SOUTH AFRICAN
WRESTLING FEDERATION

HEALTH, SAFETY & SECURITY COUNCIL

Section 6
Sport Injuries

1 INTRODUCTION

There are very few true sports injuries, as most injuries occurring in sports commonly occur in everyday activities. There are, however, some injuries occurring exclusively in sports, which rarely occur in other aspects of life, and it is primarily these injuries that will be discussed.

In studying sports injuries, it has been found that different sports have different types of injuries.

An easy classification to grasp and also utilise in the understanding of the mechanisms and treatment of sports injuries is that there are two types of injury:

- **overuse**
- **overload**

Overuse

As the name implies, comes from repetitive activity which eventually creates excessive friction and therefore injury.

Overuse injuries are more common in sports where endurance activity is a factor, eg. Long-distance running and competitive swimming. Not uncommonly, the overuse and overload injuries occur together often together and often aggravate one another, eg. Shoulder pain in long distance swimming may be aggravated by the use of hand paddles which increase the load on the shoulder joint.

Most of the time, if the sportsman progresses carefully, his tissues will gradually adapt to the friction caused by the activity. Usually, if he attempts too much too soon, his body will fail to adapt, and that will lead to injuries.

Incorrect training is a very common cause of overuse injuries.

Overload

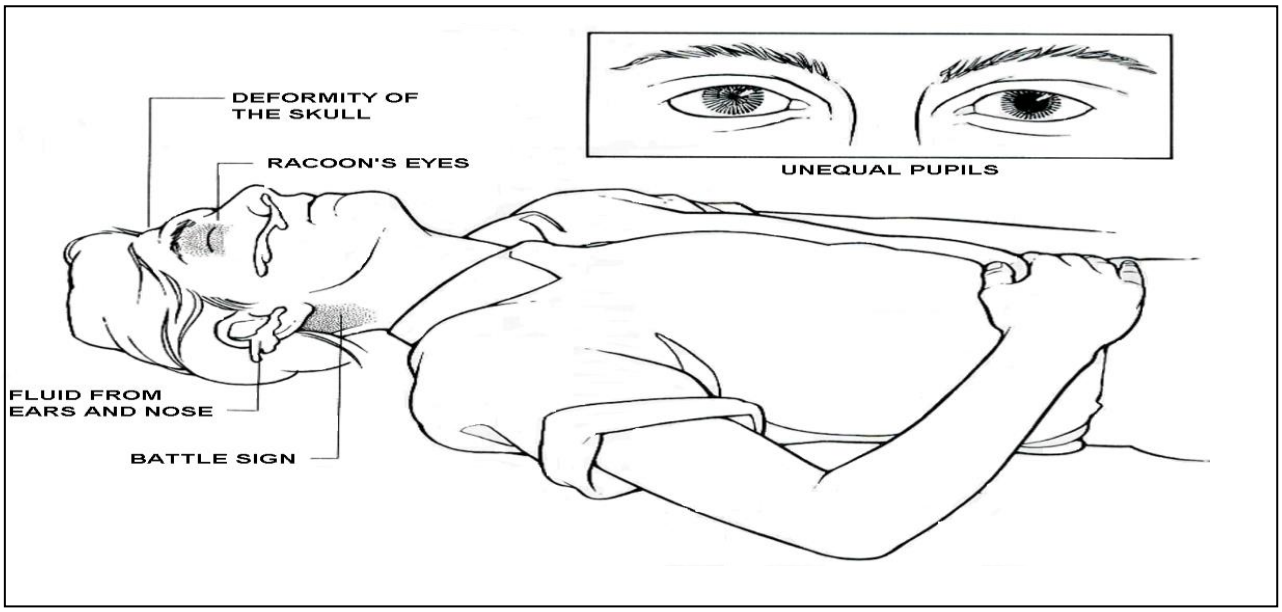
May be either ***intrinsic*** or ***extrinsic***.

Intrinsic implies overloading of one's own tissues without any external forces being applied, eg. the sprinter who tears his hamstring muscles.

Extrinsic indicates forces from the outside, which will cause overloading of a part of the body and thus lead to injury, eg. a tackle in rugby.

This course hopes to help you avoid injury in the first place, explain an injury should it occur and give you advice on the best approach to treatment.

2 HEAD INJURIES



HEAD INJURY WITH LOSS OF CONSCIOUSNESS (CONCUSSION)

Cause - Hard knock against head, e.g. dive head first against other player, hit with a cricket or hockey ball against head.

Intervention - (General)

- Primary survey - Check level of consciousness and history of loss of consciousness.
- Stop any surface bleeding and cover wounds with suitable bandages.
- Do not stop cerebrospinal fluid leaking from the nose or ears. It can lead to increased pressure on the brain.
- Prevent any movement of the head. Remember the possibility of a neck injury.
- Apply a cervical collar and transport on a spine board.
- Manage shock - check every 5 - 10 minutes for signs of life.
- Alert the emergency services if necessary.

UNCONSCIOUS FOR LESS THAN 10 SECONDS

- Remove player from bystanders (especially the coach).
- Assess level of consciousness:

  Ask for specific facts.

  Listen to his account of e.g. what position he played, in which direction he played, where he is, who the opposing team is, the score.

  Test hand/eye co-ordination - put your finger on your own nose - player must take your finger and place it on his nose.

  Must be able to walk on a straight line with both feet.

Player must stand up straight and put his left heel on his right knee, without falling over.

- Make a decision based on the facts and the safety of the athlete

  Oriented Athlete - Aware of the facts and firm on his feet - he can continue playing.

  Athlete unsure & unstable - Rather leave the field.

UNCONSCIOUS FOR MORE THAN 10 SECONDS

- Apply a cervical collar to stabilise the head and remove player from field on a spine board.
- Player must suspend sporting activities for 3 weeks and visit a medical professional to asses the extent of the injury.

Note: Swelling in the brain can lead increased risk of bleeding - if a player has a second head injury within 3-6 weeks - second head injury could cause death

DEEPLY UNCONSCIOUS

- Maintain an open airway - be prepared for neck injury (jaw thrust),
- Place in recovery position
- Examine pupils
- Test for pain reflex
- Look for convulsions
- Ask if doctor is present - urgent hospitalisation,
- Transport with cervical collar on spine board under supervision (ambulance)

IMPORTANT

Take note of the following and always seek medical advice from a professional:

Headaches and/or double vision/vomiting

No sport contact for a period of at least 6 weeks and recommend neurological examination

Further prolonged unconsciousness

Recommend Hospitalise for observation.

Note: that all persons with concussion must be observed for 24 hours to detect bleeding inside the brain.

Repeated concussion:

Player should avoid contact sport permanently, insist on neurological examination.

CONCUSSION CAUSES PERMANENT DAMAGE TO THE BRAIN CELLS

3 FACIAL INJURIES

EYES

- Lime in eyes: rinse with clean water.
- Blue eye because of hard knock: check for fracture, swelling -
- No abnormal swelling - apply ice.
- Finger in eye - rinse with sterile water, cover with gauze and micropore.

NOSE

- Normal bleeding or because of hard knock - direct pressure, apply ice (wrapped in gauze)
- If disfigured, heavily swollen, bleeding profusely (suspected fracture) no pressure - refer to doctor immediately - preferably within 30 min.

EAR

- Cartilage torn - leave field - thick layer of gauze - dress wound -resume game.
- Hard knock on ear - burst ear-drum? - Refer to the doctor.
- Cauliflower ear - doctor must drain

JAW

- Dislocated or broken because of hard knock - support and refer to doctor.

MOUTH

- Tooth out - If clean, push back. If dirty - transport in wet gauze or milk and let player bite on moist gauze - refer to dentist immediately.
- Braces on teeth - Remove player from field - except if he is wearing a mouth guard that has been prescribed by a dentist.
- Tongue cut - Blot inside mouth with gauze - don't rinse too much as it encourages bleeding. Player must bite on wet gauze.

THROAT(Trachea)

- Indented windpipe because of hard knock: - head back - lift jaw
- If possible - pull out windpipe with fingers - let patient cough
- Transport in semi-seated position and maintain open airway

4 SPINAL INJURIES

Spinal cord injuries are some of the most traumatic injuries to care for as they affect most other organ systems and improper handling of the patient can result in death.

The neck is probably the most vital and vulnerable part of the anatomy in the body. It contains the airway, the entire blood supply to the brain and the nerve supply to the whole body below the head. For this very reason, injuries to the neck are extremely serious.

The spine extends from the base of the skull right down to the coccyx and contains the spinal cord and nerves.

Motor vehicle / cycle accidents, diving into shallow water, falls from heights etc., are the main causes of neck / spinal injuries.

Any suspected neck / spinal injury must be considered to be serious and the patient must be treated with caution. This patient may only be moved if his life is in danger. It has been shown through research that many spinal injured patients have been paralysed due to incorrect management and transportation.

Symptoms

- **Pain that accompanies movement**

  Suspect spinal injury if the patient complains of pain when moving an apparently uninjured neck, shoulder or leg. Pain from a spinal injury may be localised and the patient should be able to indicate exactly where it hurts.
- **Pain independent of any movement**
- This is generally intermittent instead of constant and may occur anywhere along the spine between the top of the head and the tops of the legs. If the lower spinal cord or column is injured, the patient may feel pain in his / her legs.
- **Lack of response to pain or other stimuli**
- **Numbness, tingling or weakness in the arms and / or legs.**
- **Weakness, loss of sensation or paralysis below the level of injury.**

  In a conscious patient, paralysis of the extremities is considered the most reliable sign of spinal injury. Loss of function in either the upper or lower extremities.

Signs

- ***Lacerations, cuts, punctures or bruises*** over or around the spine (these indicate forceful injury). Injuries of the neck may be accompanied by bruises or cuts on the head and / or face.
- Visible ***deformation of spine*** (not a common sign). never ask the patient to move his neck or back to test for pain. In can aggravate an existing injury.

- ***Impaired breathing*** or breathing that involves little or no chest movement. The diaphragm may continue to function even though the chest wall muscles are paralysed. (Frog breathing)
- **Loss of bowel and / or bladder control.**
- Skin may be **warm and dry**.

Assessment

History of the incident? If the patient is unconscious assume that he / she has a spinal injury and manage accordingly.

If the patient is conscious, the following assessment can be made:

- Touch the patient's foot and leg and ask him if he feels your touch. Do this on both sides.
- Ask the patient to move his toes.
- Touch the patient's hand and arm and ask him if he feels your touch. Do this on both sides.
- Ask the patient to move his fingers.
- Ask the patient to grasp your hand as though he is going to shake your hand, then ask him to squeeze your hand. The grip should be strong and firm and should not cause any pain. Do this procedure with both hands.

Intervention

- Ensure an adequate airway, breathing and pulse. Recovery position for unconscious patient.
- Use the jaw thrust manoeuvre to open the airway, should the tongue be blocking the airway.
- The head and neck must be immobilised with a cervical collar.
- The patient should then be immobilised and placed on a full spine board.
- Control any bleeding, but do not put any pressure on a suspected skull fracture to control bleeding as you could push fragments of the bone into the brain.
- Manage shock

IMMOBILISATION WITH A CERVICAL COLLAR

- The size of the collar should fit the patient. If the collar is too large, it can cause extension to the neck. press against the jaw and compromise the airway. If the collar is too small it will not give sufficient support. If the collar is too tight, it can impair circulation.
- It is recommended that 2 rescuers perform this procedure. This will ensure that the neck has sufficient support and further injuries are prevented. If patient is lying on his back:

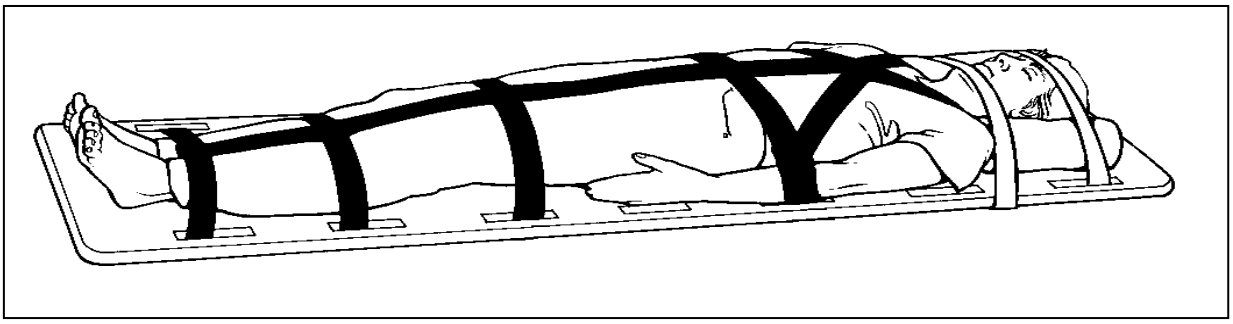
- While one rescuer is supporting the neck and head, the second rescuer must slide the collar into position under the chin and fasten it. Ask the patient if it is comfortable.
- Do not attempt to apply this procedure if you do not have the necessary skill.
- Warning: Do not use improvised collars e.g. of newspapers if you suspect a back or neck injury. It can cause permanent damage to the patient.

A CERVICAL COLLAR DOES NOT GIVE ENOUGH SUPPORT TO THE NECK. STABILISATION BY HAND CAN ONLY BE RELEASED WHEN THE PATIENT IS IMMOBILISED ON THE TRAUMA BOARD.

IMMOBILISATION OF THE SPINE

WARNING!!! Do not attempt this on your own or without trained assistance!

- Once the neck has been immobilised with a cervical collar, the patient should be secured to a full spine board. This will require a team of people (at least 4 - 5)
- The patient must be log rolled as a unit, without any movement on the neck and his/her body kept in alignment. Here one person should support the head and neck, while another person supports the feet. The third and fourth persons sit on one side of the patient to turn the patient. The person at the head gives the command to roll and the patient is turned as a unit. While the patient is turned onto his/her side, slide the board in under the patient. The patient is then gently lowered onto the board.
- The patient should then be immobilised onto the board with either a spider harness (if available), straps or bandages over the shoulders, chest, hips, knees and ankles. Lastly the head should be secured to the board. The strap across the chest should not be too tight or it may inhibit breathing.



TRANSPORTATION

Once the patient has been secured on a full spine board, he/she should be transported in the lateral side position to protect his/her airway.

5 INJURIES TO MUSCLES, TENDONS AND LIGAMENTS

THE MECHANISM OF A MUSCLE INJURY

The small capillary veins in the muscle are torn and blood is released into the tissue of the muscle. This causes pain because it is a foreign substance in the muscle. It also causes swelling and later possibly infection. If untreated, the blood that is between the tissues causes scar tissue which weakens the muscle. The object of treating an injured muscle is to keep the blood that leaks from the veins into the muscle tissues to a minimum.

Use R - I - C - E.

Let the patient ***REST*** to prevent more bleeding.

Apply ***ICE*** to make the veins contract

Compression (bandaging) also stops blood flow and

Elevation prevents the limb from swelling too much.

TYPES OF INJURY

TORN MUSCLE

As result of too much stress on muscle. Sudden pain and feeling of lameness in limb, swelling, discolouring, cannot go on with activity. (Rest for 6 weeks).

PULLED MUSCLE

As the result of too much stress on muscle - muscle still intact. Pain when muscle is used, sometimes swelling.

BRUISES

As the result of hard knock on soft tissue. Sometimes severe swelling e.g. on parts with thin layer of tissue on bone.

Intervention

REST

ICE

COMPRESSION

ELEVATION

MUSCLE CRAMPS

Caused by unfitness, high temperature, too much exercise, weak blood circulation in thigh, calves and foot.

Intervention

Let patient relax.

Thigh

Push thigh against stomach and lower leg against thigh - patient must not "help" Repeat.

Calves

Support the lower leg and move ankle up and down.

After the cramp has gone - massage leg in direction of body.

6 SPECIFIC FRACTURES RESULTING FROM SPORTS ACTIVITIES

All fractures must be handled according to the principles as laid down in Level 1 syllabus.

COLLAR BONE

Test	Can't lift elbow
Intervention	Take jersey off - healthy side first, then injured side. Put injured arm in big sling.
Caution	Sterno-clavicula dislocation can be serious. Collarbone can also be dislocated at shoulder -treat as for fracture of collarbone.

FEMUR

Intervention	As for other fractures
Caution	Heavy blood loss - to hospital as soon as possible. Do not move without immobilisation.

WRIST

Intervention	Remember filling
Caution	Especially careful with young children, growth plates can be damaged.

FINGERS

Intervention	Gauze between fingers and tie to healthy finger and send to doctor.
Caution	Untreated fractures of fingers can cause permanent damage.

ANKLES

Intervention	As for other fractures. Be careful when aligning it. Immobilise in the most comfortable position.
Caution	Check blood and nerve supply.

KNEES **See separate notes**

7 INJURIES TO JOINTS

SPRAINS

Joint abnormally forced - bleeding - ligaments torn. Bones still in normal relationship. Common sprains on sports field: wrist, ankle, fingers, knee.

Signs and symptoms

- Pain in and around joint.
- Pain with movement of joint.
- Swelling at site of injury.
- Subcutaneous bleeding causes blue colour under skin.

Intervention

REST – **I**CE – **C**OMPRESSION – **E**LEVATION

DISLOCATIONS

Bones are not in the normal relationship as result of strong force exerted on joint. Fractures are common with dislocations.

Signs and symptoms

- Deformity, swelling and discolouring,
- Pain, cannot move joint, limb lame and useless,
- Shock can develop because there can be severe bleeding in the larger joints.

Intervention:

- Do not try to reduce as this can cause further damage, even a fracture.
- Check pulse and nerve supply below dislocation.
- Place in comfortable position.
- Immobilise with splints, bandages and filling.
- Manage shock and hospitalise immediately.

SPECIFIC DISLOCATIONS ON THE SPORTSFIELD

Shoulder	Filling under arm - send to doctor immediately.
Elbow	VERY SERIOUS if nerves and arteries are pinched or cut off.
	Try to keep straight to encourage blood flow. - To hospital immediately.
Wrist	Can lead to permanent stiff wrist - Immobilise.
Fingers	Don't reduce - can cause fracture - Send to doctor.

All injuries to fingers must be treated with care to avoid permanent damage.

NO FIRST AIDER, UNDER ANY CIRCUNSTANCES, REDUCE A DISLOCATION

8 INJURIES TO THE KNEE

The knee joint is the largest joint in the body. The femur and tibia are the longest bones in the body and place a lot of pressure on the knee joint.

Muscles, tendons ligaments give stability to the knee.

CLASSIFICATION OF KNEE INJURIES

Soft tissue injuries

- Bruising resulting from hard knocks.
- Injuries to ligaments:
- Partial tear of ligaments
- Complete tear of ligaments
- Muscle injuries

Injuries to cartilage

Caused by too much rotation of the knee joint

Fractures

Fractures of the patella

Dislocations

- Partial — Partial dislocation of the patella is fairly common.
- Complete dislocation — This is a very serious injury that seldom happens.
- Complicated — Damage to the nerves and blood vessels can result from a dislocation. Fractures of joint bones can also cause complications

Mixed injuries

Any combination of above injuries. It is often found in soccer and rugby where the ligaments are injured as result of rotation of the knee joint when the foot is still anchored on the ground or when a player gets tackled and there is impact to his knee while its still in extension.

EXAMINING A PATIENT WITH A KNEE INJURY

History Listen to the patient's explanation the how the injury occurred. Visual observation of the incident will also help the first aider.

Watch the game!

Evaluation Observe for swelling and discolouring. Compare the injured limb to the uninjured limb for irregularities and deformities. Observe the position in which the limb is held by the patient.

Palpation Check the distal pulse and sensation. Check if the tenderness is local or diffuse. Feel for deformity and check for visible abnormal knee alignment.

Movement Ask the patient to bend his knee if possible - do not use force.

Normal use Ask the patient to stand and walk, if possible.

EMERGENCY TREATMENT OF THE KNEE

The first decision that the first responder/doctor has to make is if the patient may resume playing. In the event of an severe injury to the ligaments, dislocation or a fracture, it is obvious that the patient cannot play on. Severe pain, swelling or bleeding in the injured knee will prevent the player to perform and force him to leave the field.

If in doubt, rather let the patient leave the field. After evaluation by a doctor, the patient could return, if possible.

Emergency treatment of the knee is based on 5 actions

Rest – **I**ce – **C**ompression – **I**mmobilisation – **E**levation

Rest The patient must be carried off the field on a stretcher with support under the knee. He must not put weight on the knee by walking. No "hanging" between supporters with the knee dangling.

Ice packs Ice wrapped in thin material must be placed on the knee. It will prevent further bleeding and swelling and reduce pain.

Compression This reduces bleeding and swelling and will support the knee. Be careful not to put the roller bandage on too tightly as could impair circulation.

Immobilisation Prevents pain and further injury. A variety of splints are available. Be careful that you do not cause further injury by immobilisation. If the knee cannot be straightened, immobilise in a comfortable position e.g. with a roll of blanket under the knee while it is bent.

Elevation Reduces swelling and eases the flow of blood. It forces the patient to rest his leg.

9 DIVERSE INJURIES

HYPERVENTILATION

Player tense, also learner in examination. Fast and deep breathing results in too much carbon dioxide in blood.

Symptoms

- Nervousness, headaches, convulsions.
- Fast breathing, muscle contractions.

Intervention:

- Calm down, let him breathe in paper bag or cupped hands.
- **Do not give oxygen**

STITCH IN THE SIDE

Diaphragm constricted, obstructing flow of blood.

Intervention:

- Press with hand on the spot, bend over and expel air.

WINDED

Temporary paralysis of respiratory muscles resulting from of hard knock to the stomach.

Intervention:

- DON'T pump legs, can aggravate a possible fracture/ internal bleeding
- Let patient lie on his side with legs pulled up.
- Put ice on the back of his neck.

KICK BETWEEN THE LEGS

Can cause muscle-spasm, if pain becomes worse, see doctor.

Intervention:

- Player puts ice on himself.
- Take him under the arms and stamp on heels.
- Lie patient down with outstretched legs and kick under heels.

HEAT SYNCOPE

Low blood pressure due to blood filling the veins of arms and legs if after exercising for prolonged periods in the heat. (e.g. marathons)

PREVENTION IS BETTER THAN CURE

Signs and symptoms

- Nausea, weakness.
- Dizziness, headache.
- Pulse fast and faint.
- Breathing fast because of shock.
- Thirsty.
- Skin could turn from warm and wet to cold and clammy due to shock.

Intervention:

- Conscious patient: lie him down with legs and pelvis above head.
- Give fluid to drink if any reason to believe he is dehydrated.

HEAT-STROKE - VERY SERIOUS

The body unable to regulate temperature and cool down. Could lead to dehydration. Temperature rises to more than 42 °C, can lead to brain damage, kidney failure, coma.

Signs and symptoms:

- Confused, irritable, aggressive, irrational, dizzy, (LOC deteriorates)
- Skin - dry and hot.

Intervention:

- Cool down by placing ice cold water for 5-10 minutes or placing ice on body especially large blood vessels in groin, neck and armpits.
- Cool down with fan; fan with cardboard or towel.
- DO NOT cover with blanket.
- Hospitalise immediately if unable to lower body temperature within 30 to 40 minutes.

WOUNDS IN SPORT

Abrasions occur frequently and must be properly disinfected.

Neglected wounds can lead to infections and blood poisoning.

Cuts occur frequently in rugby. Cuts in the face heal quicker after stitching.

Blisters - Keep skin unbroken, cover with plaster to protect skin. If skin is broken, clean with soapy water or disinfectant and cover.

BLEEDING IN SPORT

External bleeding as a result of contact games - usually not serious.

Subcutaneous bleeding is slight swelling, skin becomes blue - not serious

Internal bleeding eg. fractured rib through lung - SERIOUS - Get help.

Invisible internal bleeding: always be suspicious if a player has signs and symptoms of shock but no visible bleeding after a severe knock to the soft part of the chest and abdomen

10 EQUIPMENT FOR SPORT INJURIES

CLEANING OF WOUNDS

GLOVES
Disinfectant e.g. Kleenwound or Savlon
Gauze swabs 50mm x 50 mm or nappy liners cut smaller
Gauze swabs 75mm x75 mm or nappy liners cut smaller (Pack swabs in new bank bags)
Ointment:eg.Betadine or Savlon
Plaster 25mm x 3m
Micropore and Steristrips for wounds in the face.
Small plasters e.g. Bandaid or Anchor
Scissors and tweezer

MUSCLE INJURIES

Adhesive bandages: 50mm and 75mm
Roller bandages: 50 mm and 75 mm
Reparil gel (optional)
Deepheat or rub (*Just for warming up* - **NOT** *treatment of injuries)*
Instant Ice Pack (optional)

BACK AND NECK INJURIES

Full spine board with straps
Cervical collars (different sizes)
Sand bags

MEDICINE

Anti-Doping Rules prevents first aiders from supplying medication to athletes.

OTHER

Set Medisplints, water bottles, ice containers, blankets