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## Wound Care

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Wounds are extremely prevalent in sports today and must be cared for immediately in order to avoid the transmission of infection and disease. Wounds can be classified as either open wounds or closed wounds (contusions, strains, sprains, bursitis)<sup>1</sup>. Open wounds can be defined as traumatic skin lesions and are further classified as abrasions (scrapes, burns, and strawberry), lacerations (cuts and gashes), incisions, punctures, blisters, and avulsions<sup>2,3</sup>.

### Care For Closed Wounds

In the event that an athlete suffers a closed wound, rest, ice, compression, and elevation (**RICE**) should generally be followed. Always apply the compression wrap from bottom to top. For example, if there is swelling in the knee, start wrapping below the knee and gradually work your way up. This promotes removal of swelling.

Contusions should be padded properly when returning an athlete to play. Pad with a soft material directly to the skin. The soft material should be cut with a hole in the middle that is the size of the contusion making a donut pad. A more dense material should next be placed over the donut padding to prevent external forces from hitting the contusion directly. Secure the padding with an elastic wrap and/or tape. **RICE** should be continued for a few days following athletic events. In the event that the contusion is so severe that the athlete does not have full range of motion, he/she should not be participating in an activity. If a limp is present, the athlete should be fit for crutches.

For mild strains and sprains, utilize **RICE**. For mild muscle strains, heat can usually be applied after 72 hours. For mild sprains, heat may be applied once swelling is no longer present. Braces, taping, and/or wraps may be utilized for further support and protection.

If an athlete suffers from bursitis, also utilize **RICE**, as well as pad the area before athletic activity.

### General Care For Open Wounds

When providing care for open wounds, it is critical that universal precautions are taken. This can be done by avoiding direct contact with blood or other bodily

fluids at the injury site that may transmit infectious organisms such as human immunodeficiency virus (HIV) and hepatitis B virus (HBV), as well as avoid contaminating surrounding surfaces while evaluating and treating the wound<sup>3</sup>. Always assume that all wounds are contaminated regardless of the type of injury and the person being treated.

Generally, most wounds may be cleansed with soap and water then a dressing containing an antiseptic should be applied. Do not apply antiseptic if the wound is going to be examined by a physician<sup>2</sup>. Always follow universal precautions, such as wearing latex gloves, not touching surfaces after touching the wound, and washing hands after wound care in order to prevent the spreading of infection or disease.

The following are suggested procedures to use in the sporting environment to minimize wound infection<sup>2</sup>.

1. Use sterilized instruments (scissors, tweezers, clippers, etc.).
2. Clean hands thoroughly and put on latex gloves.
3. Clean in and around the wound thoroughly. All debris such as dirt and gravel should be removed from the wound.
4. Apply a sterile dressing (such as non-stick sterile gauze) with antiseptic on it over the wound, unless the athlete is to be seen by a physician. Otherwise, place only the sterile dressing over the wound. **When using antiseptic apply it to the dressing instead of directly to the wound.**
5. Secure the dressing with tape or wrapping.
6. Always wash your hands and clean all surfaces after treating the wound.
7. Dispose of soiled products in a biohazard container.

In the event that a wound is bleeding profusely certain steps should be followed. As with any wound, always follow universal precautions. Remove any clothing or debris that may be covering the wound and apply direct pressure over the wound site by using some type of sterile dressing. Never remove the blood soaked dressing, simply add more layers if the dressing becomes soaked with blood. In the event that the direct pressure and layers of dressing do not help, elevate the appendage while keeping pressure over the wound. Depending on the location of the wound, direct pressure may also be put on the brachial artery (inside of the upper arm) or the femoral artery (inside of the upper thigh) to decrease blood flow. Pressure should be maintained on the pressure points until the wound is cared for by a physician. It is very rare that a tourniquet is needed in the sporting setting and should only be used as a last resort. All materials used to treat the wound should be disposed of in a biohazard container<sup>3</sup>.

### **Care for Specific Open Wounds**

After cleaning an abrasion with soap and water, take care to remove any visible contaminants such as dirt or gravel. Apply a solution of hydrogen peroxide over the abraded area. Continue this until foaming has ceased then follow with an iodine solution. Apply an antibiotic ointment in order to keep the abrasion moist to prevent scabbing. During sports, scabs will easily be ripped off; therefore, by

keeping it moist, the abrasion can heal from the inside out. Finally, an occlusive dressing with the antibiotic ointment is advised<sup>2</sup>.

For blisters, clean both the wound and the area around the wound with an antiseptic solution. Keep the blister intact for at least 24 hours and cover the area with an antibiotic ointment and sterile dressing. If there is a blister that is large and prone to constant friction, have the fluid drained by a medical professional; however, do not aspirate a blood-filled blister. Once the fluid is removed, clean the area again and cover with a dressing. For sporting events, apply a donut pad around the blister in order to prevent further friction and cover with a dressing<sup>1</sup>.

With lacerations, punctures, and incisions, it is advised to refer athletes to a doctor for a tetanus booster if they have not had one in five years<sup>1</sup>. Clean around the wound, control bleeding, and apply sterile dressing. Do not remove the object with a puncture wound. Rather, clean the area around it, control bleeding, stabilize the object, and refer to the physician.

In some instances it may be difficult to decide whether or not a wound would need stitches. **Wounds more than ½ inch in length and 1/8 inch in depth should be referred to the physician.**

In the event that an athlete suffers an avulsion soft tissue injury, save the avulsed tissue, clean around the wound, apply a dry, sterile compressive pad to control bleeding, and refer to a physician<sup>2</sup>. If the avulsion is a more serious injury such as that of a finger, find the tissue and place it in moist gauze saturated preferably with saline solution. Next place it into a plastic bag that is immersed in cold water or ice. Do not put the tissue directly on ice.

In conclusion, always keep a safe, clean environment by utilizing proper universal precautions, in order to prevent the spread of infection and diseases. When dealing with athletic injuries, remember that we must think in terms of the best interest of the athlete. When in doubt of a situation, refer to proper medical personnel.

### Wound Definitions<sup>1,2,3</sup>

#### **WOUND**

Contusion

#### **DEFINITION**

Compression (bruise) injury involving accumulation of blood and lymph within a muscle.

Strain

Injury involving muscles and tendons or the junction or between the two

Sprain

Injury to ligamentous tissue

Bursitis

Inflammation of a bursa. Bursae are located between bony prominences and a muscle or tendon.

Abrasion

Rubbing or scraping off of skin.

Puncture

Direct penetration of tissue by a pointed object

Laceration	Tearing of tissue by a sharp or point object
Incision	Similar to lacerations, but the cut is smooth
Skin avulsion	Skin is torn from the body; associated with major bleeding

### **General Guidelines for Preventing Spread for Blood-Borne Pathogens<sup>1</sup>**

- Medical gloves should always be worn. In case of splashing of blood, eye wear/face guards, masks and/or protective guards, and gowns or aprons should also be worn.
- Following exposure to injured area, immediately wash and disinfect hands and other skin surfaces.
- Clean large spills of bodily fluids and blood borne pathogens by flooding the contaminated area with disinfectant prior to removing the spill. After the removal, the area should again be disinfected.
- Disinfect with a disinfectant cleaner or a cleaning solution of 1:10 to 1:100 solution of bleach to water. Soiled linens and towels should be separated from regular laundry and handled with gloves.
- All disposable items that have been contaminated should be placed in a biohazard container. All sharp objects should be placed in a separate biohazard container that is made of a hard material and labeled Sharps Container.
- Always wash hands after treating possible contaminated surfaces.

### **References**

1. Anderson K, Hall J, & Martin M. Foundations of Athletic Training: Prevention, Assessment, and Management. 3<sup>rd</sup> ed. Philadelphia, PA; Lippincott Williams & Wilkins; 2005
2. Prentice W. Arneim's Principles of Athletic Training A Company Based Approach. 11<sup>th</sup> ed. Boston, MA. McGraw Hill; 2003
3. Pfeiffer R & Mangus B. Concepts of Athletic Training. 4<sup>th</sup> ed. Sudbury, MA. Jones and Bartlett Publishers

*Physiotherapy Associates are the sports medicine providers for the Boys' State Basketball, Soccer & Baseball Tournaments.*

1108