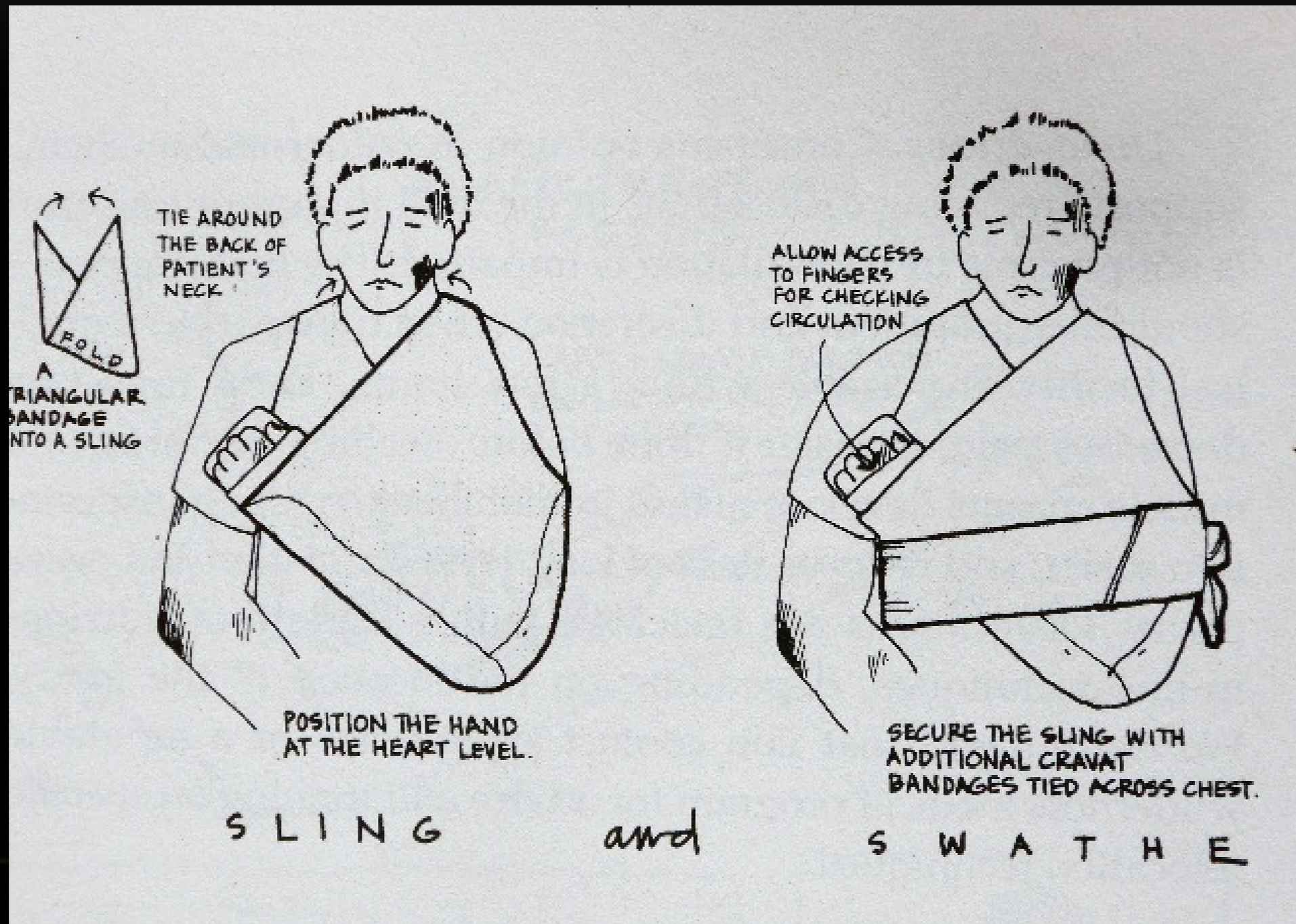
UPPER EXTREMITY FRACTURE

- ASSESS FOR OTHER INJURIES
- REMOVE WATCH, JEWELRY AND TIGHT CLOTHING
- ASSESS WOUNDS, DISTAL SENSATION AND PULSES
- CLEAN AND DRESS ANY WOUNDS
- IMMOBILIZE AND PAD THE INJURED UPPER EXTREMITY
- USE SAM SPLINT, ACE WRAP AND PLACE IN A SLING
- FREQUENT CHECKS OF WRAP TIGHTNESS, DISTAL SENSATION AND PULSES
- MOST OFTEN CAN HIKE TO TRAILHEAD



Wilderness Medicine • Rescue • Survival

SLING AND SWATHE



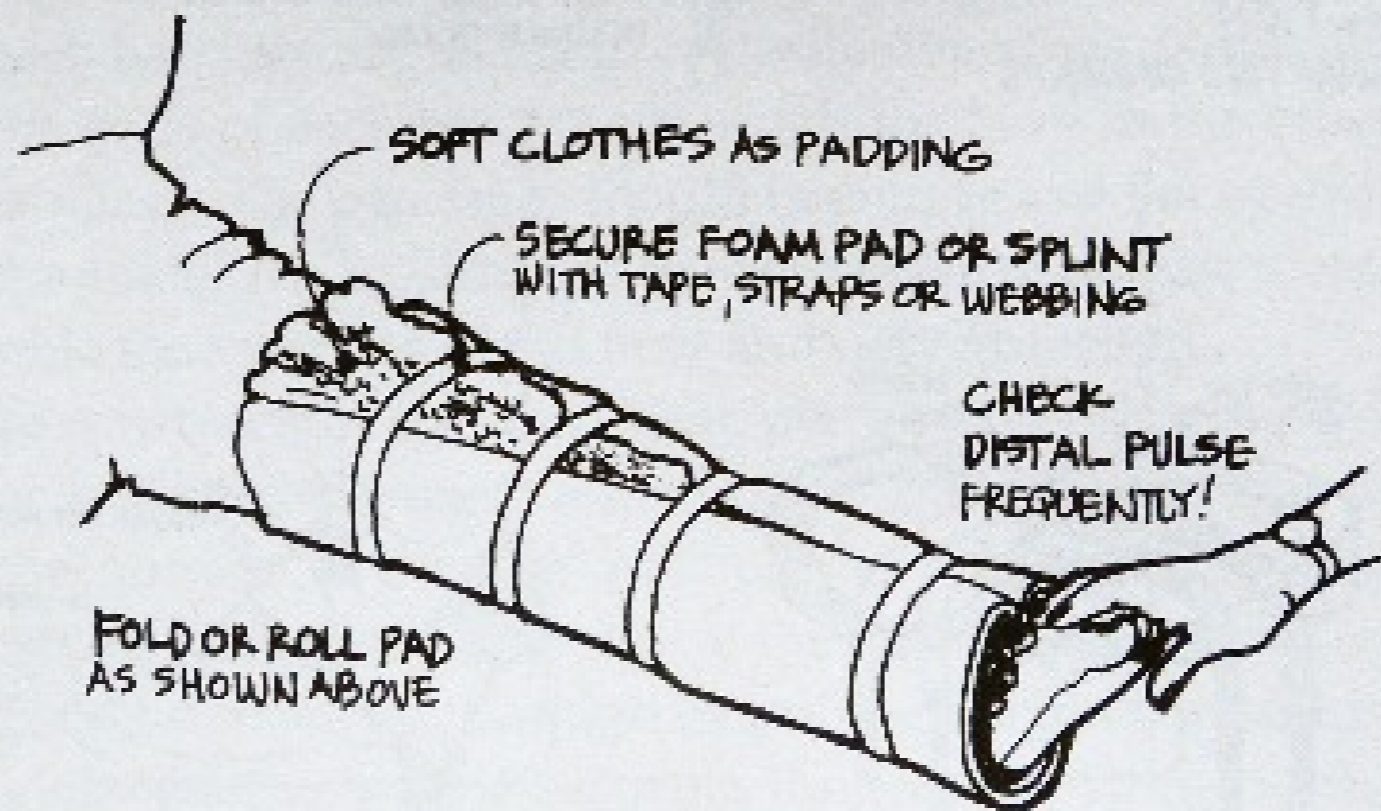
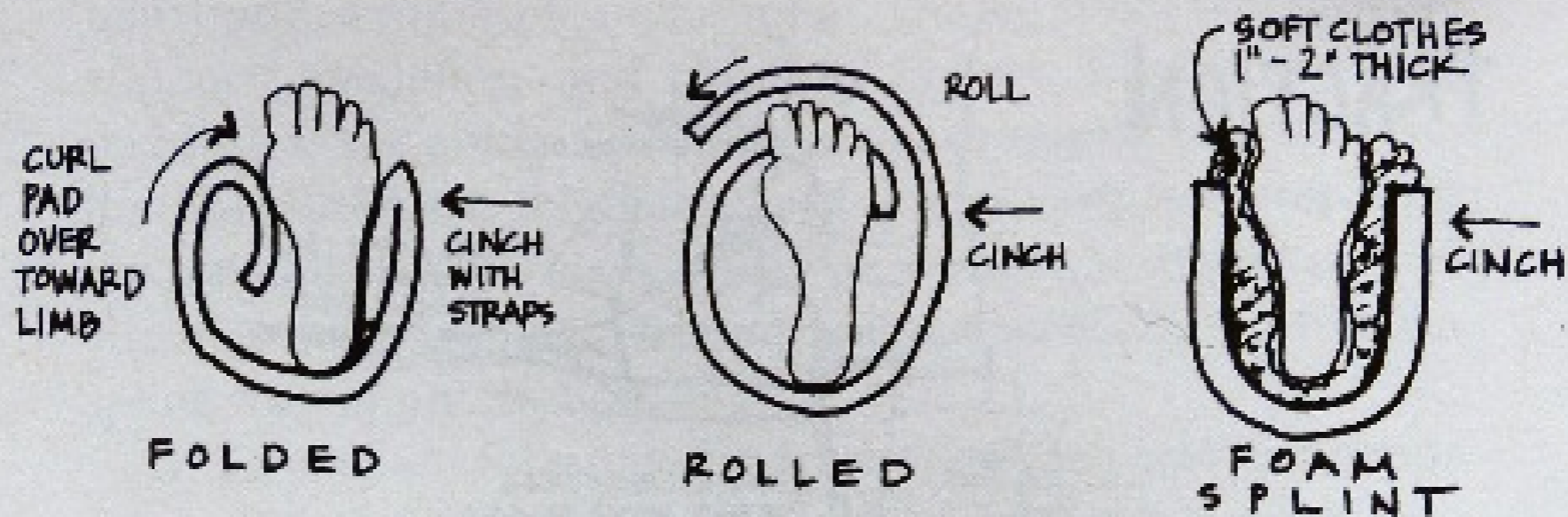
TREATMENT OF LOWER EXTREMITY SPRAIN OR FRACTURE

- SPRAINS / UNDISPLACED FRACTURES
 - MAY ACE WRAP ANKLE OR KNEE AND WEAR BOOT IF SPRAIN IS MINOR AND HIKER CAN WALK UNAIDED
 - OTHERWISE SPLINT IN PLACE WITH SAM SPLINT AND ACE WRAP. USE CLOTHING FOR PADDING.
 - CHECK DISTAL PULSES AND SENSATION.
 - DON'T CIRCUMFERENTIALLY TAPE THE SPLINT BECAUSE SITE MAY BECOME CONSTRICTED AS SWELLING OCCURS. USE ACE BANDAGE
- DISPLACED / ANGULATED FRACTURES REQUIRE EVACUATION
 - WHY SPLINT?
 - DECREASE MOTION TO REDUCE CHANCE OF GREATER INJURY
 - DECREASE PAIN AND DECREASE HEMORRHAGE
 - PREPARATION FOR EVACUATION

SAM SPLINT –UNDISPLACED FRACTURE/SPRAIN



SIMPLE LEG SPLINT



SAM SPLINT DISPLACED FRACTURE/SEVERE SPRAIN



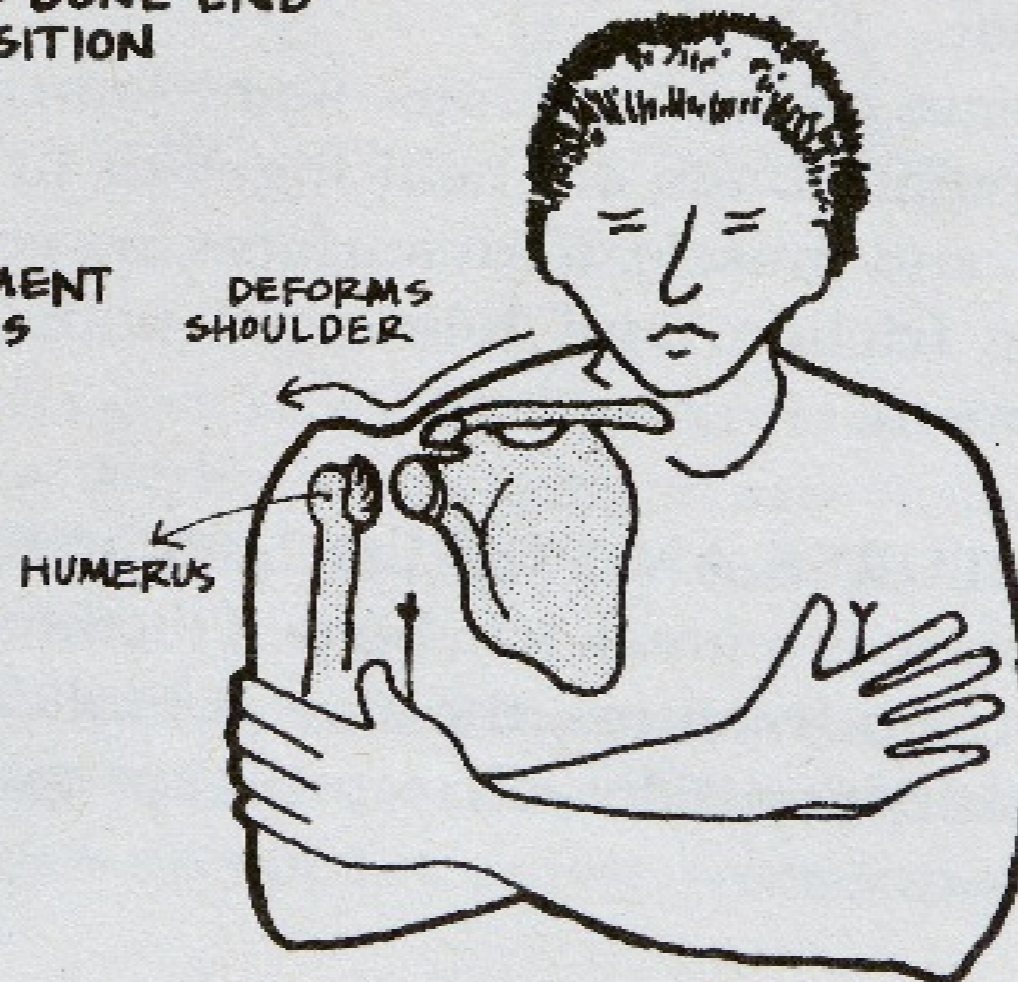
SPRAIN OR UNDISPLACED FRACTURE – LOWER EXTREMITY (KNEE AND ANKLE)

- DECISION MAKING
 - WRAP OR SPLINT?
 - SEVERITY OF PAIN, MOBILITY OF JOINT
 - HIKE OUT OR EVACUATE?
 - ABLE TO KEEP BOOT ON INJURED LEG
 - ABLE TO STAND AND WALK ON INJURED LEG
 - HOW FAR AWAY FROM TRAIL HEAD
 - ELEVATION AND DIFFICULTY OF TRAIL
 - UNABLE TO WALK WITH ASSISTANCE – CALL FOR EVACUATION

DISLOCATION – SPLINT RATHER THAN TREAT

DISLOCATION
DISPLACEMENT OF A BONE END
FROM ITS NORMAL POSITION
AT THE JOINT.

EXAMPLE:
DISPLACEMENT
OF HUMERUS
FROM
SHOULDER
BONES



KEY POINTS REGARDING SPRAINS AND FRACTURES

- ANY SIGN OF DISPLACEMENT OR SKIN PUNCTURE - DRESS, SPLINT AND EVACUATE.
- IF HIKER CAN STAND AND APPLY PRESSURE TO A LOWER EXTREMITY INJURY, APPLY A PRESSURE WRAP BANDAGE OR SPLINT AND WALK OUT.
- MOST UPPER EXTREMITY SPRAINS, FRACTURES, AND DISLOCATIONS CAN BE SPLINTED AND WALK OUT.

ENVIROMENTAL INJURIES

CACTUS

- CHOLLA AND PRICKLY PEAR ARE MOST COMMON
 - CHOLLA PODS REMOVED WITH COMB PREFERABLY WITH A HANDLE
 - LARGE SPINES OF CHOLLA OR PRICKLY PEAR REMOVED WITH TWEEZERS
 - TINY SPINES (CALLED GLOCHIDS) ARE LEFT BEHIND IN THE SKIN. THEY ARE MORE DIFFICULT TO REMOVE, CAUSE SKIN IRRITATION AND CAN PRODUCE A LONG LASTING UNCOMFORTABLE DERMATITIS.
 - REMOVE AS MANY AS POSSIBLE WITH TWEEZERS
 - USE AN ADHESIVE METHOD TO REMOVE MORE GLOCHIDS
 - DUCT TAPE
 - ELMER'S GLUE

BEE STINGS

- MOST COMMON CAUSE OF ANAPHYLAXIS (SEVERE ALLERGIC REACTION) IN THE WILDERNESS
- SYMPTOMS INCLUDE SWELLING AND HIVES (RED RASH), SHORTNESS OF BREATH DUE TO BRONCHIAL SPASM (AIRWAY CONSTRICTION).
- USUALLY HAVE PAST HISTORY OF SEVERE ALLERGY OR ANAPHYLAXIS. HIKER SHOULD BRING EPIPEN® IF PRIOR HISTORY OF ALLERGIC REACTION TO BEES OR ANTS.
- TREATMENT
 - QUICKLY REMOVE STINGER IF STILL PRESENT (USE CREDIT CARD EDGE OR PEN KNIFE – DO NOT PINCH)
 - IF HIKER HAS THEIR OWN EPIPEN MAY ASSIST THEM IN USING IT.
 - EPINEPHRINE (1:1000) 0.3 CC IM IN THIGH. MAY NEED TO REPEAT IF REBOUND SYMPTOMS DEVELOP.
 - GIVE ORAL ANITHISTAMINE - TWO 25 MG BENADRYL TABLETS.

RATTLESNAKES



AZ Trail Hike, Tortilla Mtn. March 17, 2017

QUIZ

- WHICH OF THESE ACTIVITIES CARRIES THE GREATEST RISK OF A RATTLESNAKE BITE?
 - HIKING ON TRAILS
 - PLAYING GOLF
 - GARDENING

SNAKE BITE



NOLS

MYTHCRUSHERS

Episode 2: North American
Snake Bites

RATTLESNAKE (VIPER) ENVENOMATION

- RATTLESNAKES ARE PIT VIPERS (*Crotalinae*)
- VENOM IS HEMOTOXIC. NEUROTOXIC COMPONENT IN SOME SPECIES.
- RISK FACTORS FOR SNAKE BITE
 - 8,000 REPORTED SNAKE BITES/YEAR IN USA
 - ABOUT 30% ARE DRY OR MINIMAL ENVENOMATION
 - 5 DEATHS/YEAR (0.06%). HIKERS ARE MUCH MORE LIKELY TO BE STRUCK BY LIGHTNING
- RATTLESNAKES ARE NOT AGGRESSIVE. STEP BACK OR GIVE A WIDE BERTH
- DO NOT TRY TO CATCH OR KILL A SNAKE

RATTLESNAKE (VIPER) ENVENOMATION

- SYMPTOMS OF ENVENOMATION
 - SEVERE BURNING AT SITE OF BITE
 - SOFT TISSUE SWELLING
 - ECCHYMOSIS (BLEEDING INTO SKIN)
 - OVER TIME WEAKNESS, NAUSEA, VOMITING
- INITIAL TREATMENT
 - KEEP PATIENT CALM
 - IF BITE ON ARM TAKE OFF ALL JEWELRY AND WATCH IMMEDIATELY
 - DECIDE IF HIKER CAN HIKE OUT OR NEEDS EVACUATION
 - DO NOT CUT OR SUCK WOUND. DO NOT GIVE ASPIRIN
 - MARK EXTENT OF SWELLING EVERY FIFTEEN MINUTES ON SKIN
 - TRANSPORT TO NEAREST MEDICAL FACILITY FOR EVALUATION AND POSSIBLE ANTIVENOM RX



NOLS

MYTHCRUSHERS

Episode 3: Lightning

LIGHTNING

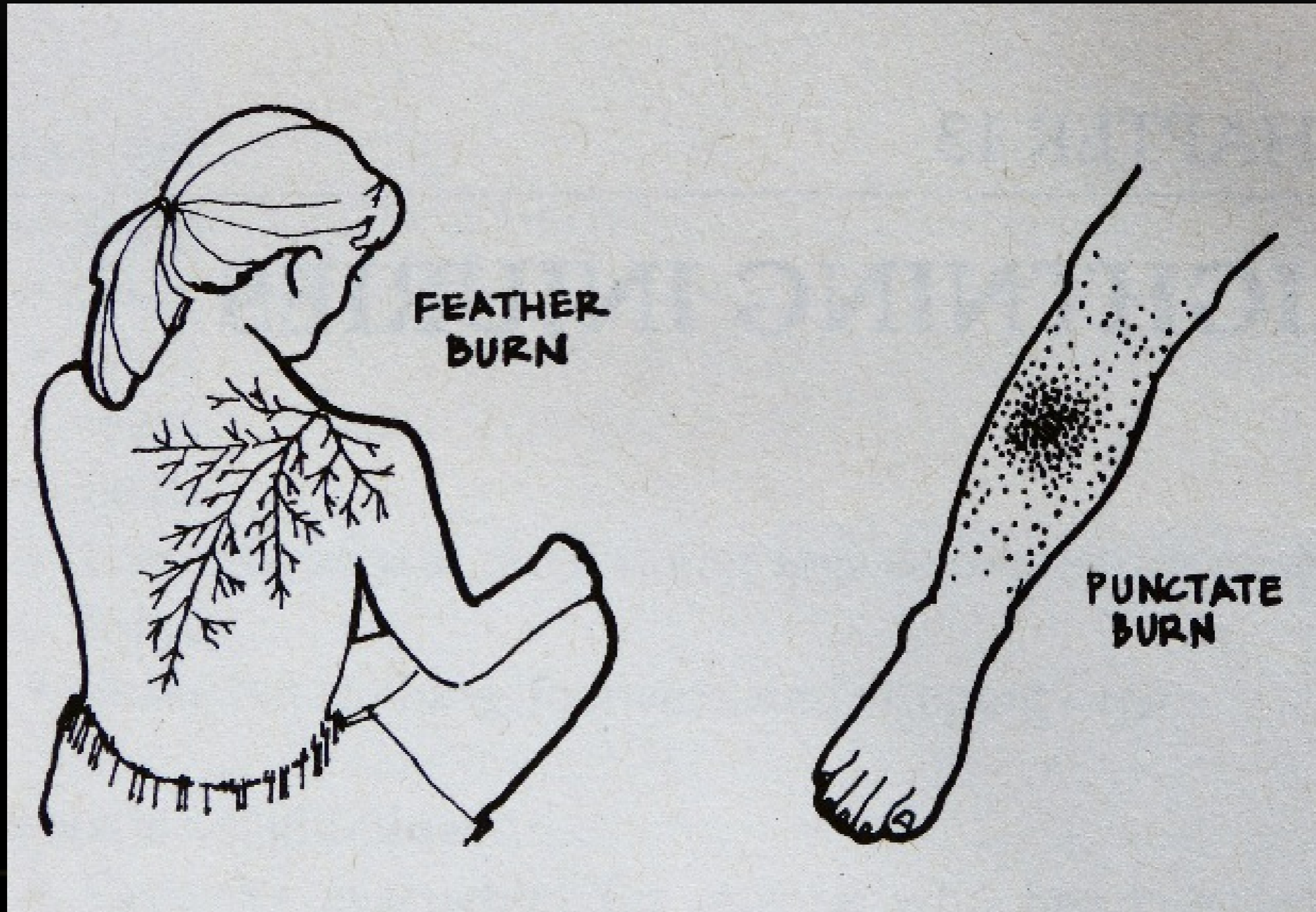
"SHORT CIRCUITS" BODIES ELECTRICAL SYSTEMS

ALSO CAUSES DIRECT TRAUMA DUE TO VIOLENT MUSCULAR CONTRACTION

MOST COMMON CAUSE OF DEATH IS CARDIOPULMONARY ARREST!

- TEMPORARY CARDIAC ASYSTOLE (FLATLINE) WITH RECOVERY OF NORMAL RHYTHM
- RESPIRATORY ARREST THAT USUALLY LASTS LONGER THAN CARDIAC ARREST
- FERNING OR "LICHTENBERG FIGURES" ON SKIN
- MAY HAVE FRACTURES OR DISLOCATIONS
- FREQUENT TYMPANIC MEMBRANE RUPTURE IN MIDDLE EAR

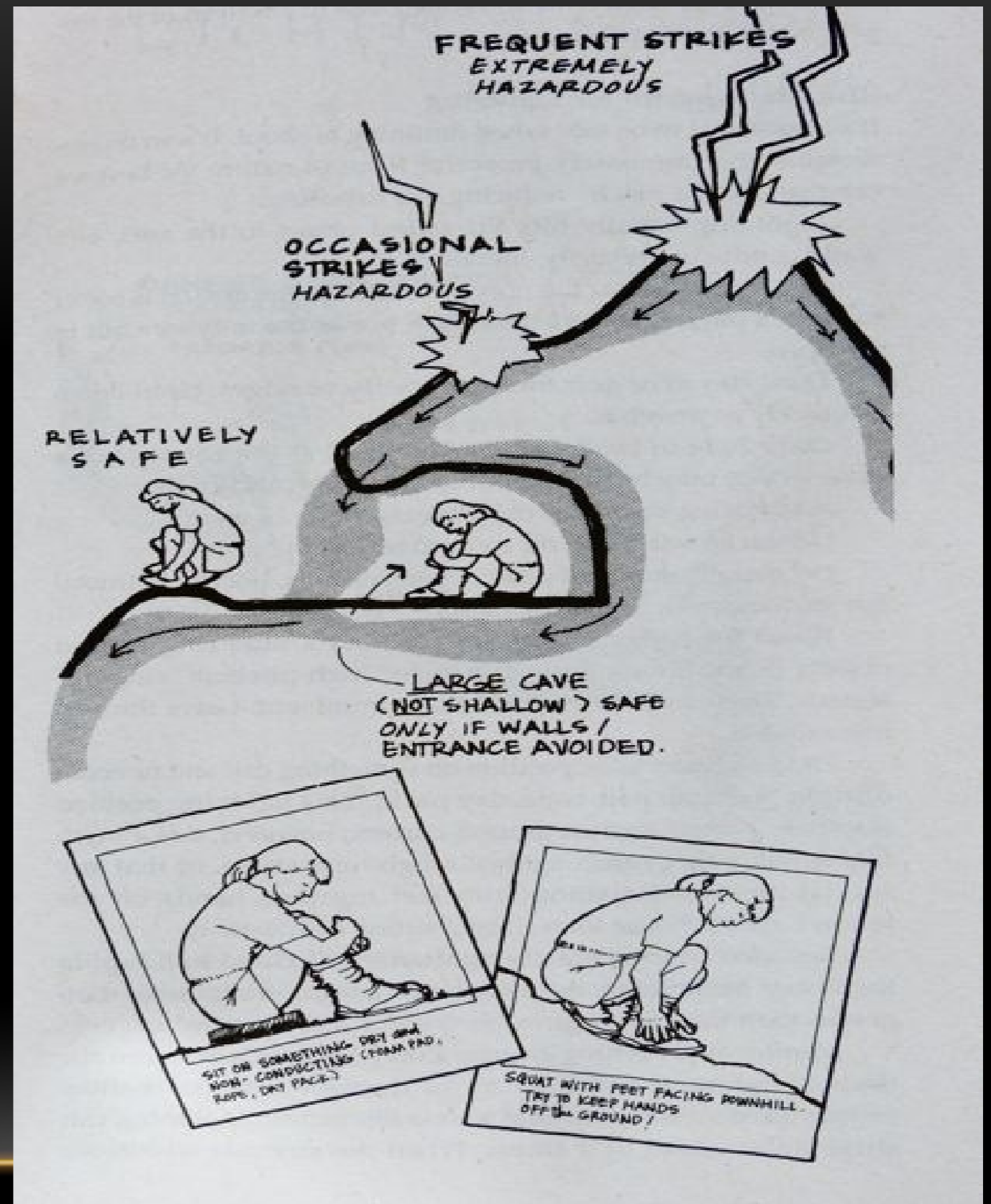
LIGHTNING – SKIN LESIONS



LIGHTNING - PREVENTION

- FIRST OPTION – SEEK SHELTER IN A SUBSTANTIAL BUILDING OR VEHICLE WITH WINDOWS UP.
- IF ON THE TRAIL –
 - IF YOU ARE IN THE OPEN, STAY AWAY FROM OBJECTS TALLER THAN YOU (ISOLATED TREES, SKI LIFTS, POLES) TO AVOID LIGHTNING SPLASHES AND GROUND CURRENT.
 - SEEK A LOW AREA.
 - STAY OUT OF CAVES.
 - SQUAT DOWN WITH KNEES FULLY BENT AND FEET TOGETHER ON A PAD IF POSSIBLE

LIGHTNING STRIKES



MEDICAL CONDITIONS

BEWARE OF THE "UMBLES"

- "UMBLES"
 - MUMBLES
 - GRUMBLES
 - TUMBLES

MEDICAL EMERGENCIES

- CONDITIONS ASSOCIATED WITH THE "UMBLES" (MUMBLES, GRUMBLES AND TUMBLES)
 - FATIGUE
 - HYPOTHERMIA
 - DEHYDRATION / HYPERTHERMIA
 - HYPOGLYCEMIA (LOW BLOOD SUGAR)
 - SEIZURE
 - STROKE
 - HEAD INJURY
 - ACUTE CORONARY SYNDROME (CHEST PAIN, HEART ATTACK, CARDIAC ARREST))
 - ALTITUDE SICKNESS
 - ASTHMA/COPD (CHRONIC OBSTRUCTIVE PULMONARY DISEASE)
-

MEDICAL EMERGENCIES

BE AWARE! IF SOMEONE IS HAVING TROUBLE. STOP AND EVALUATE.

- PLACE IN A COMFORTABLE POSITION
- REGULATE TEMPERATURE (FIND SHADE OR ADDITIONAL CLOTHING)
- MOIST TOWEL OR BANDANA TO FOREHEAD
- PROVIDE REASSURANCE!

GOOD QUESTIONS TO ASK:

- WHEN WAS THE LAST TIME YOU DRANK AND HOW MUCH?
- WHEN WAS THE LAST TIME YOU ATE AND WHAT WAS IT?
- HAVE YOU URINATED?
- ARE YOU ON ANY MEDICATIONS? DID YOU TAKE THEM OR BRING THEM?
- ARE YOU BEING TREATED FOR ANY MEDICAL CONDITIONS?

CONDITIONS ASSOCIATED WITH THE "UMBLES"

- "UMBLES" ARE MUMBLES, STUMBLES AND TUMBLES. ALL ARE SUGGESTIVE OF ALTERED MENTAL STATUS DUE TO SOME UNDERLYING MEDICAL CONDITION AND ARE WARNING SIGNS.
- THE "UMBLES" ARE NOT DIAGNOSTIC OF A PARTICULAR CONDITION. THE HIKE LEADER SHOULD TRY AND SORT OUT THE MOST COMMON CAUSES IN THE TUCSON DAY-HIKE ENVIRONMENT.
 - "FATIGUE"
 - DEHYDRATION WITH OR WITHOUT HYPERTHERMIA
 - HYPOGLYCEMIA (LOW BLOOD SUGAR)
 - HYPOTHERMIA
 - UNLIKELY – ALTITUDE SICKNESS, OVER-HYDRATION (HYPONATREMIA)
STROKE, SEIZURE, ALLERGIC REACTION

HYPOTHERMIA

- DEFINED AS CORE BODY TEMPERATURE LESS THAN 35 C OR 95 F. DIAGNOSIS IN THE FIELD MADE BY ASSESSING SYMPTOMS.
- CONDITION ASSOCIATED WITH PROLONGED COLD EXPOSURE.
- MOST VICTIMS ARE OVER 65 YEARS OF AGE. ROLE OF ALCOHOL.
- MILD HYPOTHERMIA (CORE TEMP 32 – 35 C)
 - COLD TEMPERATURE DEFENSE MECHANISMS STILL INTACT
 - UNCONTROLLABLE SHIVERING WITH PERIPHERAL VASOCONSTRICTION (DIMINISHED BLOOD FLOW)
 - MAY HAVE IMPAIRED JUDGMENT, CONFUSION AND ATAXIA (LOSS OF MOTOR CONTROL)
 - TACHYCARDIA (INCREASED PULSE RATE), TACHYPNEA (RAPID BREATHING)
- MODERATE AND SEVERE HYPOTHERMIA UNLIKELY IN DAY HIKING ENVIRONMENT

HYPOTHERMIA IN ARIZONA??

- YES IT CAN HAPPEN ON YOUR HIKE!
 - HIKING TO HIGHER ALTITUDE
 - HIKING IN COOL WINTER WEATHER
 - ENCOUNTERING A RAPID CHANGE IN WEATHER WITH 15 DEGREE TEMPERATURE SWING AND 20 MPH WIND
 - DRENCHING RAIN WITH NO RAIN GEAR
 - HYPOTHERMIA COMPLICATING ANOTHER EMERGENCY WHERE PATIENT NEEDS TO BE RECUMBENT WITHOUT PROPER GROUND INSULATION

HYPOTHERMIA

- PREVENTION IS KEY
 - ADEQUATE PREPARATION
 - PROPER GEAR
 - REMEMBER LAYERS AND RAIN GEAR!
 - CONTINGENCY PLAN
- TREATMENT
 - GET HIKER OUT OF COLD, WET OR WINDY CONDITIONS.
 - REMOVE WET CLOTHING.
 - PUT ON DRY CLOTHING AND/OR BLANKETS.
 - CONSUME WARM LIQUIDS IF AVAILABLE.
 - EVACUATION ?

HYPERTHERMIA (HEAT RELATED ILLNESS)

- AGING DECREASES ABILITY TO RESPOND TO HEAT STRESS
 - DECREASED PERIPHERAL VASODILATATION TO SKIN
 - DECREASED SWEAT RESPONSE DUE TO AGE, ACCLIMATIZATION, MEDICATIONS
 - MOST VULNERABLE ORGANS TO HEAT
 - BRAIN
 - LIVER
 - GUT
 - LEADING CAUSE OF MORTALITY IN HS ATHLETES
-

HYPERTHERMIA

- MINOR HEAT RELATED ILLNESSES
 - HEAT EDEMA
 - HEAT RASH
 - EXERCISE ASSOCIATED MUSCLE CRAMPING
 - HEAT SYNCOPE (FAINTING)
 - MAJOR HEAT RELATED ILLNESSES
 - HEAT EXHAUSTION – BODY CAN STILL RECOVER WITH CONSERVATIVE TREATMENT. RESPONSE TO TREATMENT? LOW THRESHOLD TO EVACUATE.
 - HEAT STROKE – MEDICALLY EMERGENCY DUE TO LOSS OF REGULATORY MECHANISMS.
-

HYPERTHERMIA – DRUGS THAT REDUCE SWEAT PRODUCTION

- Atropine, scopolamine and similar drugs
- Antihistamines (Benadryl and Phenergan)
- Over-active bladder (Ditropan and Oxytrol)
- Muscle relaxants (Flexiril, Valium)
- Benzodiazepines (Xanax, Ativan)
- Antipsychotic and antiemetic drugs (Zofran, Droperidol, Haloperidol)
- Antiepileptics
- Tricyclic Antidepressants (Amitriptyline and similar)
- Calcium channel blockers (Cardizem, Norvasc, Procardia)
- Beta blockers (Tenormin, Lopressor, Inderal)

ACCLIMATIZATION TO DESERT HIKING

- ACCLIMATIZATION – (DEFINITION) THE PROCESS OF ACCLIMATING. ESPECIALLY PHYSIOLOGICAL ADJUSTMENT BY AN ORGANISM TO ENVIRONMENTAL CHANGE.
- REGULAR EXERCISE IN A WARM ENVIRONMENT WILL IMPROVE HEAT TOLERANCE AND THERMOREGULATORY RESPONSE, DECREASING THE RISK OF HEAT RELATED ILLNESS.
 - DAILY WALKS WITH INCREASING DURATION, DISTANCE AND AT APPROPRIATE AMBIENT TEMPERATURE FOR 7-14 DAYS.
 - IMPROVE CARDIOVASCULAR RESERVE
 - IMPROVE MUSCLE TONE AND STRENGTH
 - IMPROVE SWEAT RESPONSE BY SWEAT GLANDS

TREATMENT OF HEAT RELATED SYMPTOMS

- REST IN THE SHADE IN POSITION OF COMFORT. OFTEN LYING THE HIKER DOWN AND ELEVATING LEGS HELPFUL.
- PROMOTE SKIN COOLING WITH A MOIST ENDURCOOL BANDANA OR WETTING CLOTHING.
- ENSURE HYDRATION AND ELECTROLYTE REPLACEMENT. SHOT BLOX[®], GU[®], PROPEL[®]
- DECIDING TO HIKE OUT OR CALL 911.
 - IF HIKER DOESN'T QUICKLY RESPOND TO CONSERVATIVE MEASURES, CALL 911 FOR RESCUE.

KEEPING COOL ON A DESERT HIKE

AVOID DEHYDRATION! DEHYDRATION LEADS TO DIMINISHED SWEAT RESPONSE AND HYPERTHERMIA

- WEAR A WIDE BRIM HAT AND LOOSE CLOTHING THAT PROMOTES AIR CIRCULATION.
- COME TO THE HIKE HYDRATED AND STAY HYDRATED! (COFFEE/TEA ARE HAVE DIURETIC EFFECT!)
 - DRINK WHEN THIRSTY, AT LEAST EVERY HOUR. (GOOD RULE OF THUMB IS 1 LITER/QUART OF LIQUID EVERY 5 MILES.
 - PERIODICALLY CONSUME ELCTROLYTES AND SALTY SNACKS.
 - MONITOR URINATION (COLOR AND FREQUENCY).
- *OVER-HYDRATION IS A RARE BUT REPORTED PROBLEM IN ENDURANCE ATHLETES AND HAS BEEN REPORTED IN THE GRAND CANYON. IT CAN LEAD TO SYMPTOMS SIMILAR TO DEHYDRATION.*

HYPOGLYCEMIA – LOW BLOOD SUGAR

- OCCURS IN SETTING OF DIABETIC PATIENT WHO HAS A LOW BLOOD SUGAR
 - EXCESSIVE INSULIN RELATIVE TO CALORIC INTAKE
 - EXERCISE LEVEL HAS CREATED RELATIVE CALORIC DEFICIENCY AND MAY EXACERBATE INSULIN EFFECT
- SYMPTOMS
 - NERVOUSNESS OR ANXIETY. IRRITABILITY
 - SWEATING
 - CONFUSION
 - RAPID HEART BEAT
- TREATMENT
 - ORAL SUGAR DRINK OR SUPPLEMENT - GU ENERGY GEL[®], SUGARY DRINK, CANDY

STROKE

- INTERRUPTION OF BLOOD FLOW TO A BRAIN TISSUE. LESS COMMONLY BLEEDING INTO BRAIN TISSUE.
- SYMPTOMS
 - CONFUSION
 - DIFFICULTY SPEAKING
 - LOSS OF BALANCE AND WEAKNESS
 - PARALYSIS OF ONE SIDE OF THE FACE, ARM OR LEG
- TREATMENT
 - REQUIRES EVACUATION. DO NOT GIVE ASPIRIN. CALL 911 WITH CURRENT LOCATION AND NATURE OF EMERGENCY.
 - OCCASIONALLY SYMPTOMS QUICKLY RESOLVE (TRANSIENT ISCHEMIC ATTACK OR TIA). STILL REQUIRES EVAC AND MEDICAL CARE.

HEAD INJURY

- CONTROL HEMORRHAGE FROM ANY SCALP OR FACIAL LACERATION THAT WILL USUALLY BLEED BRISKLY. CAN USE HEMOSTATIC GAUZE.
- ASSESS LEVEL OF RESPONSIVENESS AND RECALL OF EVENT
 - ORIENTED, EYES OPEN, OBEYS COMMANDS, GOOD RECALL OF EVENTS
 - IF HIKER SEEMS TO HAVE RECOVERED, CAN WALK OUT AND THEN RECOMMEND ASSESSMENT, ESPECIALLY IF DELAYED SYMPTOMS APPEAR. HAVE SOMEONE DRIVE THEM HOME AND CHECK ON THE EVERY HOUR THAT EVENING.
 - CONFUSED OR LETHARGIC, IRRITABLE, INAPPROPRIATE WORDS, HAS AMNESIA FOR EVENT, ANY SUGGESTION OF SKULL OR FACIAL FRACTURE, IMBALANCE, SPINE PAIN OR OTHER INJURIES – CALL 911 AND EVACUATE

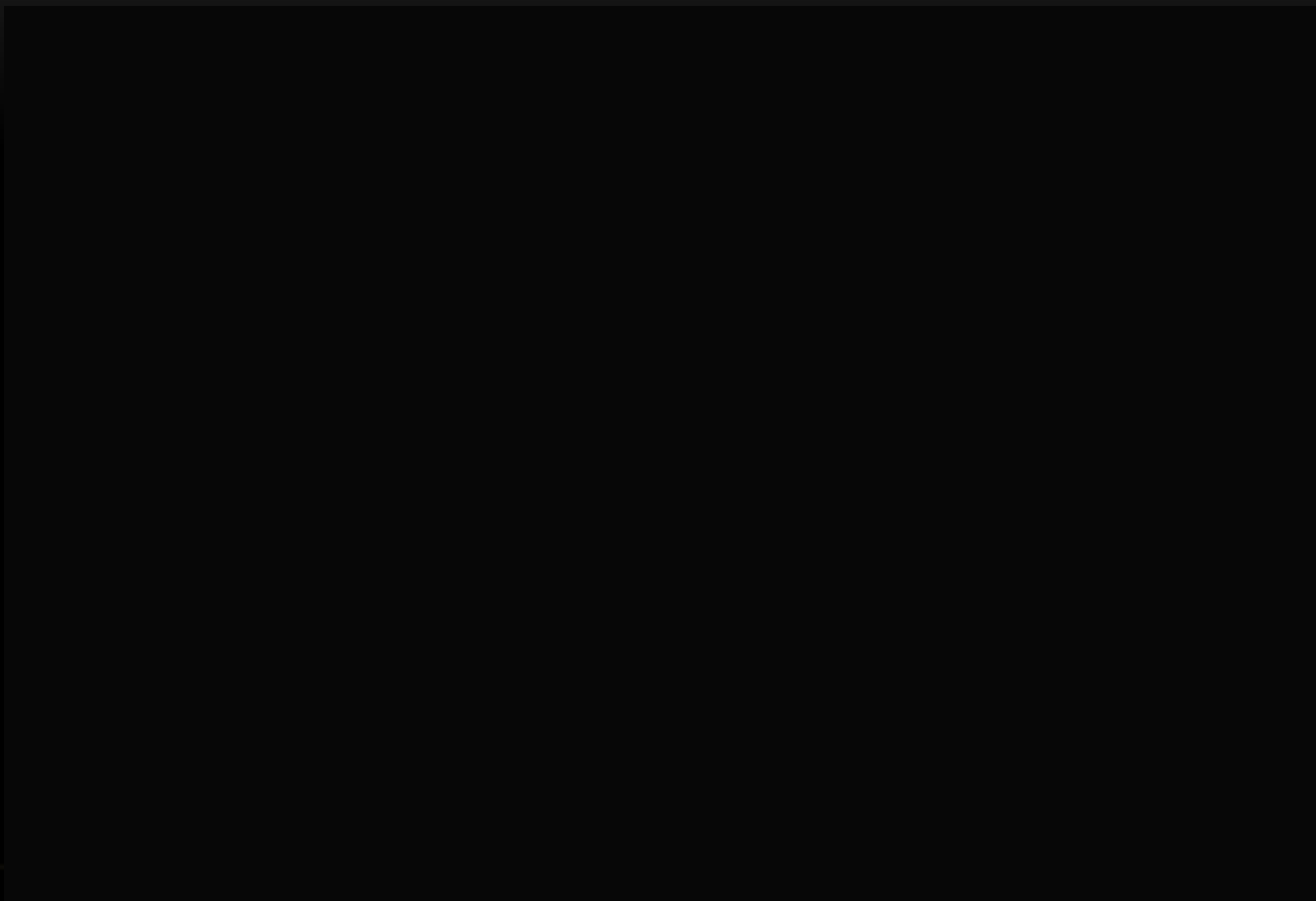
CHEST PAIN (ANGINA) AND HEART ATTACK (MYOCARDIAL INFARCTION)

- TYPICAL SYMPTOMS OF CARDIAC RELATED CHEST PAIN OR ANGINA
 - DESCRIBED AS A SQUEEZING OR TIGHTNESS
 - USUALLY IN THE CENTER OF THE CHEST BUT MAY LOCALIZE TO ONE SIDE OR ACROSS ENTIRE CHEST. MAY RADIATE TO THE ARMS, JAW, NECK OR BACK.
 - CAN ALSO HAVE SHORTNESS OF BREATH, NAUSEA AND VOMITING, LIGHT HEADEDNESS OR FAINTING, PROFUSE SWEATING
 - WOMEN MAY EXPERIENCE DIFFERENT SYMPTOMS. FATIGUE COMMON SYMPTOM.
- GOAL IS TO REDUCE STRAIN ON HEART (DECREASE OXYGEN DEMAND)
 - CALL 911 WITH CURRENT LOCATION AND NATURE OF EMERGENCY.
 - REST IS KEY. REDUCE EXPOSURE TO HEAT OR COLD
 - HYDRATE BUT NO FOOD
 - MAY ASSIST IN ADMINISTERING HIKERS OWN NITROGLYCERIN
 - GIVE 4 81 MG CHEWABLE BABY ASPIRIN OR ONE ADULT 325 MG ASPIRIN

KEY POINTS REGARDING CPR FOR CARDIAC ARREST

- DETERMINE IF HIKER IS AROUSABLE (SHAKE AND SHOUT) OR RESPONDS TO PAIN (STERNAL OR BREAST BONE PRESSURE).
- NO RESPONSE – HAVE SOMEONE CALL 911 REPORTING YOUR LOCATION AND NATURE OF EMERGENCY.
- INITIATE CHEST ONLY CPR. COMPRESS WITH HEEL OF HANDS ALONG MID BREAST BONE (STERNUM)
- FAQ'S
 - AM I LIABLE FOR INJURY? – NO. YOU ARE A “GOOD SAMARITAN” TRYING TO SAVE SOMEONE FROM CERTAIN DEATH.
 - DOES IT MATTER IF THE HIKER HAS A PACEMAKER – NO.
 - DOES IT MATTER IF THERE IS A PULSE PRESENT – NO. IF THE HIKER BECOMES AROUSABLE AND HAD A HEART BEAT, NO PERMANENT DAMAGE HAS BEEN DONE.

CHEST COMPRESSION ONLY CPR



ALTITUDE SICKNESS (ACUTE MOUNTAIN SICKNESS OR AMS)

- AMS UNLIKELY TO BE A PROBLEM ON DAY HIKES IN CATALINAS. USUALLY NOT SEEN AT ALTITUDES BELOW 9000 FT. HOWEVER, HAS OCCASIONALLY BEEN REPORTED AS LOW AS 6500 FT ASSOCIATED WITH RAPID ASCENT AND NO ACCLIMATIZATION.
- AMS IS DUE TO RELATIVE HYPOVENTILATION, FLUID RETENTION AND REDISTRIBUTION, AND IMPAIRED GAS EXCHANGE IN THE LUNGS.
- TYPICAL SYMPTOM IS HEADACHE PLUS ANOTHER SX (LIGHT-HEADEDNESS, FATIGUE OR WEAKNESS, NAUSEA/VOMITING OR INSOMNIA)
 - AMS CAN LEAD TO ATAXIA (LOSS OF MOTOR CONTROL, STAGGERING GATE, IMBALANCE) AND ALTERED CONSCIOUSNESS (HIGH ALTITUDE CEREBRAL EDEMA OR HACE).
 - AMS CAN CAUSE SERIOUS SHORTNESS OF BREATH DUE TO FLUID ON THE LUNGS (HIGH ALTITUDE PULMONARY EDEMA OR HAPE)
- TREATMENT – DESCENT!

ALLERGIES, ASTHMA AND OBSTRUCTIVE LUNG DISEASE

- ALL OF THESE CONDITIONS ARE USUALLY WELL-RECOGNIZED AILMENTS AND HIKERS MUST DETERMINE WHETHER THEIR HEALTH STATUS CAN ACCOMMODATE A HIKE.
- IN ADDITION TO SEVERE ALLERGIC REACTION TO BEE STINGS, THE TRAILS ARE DUSTY, AND THE TREES AND GRASSES PRODUCE LOTS OF ALLERGENS (POLLEN).
- IF THE GUIDE AND THE HIKER DETERMINE A HIKER IS SUITED FOR A HIKE, THEN BRINGING ANY MEDICATIONS THEY MAY NEED IS CRITICAL!!
 - EPINEPHRINE (EPI PEN)
 - ORAL MEDICATIONS
 - INHALED MEDICATIONS

DISCUSSION OF MEDICAL EMERGENCIES

- You are leading a hike up Finger Rock Canyon to the Linda Vista Saddle. It is a warm day and the group is moving along at a moderate pace. Joe, a new hiker in your group, is starting to slow down. You check on him and he says he's been drinking lots of water, but is feeling a little nauseated, looks flushed, and is complaining of some cramping in his legs that is slowing him down. What are some possible causes of his symptoms? What questions do you want to ask? What steps should you take? Is any follow-up indicated?

DISCUSSION OF MEDICAL EMERGENCIES

- You are leading a hike up Bear Canyon to Seven Falls on a cool December day. Phyllis, who usually is talkative and full of energy, seems to be unusually quiet. When you stop to talk to her, she is irritable, perspiring a lot, and you notice that she has a bit of a hand tremor. You ask her if she's been drinking fluids, and she says she has almost finished a bottle of Power Aide Zero. What are some possible causes of her symptoms? What questions do you want to ask? What steps should you take? Hike or evacuate?

DISCUSSION OF MEDICAL EMERGENCIES

- You are leading a hike up Blackett's Ridge. Darlene, an experienced SBHC hiker, starts to feel a little short of breath and nauseated. She says she has developed a little heartburn too, but it is probably due to some barbecue she ate the night before. The heartburn and shortness of breath seem to get better when she takes a break and sits down? What are some possible causes of her symptoms? What questions do you want to ask? What steps should you take? Hike or evacuate?

SCREENING THE NEW HIKER

- WHAT KIND OF SHAPE?
 - CURRENTLY HIKING OR REGULARLY WALKING?
 - RECENT CLUB HIKES AND WITH WHICH GUIDE?
 - ABLE TO HIKE APPROPRIATE DISTANCE AND ELEVATION GAIN FOR HIKE?
- ACCLIMATIZATION
 - HAVE THEY BEEN EXERCISING IN SADDLEBROOKE OR JUST ARRIVED?
- HEALTH ISSUES
 - ANY HISTORY OF SEVERE ALLERGIC REACTIONS, PARTICULARLY TO ANTS AND BEE STINGS? **IF POSITIVE HX SHOULD BRING EPIPEN®.**
 - **BRING ALONG INHALER OR NITROGLYCERIN TABS IF PRESCRIBED**
- GENERAL PREPAREDNESS
 - HAT, SUNGLASSES, SUN BLOCK, SNACKS, HYDRATION, WINDBREAKER OR FLEECE.

LEADERSHIP AND DECISION-MAKING

- PRE HIKE DECISION MAKING
 - WHAT IS THE WEATHER FORECAST? SHOULD I ALTER THE HIKE
 - CANCEL THE HIKE (TEMP FORECAST > 90 DEGREES F)
 - DECREASE DISTANCE
 - CHANGE DEPARTURE TIME
 - DO I HAVE AN UNPREPARED HIKER?
 - DON'T BE AFRAID TO SEND SOMEONE HOME IF THEY DON'T HAVE ESSENTIAL MEDICATIONS OR ARE UNPREPARED FOR THE HIKE.
 - REMEMBER – IF THE HIKE IS SUBSTANTIALLY DELAYED ON A HOT DAY DUE TO AN UNPREPARED HIKER, ALL HIKERS CAN BE PUT IN DANGER!

ACCIDENT LEADERSHIP AND DECISION-MAKING

- IMPORTANT TO VERIFY SCENE SAFETY. PREVENT OTHERS FROM INJURY!
- STOP HEMORRHAGE (PRESSURE DRESSING, HEMOSTATIC GAUZE)
- ASSESS BREATHING AND CIRCULATION. AVOID HYPO OR HYPERTHERMIA.
- ASSESS ILLNESS OR INJURIES AND PROVIDE BASIC TREATMENT.
- SELF-RESCUE OR EVACUATION? CAN PATIENT WALK? (LITTERS OR CARRY NOT RECOMMENDED)
 - DON'T NEED HELP. HIKE OUT AND DRIVE HOME!
 - NEED HELP AT TRAILHEAD? NEED WILDERNESS EVACUATION?
 - CALL 911
 - USING CELL PHONE REQUIRES CELL PHONE COVERAGE
 - PERSONAL LOCATOR BEACON (SPOT, DELORME) – EMERGENCY SATELLITES

COMMUNICATION WITH EMERGENCY DISPATCH

- WHO'S CALLING, WHERE, WHY?
 - PATIENT DEMOGRAPHICS (AGE, SEX)
 - PATIENT SYMPTOMS
 - LEVEL OF RESPONSE (ALERT, SLEEPY, UNCONSCIOUS)
 - PHYSICAL FINDINGS
 - ASSESSMENT (WHAT YOU THINK IS THE PROBLEM)
 - TREATMENT ADMINISTERED
-

MEDICAL KIT

- FIRST AID SUPPLIES
 - MEDICATIONS
 - ACCESSORY ITEMS
-

MEDICAL KIT –FIRST AID SUPPLIES

- GLOVES
- ALCOHOL WIPES
- ACE BANDAGE
- SMALL ROLL OF DUCT TAPE
- TRIANGULAR SLING
- 2 LARGE SAFETY PINS
- SAM SPLINT
- SMALL KNIFE OR SISSORS
- MOLE SKIN
- ROLL OF SELF ADHERENT TAPE
- LARGE BANDAIDS
- SMALL BUTTERFLY BANDAIDS
- 4" X 4" STERILE GUAZE PAD
- 4" X 4" HEMOSTATIC GAUZE PAD
- TWEEZERS
- COMB WITH HANDLE

MEDICAL KIT - MEDICATIONS

- 0.5 OZ TUBE OF TRIPLE ANTIBIOTIC OINTMENT (WOUNDS)
- 1 PK ELECTROLYTE REPLACEMENT (CLIF BLOCS) (DEHYDRATION / FATIGUE)
- GU OR ENERGY GEL (LOW BLOOD SUGAR (DIABETIC) / FATIGUE)
- TYLENOL (PAIN)
- (4) 81 MG CHEWABLE ASPIRIN OR ONE ADULT ASPIRIN (HEART ATTACK)
- (2) 25 MG BENADRYL TABLETS (ALLERGIC REACTION)
- SMALL WATER BOTTLE
- QUIKCLOT ADVANCED CLOTTING SPONGE 25G (adventuremedicalkits.com)

ACCESSORIES TO MEDICAL KIT

- WHISTLE
- HEAD LAMP
- CELL PHONE
- SMALL NOTEBOOK AND PEN
- READING GLASSES?
- BUTANE LIGHTER
- REFLECTIVE SIGNAL MIRROR
- TOILET PAPER
- MISSION ENDURACOOOL COOLING BANDANNA ([amazon.com](https://www.amazon.com))

KEY POINTS TO REMEMBER

- RECOMMENDATIONS ARE FOR DAY HIKES. DECISION MAKING AND TREATMENT IS MORE COMPLEX IF ON A MULTI-DAY TRIP.
- REMEMBER - EVERY INJURY HAS A PHYSICAL AND EMOTIONAL COMPONENT. TREAT BOTH!
 - SIT VICTIM DOWN IF POSSIBLE, REGULATE TEMPERATURE, HYDRATE, NOURISH, COMMUNICATE
 - CONSTANTLY REASSURE.
 - MONITOR BEFORE RESUMING HIKING.
 - NEVER, EVER LEAVE ANYONE ALONE