

First Aid for Dancers

by the International Association for Dance Medicine and Science

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Introduction

Over the past few decades, dance science has produced a vast range of conditioning and injury prevention techniques, enabling dancers' bodies to be stronger and more capable than ever before. However, the expectations of choreographers and audiences have increased at the same rate, so dancers still face the possibility of injury at some time during their careers. How well they are informed about injury care can play a large part in their successful rehabilitation and return to dancing. This resource paper suggests short and long term strategies for dealing with dance injuries when they occur.

First Aid Immediately After an Acute Injury

All dancers need to remember the acronym **PRICED** – an invaluable first aid guide to the immediate treatment of injuries. Using **PRICED** in the first minutes and hours after an injury occurs can help in controlling the severity of inflammation and/or pain and in assisting a safe return to dancing. **PRICED** describes a simple procedure to follow immediately after injury occurs.

- **PROTECTION:** Remove additional danger or risk from injured area.
- **REST:** Stop dancing and stop moving the injured area.
- **ICE:** Apply ice to the injured area for 20 minutes every two hours.
- **COMPRESSION:** Apply an elastic compression bandage to the injured area.
- **ELEVATION:** Raise the injured area above the heart.
- **DIAGNOSIS:** Acute injuries should be evaluated by a health-care professional.

Avoiding Further HARM

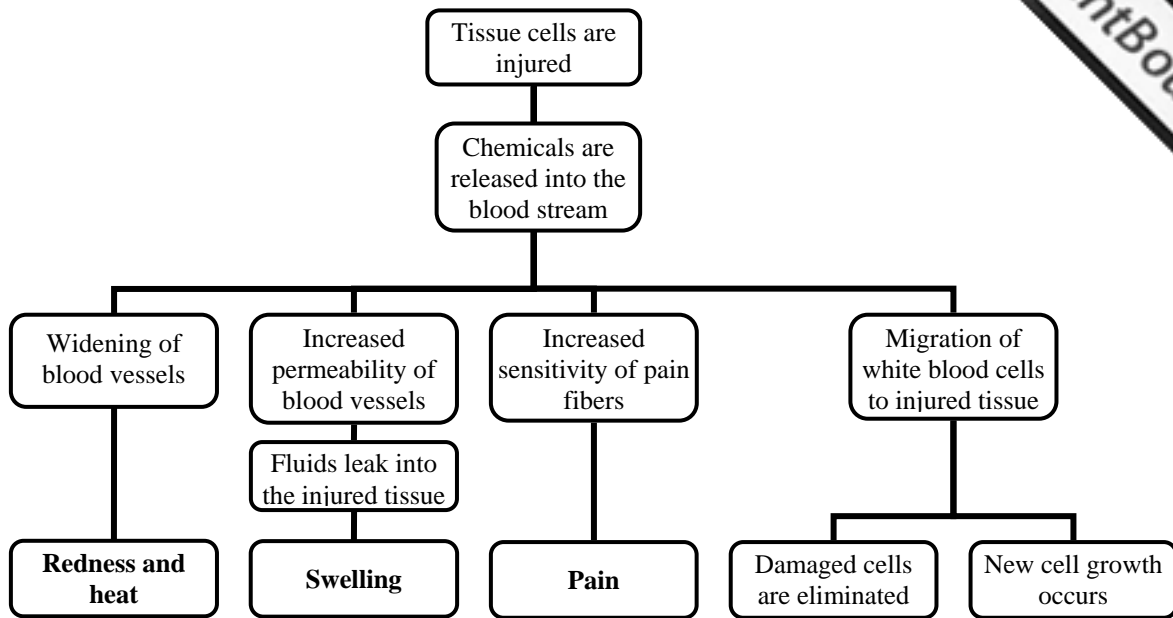
In the first few days after an injury, remember to avoid HARM.

- **HEAT:** Any kind of heat will speed up the circulation, resulting in more swelling and a longer recovery.
- **ALCOHOL:** Alcohol can increase swelling, causing a longer recovery.
- **RUNNING OR OTHER EXCESSIVE EXERCISE:** Exercising too early can cause further damage to the injured part. Exercise also increases the blood-flow, resulting in more swelling.
- **MASSAGE:** Massage increases swelling and bleeding into the tissue, prolonging recovery time.

To understand how **PRICED** and **HARM** work, dancers need to learn more about the way the body reacts to injury.

What Happens When a Dancer is Injured?

When a dancer has an injury such as an ankle sprain or muscle strain, the cells within the injured tissue are damaged. To limit the damage, the body releases a number of chemicals that create an inflammatory response, generating swelling, redness, heat, pain and loss of function. The inflammation brings white blood cells to the injured tissue to defend the body against harmful substances, to dispose of the damaged tissue, and to promote new cell growth. It is important to understand that inflammation is the body's natural response to injury and is a necessary phase of healing. Following an acute injury, the goal should be to control – not eliminate – inflammation to assist with decreasing pain and increasing function of the injured area. The following diagram (page 2) depicts the body's response to injury that leads to these signs and symptoms.



How Does PRICED Help Recovery?

Using PRICED as a first aid method immediately after an injury helps limit the inflammation and the pain and can also guide continuing care and rehabilitation.

Protection

The injured dancer should stop dancing and limit movement of the injured part to avoid any further damage. If necessary, the dancer should be moved to a safe place. Support, such as an elastic compression bandage, air cast, fiberglass cast, tape or a splint can decrease the risk of further injury and stabilize the injured area to allow for optimal healing. If the dancer is unable to bear weight on an injured leg due to pain or loss of function, seek medical attention.

Rest

If the injured area is not rested, continual stress is placed on the injured tissue. Although many dancers tend to push through their pain and continue to dance, this could be detrimental to their healing. Insufficient rest can cause increased inflammation, pain, or further trauma to the injury, which will delay the healing process. Depending on the severity of the injury, resting a dance injury may not mean complete inactivity. In some situations, rest may include moving the joint through pain-free motion or performing other activities where the injured body

part is not involved. The health-care professional will be able to advise how much rest is appropriate and how to modify dance and other activities while maintaining fitness, taking into account the particular injury. It is important to note that the dancer should stop exercising the injured body part and seek immediate care if there is severe or unusual pain, serious traumatic onset, immediate or excessive swelling or discoloration, or if they are unable to bear weight.

Ice

Cryotherapy, or cold therapy, narrows the blood vessels, reducing blood flow to the area^{1,2} and decreasing tissue temperature.³ This helps to prevent swelling and abnormal accumulation of fluid beneath the skin and also helps prevent further tissue damage.^{4,5,6} Cryotherapy also decreases pain by slowing down the speed of nerve signals that tell our brain that we have pain.⁷

Although there is conflicting research regarding how long a dancer should apply ice, a sound guideline is to apply ice for 20 minutes every two hours.^{4,5,6} It is simple to remember to apply ice at, say, 2 pm, 4 pm, 6 pm and 8 pm. For the initial 48 to 72 hours following an acute injury, ice should be used exclusively and heat should be avoided. Ice should be above 0° C (32° F) if it is to be applied to the skin.^{4,5,6} Crushed ice or frozen vegetables are

ideal. Chemical ice bags and anything below 0° C should be wrapped in a cloth to prevent ice burns.^{4,6}

Compression

Wrapping the injured body part in an elastic compression bandage can help to reduce swelling. When wrapping an injury, apply the bandage snugly using a partial stretch of the bandage; you should be able to slide at least two fingers under the secured bandage when done. It is important not to cut off the blood supply. If the elastic bandage is too tight causing decreased circulation, the dancer will notice symptoms such as 'pins and needles,' tingling, numbness, or change of skin color.

The best way to apply the compression bandage is to start away from the heart, wrapping towards the heart and wrapping slightly looser as you pass the injured body part so swelling can move out of the injured site. Wrap an equal distance above and below the injured area, overlapping by ½ the width of the bandage. Do not leave any skin showing (except tips of fingers and toes to check skin color); otherwise swelling will accumulate in the exposed skin area. Using ice and compression together is shown to have a faster rate of decreasing the temperature of the inflamed tissue than using ice alone.⁸

Elevation

Elevating the injured body part above the heart helps to control swelling by increasing the return of blood to the heart and removing waste products from the injured area. A good time to elevate is while the dancer is icing the injured area. To promote circulation, the dancer can continue elevating after the ice is removed. Gentle elevation can be accomplished while the dancer is sleeping by elevating the foot of the bed or mattress 4 to 6 inches.

Diagnosis

Healthcare professionals play an important role in injury evaluation and rehabilitation. All acute injuries should be evaluated professionally, especially those involving significant pain, immediate swelling or bruising, loss of function or the ability to bear weight, neurological symptoms, obvious deformity, uncontrolled bleeding, mental status changes, or failure to progress in the first 48 to 72 hours of PRICED therapy. After determining the diagnosis, the health-care professional will advise on the next steps towards recovery and, if necessary,

may recommend protective measures. Diagnostic imaging such as an x-ray. A health-care professional who is familiar with dance and its particular demands can tailor the advice accordingly.

Long-Term Management Strategies

Injury

Unless the health-care professional advises otherwise, the dancer should continue basic activities to facilitate the rehabilitation process and wellness of the entire body. Keep in mind that white blood cells accelerate healing, so good circulation is essential throughout the dancer's rehabilitation. When the initial inflammation has carried out its purpose and the injured area is no longer red or hot to touch, the swelling should be reduced so it does not become chronic.

Reduce Swelling

Although often used in the clinical setting, alternating ice and heat treatment (known as 'contrast') has not been shown to be effective at removing swelling unless combined with other strategies. It is now recommended that compression, gentle massage and/or moving the joint through pain-free range should be combined with ice. This combined treatment, known as cryokinetics, causes the muscles to contract and relax. The pumping action influences the pressure on the surrounding veins, causing the blood to be pushed up towards the heart. Ice treatment is different during the recovery phase from immediately post-injury. The dancer should apply ice for 10 minutes, take it off and gently flex and extend the joints for 10 minutes, then apply ice for another 10 minutes.⁹ This treatment will increase blood flow to the heart, gradually removing the swelling and restoring range of movement. It is important to remember that ice application can decrease muscle force production for up to 2 hours following application. Therefore, it is recommended to perform cryokinetics after physical activity, not before.

Elevating the legs is a great idea after dancers finish class or rehearsal. While dancing, gravitational forces increase swelling in the feet and legs. This phenomenon happens whether the dancer is injured or not. It is evident when dancers notice that their shoes fit more tightly after class than they did beforehand. Some clinicians recommend

elevating the legs for 10 to 15 minutes after dancing to help increase the return of blood through the circulatory system and decrease swelling.

Restore Proprioception

An acute injury can change joint proprioception, or the awareness of where the body part is in space. Decreased proprioception can lead to difficulty with motor planning, which is figuring out what each body part needs to do in order to move a certain way or complete a task. This can lead to difficulty with motor control or with executing planned movement, and to decreased postural stability and balance. The following simple exercises can help restore proprioception after a lower extremity injury:

1. Stand on one leg, with eyes closed, for as long as possible, aiming for one minute. Repeat this balance exercise on each leg 4 to 5 times a day.
2. Stand on one leg, with eyes open, on an uneven surface (folded yoga mat, couch cushion or rocker board) for one minute on each leg. Once this is accomplished easily, move the gesture leg in different directions (*i.e.*, *développé en croix* or *dégagé en croix*) while balancing for one minute on each leg. Repeat on each leg 4 to 5 times a day.

Regaining equal strength, flexibility, and proprioception in both the injured and non-injured parts of the body is essential to the rehabilitation process. For further information, see the [IADMS resource paper on proprioception](#).¹⁰

Maintain Fitness

Cardiovascular health is also important for the injured dancer. Maintaining strength and cardiovascular fitness can be a challenge when a dancer is immobilized in a boot or a cast. If a lower limb is injured, riding a bike or swimming can be alternative options for higher impact activities like running. If the lower extremities are limited, dancers

can work on their cardiovascular fitness by using an upper extremity bike or a modified swimming technique. For modified swimming, dancers can squeeze a swimming block between their feet while swimming with the arms only.

Nutrition Following an Injury

Finally, an important component of the rehabilitation process after an acute injury is nutrition. The proper nutrition and varied energy sources, including the right balance of carbohydrate, fat, protein, micronutrients, and fluid, are needed to facilitate healing. For more information, see the [IADMS nutrition fact sheet](#).¹¹

Summary

Immediately after an injury occurs, dancers can use the PRICED method to decrease the local inflammatory process and protect the injury prior to seeking medical care. During recovery, it is crucial that the dancer remembers to focus not just on the injured body part, but to care for the entire body. Cardiovascular fitness; restoring equal balance, proprioception, strength, and flexibility in bilateral limbs; and proper nutrition will facilitate the healing process while the dancer is rehabilitating the injury.

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