

# More Precise Classification of Orthopaedic Injury Types and Treatment Will Improve Patient Care

Kenneth L. Knight, PhD, ATC, FACSM

The classification and care of acute orthopaedic injuries is imprecise and somewhat confusing, as evidenced by the variety of treatment approaches. For example, both overuse and recurrent acute injuries are considered chronic,<sup>1</sup> and although treatment goals should be very different, most authors do not discuss recurrent injuries.<sup>2-5</sup> Another example is the use of RICES (rest, ice, compression, elevation, stabilization) for treating acute injuries. Some clinicians advocate using RICES for up to 72 hours,<sup>2,3</sup> others advocate RICES for 12 to 24 hours and then treatment with other cryotherapy and functional activities,<sup>6-7</sup> and still others advocate RICES but without a recommendation for duration of treatment.<sup>4,5</sup>

Because function follows form, meaning application is based on theory, it is important to have the correct theory to ensure correct treatment. Because injury and injury care classifications are part of the theory upon which our clinical techniques are based, we should be precise in how we classify, discuss, and implement care of those athletic injuries to avoid ambiguity and provide patients with the care they expect and deserve.

## Classification of Orthopaedic Injuries

Orthopaedic injuries are usually classified as acute or chronic.<sup>2-5</sup> Acute injuries are of sudden onset, caused by high-intensity forces, and of short duration, such as sprains, strains, and contusions. The term *chronic*, however, is used to describe 2 very different types of injuries: overuse injuries and recurring injuries.<sup>1,7</sup> Chronic overuse injuries are caused by low-intensity forces of long duration, as in tendinitis or bursitis.<sup>2,3,6,7</sup> Chronic recurring conditions are acute injuries that occur multiple times,<sup>1,6,7</sup> such as a chronic sprained ankle. One cause of chronic recurring injuries is aggressive activity before adequate rehabilitation.

To be precise, we should classify injuries as 3 types and refer to them as such:

1. Acute,
2. Chronic recurring, and
3. Chronic overuse<sup>7</sup>

This distinction is more than mere semantics. Chronic recurring injuries are treated more like acute injuries than like chronic overuse injuries. Classifying them separately helps to

emphasize the different treatments that should be administered to patients with these specific types of injuries.

## Care of Acute Athletic Injuries

The care of acute (and recurring acute) injuries is often divided into 3 stages with general time frames: acute (0-4 days), subacute (5-14 days), and postacute (after 14 days). Although this classification is used extensively, 3 problems are associated with it<sup>7</sup>:

1. It does not incorporate the concepts of immediate care and emergency care.
2. Acute care spans too wide a range of treatments. Treatment given 10 minutes after the injury is much different than treatment given 3 days after the injury. The efficacy of treatments depends on when they are used; for example, RICES is by far the best treatment to use 10 minutes after an acute ankle sprain but is not the treatment of choice 2 to 3 days after the injury. So the statement "RICES is the best treatment during the acute phase of athletic injuries" is both true and false, depending on which part of the phase you are concerned with. Subdividing the acute care phase, therefore, leads to more precise recommendations of appropriate care and helps to avoid inappropriate or less-than-optimal care.
3. The time frames associated with acute care phases sometimes become rigid guidelines. Injuries heal at different rates, depending on the type and severity of the injury and on individual patient differences. Care must be dictated by patient progress, not by specific time frames.

## Revised Stages of Acute and Recurring Injury Care

The acute care stage of acute injury care must be subdivided, as outlined below.<sup>7</sup> Time frames associated with these stages should be considered only as points of reference to help in discussing specific techniques. Actual patient care should be based on patient needs and progress, not on these general time frames.

1. Acute care: 0 to 4 days.
  - Emergency care: Immediate action such as cardiopulmonary resuscitation or transportation to a hospital, if needed.

---

Some of these concepts were developed while writing a textbook, so some of the text is taken literally, with permission, from Knight KL, Draper DO. *Therapeutic Modalities: The Art and Science*. Philadelphia, PA: Lippincott Williams & Wilkins; 2008:55-56.

- Immediate care: 0 to 12 hours.
  - Transition care: 12 hours to 4 days.
2. Subacute care: 4 to 14 days. An injury in this stage is beyond acute but still “somewhat” or “bordering on” acute.
  3. Postacute care: after 14 days.

Some may question the time frames associated with the substages of acute care. Common knowledge is that we treat with RICES (or ICE or RICE) for 24 to 72 hours and then turn to heat and/or functional exercise to rehabilitate the injury. Common practice, however, is that if a mild or moderate injury occurs in the afternoon or evening, we apply RICES overnight and then have the patient report to the athletic training clinic the next morning for further evaluation and treatment, which typically incorporates procedures other than RICES. Thus, in practice, immediate care may last as little as 12 hours. For some mild or minor injuries, transition care may begin within an hour after injury.

For the vast majority of acute injuries occurring during a competitive season, much of what happens during acute care is transition care, transitioning from immediate care (RICES) to exercise and functional activities. We should recognize this fact in our classification system, so that it is

clear how we should treat the injury and so there is no ambiguity between form and function. Separating the types of chronic injuries will help to emphasize that chronic overuse and chronic recurring injuries should be treated differently.

## REFERENCES

1. *Merriam-Webster's Collegiate Dictionary*. 11th ed. Springfield, MA: Merriam Webster Inc; 2003.
2. Prentice WE. *Arnheim's Principles of Athletic Training*. 12th ed. New York, NY: McGraw-Hill; 2006.
3. Anderson MK, Hall SJ, Martin M. *The Foundations of Athletic Training: Prevention, Assessment, and Management*. 3rd ed. Baltimore, MD: Lippincott Williams & Wilkins; 2004.
4. Denegar CR, Saliba E, Saliba S. *Therapeutic Modalities for Musculoskeletal Injuries*. 2nd ed. Champaign, IL: Human Kinetics; 2006.
5. Starkey C. *Therapeutic Modalities*. 3rd ed. Philadelphia, PA: FA Davis; 2004.
6. Knight KL. *Cryotherapy in Sport Injury Management*. Champaign, IL: Human Kinetics; 1995.
7. Knight KL, Draper DO. *Therapeutic Modalities: The Art and Science*. Philadelphia, PA: Lippincott Williams & Wilkins, 2008:55–56.

*Editor's note: Kenneth L. Knight, PhD, ATC, FACSM, is a former Editor-in-Chief of the Journal of Athletic Training and the Jesse Knight Professor of Exercise Sciences at Brigham Young University, Provo, UT.*