Secondary Injury Prevention: Using Braces to Reduce Joint Injuries

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The physical nature of agricultural tasks takes a tremendous amount of wear and tear on the body, and joints take the majority of the punishment. The joints are commonly used when we move about and perform our daily activities. Many of the problems related to stressed joints can be reduced with the use of braces. Braces help support the joint and promote proper function and movement, preventing further damage to the site. Sprains, muscle strain, joint dislocation, tendon tears, or nerve damage can be aided with the help of braces. Locations on the body that are at highest risk of a joint injury include back, elbows, wrists, knees and ankles.

**Sprain vs. Strain**

A sprain is a stretch or tear of a ligament (a band of connective tissues that joins the end of one bone with another). Sprain injuries can be caused by a trauma such as a fall, blow to the body that knocks a joint out of position rupturing the supporting ligaments, or a joint that is forcefully moved out of its typical range of motion. Sprains can range from a minimally stretched ligament to a complete tear. The area of the body most vulnerable to sprains is the ankle.

A strain is a twist, pull or tear of a muscle or tendon (a cord of tissue connecting muscle to bone). It is an acute, noncontact injury that results from overstretching or overcontraction. Symptoms of a strain include muscle pain, muscle spasm and loss of function. Strains can range from mild or moderate to severe, causing permanent damage and loss of function if not treated by a medical professional.

**Braces for Joints at High Risk of Injury**

**Back**—A back brace is designed to protect the lower back and reduce stress on the joints and muscles of the lower back during activity. It achieves this by restricting end-of-range spinal movements and provides stability and support during movement. Back braces are generally beneficial for people who are suffering from lower back pain or injury, particularly those who have chronic back pain or the potential to re-aggravate a prior injury.

**Elbows**—The elbow joint is similar to a door hinge, made to only open and close so far. When pushed beyond the normal limit, injury can occur. Elbow braces can be used to treat common injuries, arthritis joint pain, tennis elbow and epicondylitis. The use of an elbow brace is particularly helpful by supporting the elbow and providing controlled compression throughout the joint.

**Wrists**—A wrist brace may immobilize the joint or simply provide flexible support for those suffering from chronic conditions like arthritis, carpal tunnel syndrome or tendinitis. The level of flexibility of the brace depends on the injury or condition that affects the wrist.

- **Flexible support wrist braces** are made of stretch fabric that wraps around the wrist or covers the wrist and the bottom of the hand. The flexible
support wrist brace will allow some movement for everyday tasks, while limiting the wrist’s range of motion to prevent injury.

- **Immobilizing wrist braces** cover the wrist and the bottom part of the hand with harder material like plastic, a nylon shell or internal aluminum bars. These harder materials prevent the wrist from bending or twisting, but allow finger movement.

**Knees**—The knees endure more strain than many other joints because they support the body’s entire weight. They’re also required to support frequent changes of direction, sudden impacts and many other powerful stresses. Knee braces are supports that are used to reduce pain, provide stability and prevent injuries during activities. Braces are made from combinations of metal, foam, plastic, elastic material and straps. They come in many sizes, colors and designs. There are four main types of knee braces:

1. **Prophylactic braces** are designed to protect knees from injuries during contact sports like football.
2. **Functional braces** give support to knees that have already been injured.
3. **Rehabilitative braces** limit harmful knee movement while a knee is healing after an injury or surgery.
4. **Patellofemoral braces** help the kneecap move smoothly over the knee joint.

**Ankle**—Signs of an ankle sprain include varying degrees of tenderness or pain; bruising; inflammation; swelling; inability to move the ankle, joint looseness, laxity, or instability. Ankle braces stabilize, support and limit range-of-motion of the ankle joint. For people who are prone to ankle injuries, braces are used to immobilize injured ankles or provide joint protection to injuries. There are many different types of ankle braces and supports, many of which can be used to relieve heel pain, and treat Achilles tendon issues, plantar fasciitis, heel spurs, or common strains and sprains. There are also many braces that offer protective support by promoting lateral and medial stability. Almost all are constructed with neoprene and nylon.

**Should a doctor prescribe a brace?**

With any medical treatment, a person should always communicate with a healthcare provider to determine the best course of action to prevent secondary injuries. The healthcare provider may also be able to provide information on the proper brace to use and where it can be purchased.

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**References**

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**About AgrAbility Based Fact Sheets**

These fact sheets were developed to promote success in agriculture for Ohio’s farmers and farm families coping with a disability or long-term health condition. AgrAbility offers information and referral materials such as this fact sheet, along with on-site assessment, technical assistance, and awareness in preventing secondary injuries. Fact sheets were developed with funding from NIFA, project number OHON0006.