The field of sports medicine grew out of the desire of both recreational and professional athletes to return to their activities as soon after injury as possible. Traditionally, after an athlete was injured, he or she was treated with the standard therapies of “R.I.C.E.” followed by range-of-motion exercises, strengthening exercises, endurance exercise, and, finally, “return to sports” activities. The ultimate transition from the return to sports to full-speed play remains a gray area. It has been my philosophy that maneuvers on the athletic field should be introduced very soon after injury or, indeed, never stopped. In this way, athletes maintain “muscle memory” by continuing their sport-movement patterns, and when pain, motion, strength, and endurance have returned to normal, agility, coordination, speed, and quickness can be retrained more easily.

An ideal place to begin this sport-specific recovery is in the water. Like many land programs, most water programs introduce activities as a progression of motion, strength, and function. Although athletes must “walk before they run,” we try to introduce safe, pain-free, specific, and intricate maneuvers in our program almost immediately. Water is an isophysiologic environment, because, unlike in a weight room or with resistance cords, the way one moves in the water is by using the same functional physiology one would in sport.

Avoiding Injury

Functional movement patterns and sport-specific exercise are important for decreasing injury risk. We believe that the movement patterns practiced in a controlled environment will translate into the less rigidly controlled environment of competition. For example, by having our skiers do many ski-specific activities such as mountain-bike racing and running through gates in a sand pit, we give their musculoskeletal systems the sense of Alpine skiing.

Sport-specific activities can be simulated early after injury in the water, which provides the ultimate “soft workout.” Thus, although an athlete with a sprained ankle cannot shoot baskets on a court, he or she can do it in the water while wearing a buoyant vest, placing
only minimal stress on that ankle. Combining water exercise with other standard treatments such as R.I.C.E. and massage has allowed us to reduce swelling and pain faster and more easily than by any other combination of modalities.

The buoyancy and resistance of water add a new dimension of difficulty to rehabilitation exercises. This increased work has a positive effect once the motions are translated onto land. Water is also an excellent place for “active rest” days. Teams can get together and work on certain plays and drills, without the pounding or inclement conditions that might otherwise be encountered on land. The pool provides a welcome and fun change from the usual workout.

Getting athletes into the water and practicing their sport as soon as possible after injury can preclude many of their psychological difficulties, as well. There are waterproof bags available for those in casts or with open wounds, and, thus, it is the rare athlete that we cannot get into the water in an expeditious fashion. It should be understood that the water program is not just an adjunct form of therapy but a vital component of returning to the field.

**Functional Water Program**

Although we want to start sport-specific exercises as soon as possible, we know that every athlete and every injury is different. Having a rehabilitation professional with the athlete in the water and helping with the land exercises, as well, helps ensure that the athlete is not doing more (or less!) than he or she should. In the water, there is rarely a question of athletes' injuring themselves further, but there is a concern that they are using poor form and thus wasting time. Poor form in training, as we all know, results in poor form on the athletic field. If someone has sustained a lower extremity or back injury, we do not want that patient running in the water or, indeed, even walking in the water with bad posture. This is when it helps to have the athletic trainer or therapist cue the athlete and ensure that he or she is moving properly.

Although we start our athletes with some simple general exercises such as deep-water walking, kneesto-chest stretches, and hurdler stretches, we try to get them quickly into a sport-specific program. The figures included with this article illustrate examples of dynamic and sport-specific exercises. Most athletes

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**Squats while standing on a barbell**

*Starting position:* Standing on a barbell in deep water. *Action:* Do two-legged squats. *Note:* Stay balanced. Try not to lean forward while bringing your knees to your chest.

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**Crossovers or early cariocas**

*Starting position:* Holding a large barbell in each hand while vertical in deep water. The shoulders are held in horizontal abduction (straight out to the sides). *Action:* Flex at both the knee and the hip. Side-step, alternating crossing the trailing leg in front and behind. *Note:* Move your center of gravity laterally. Do not lean! Lateral movement is important in most sports, so you should start such movements early. Move to shallow water as healing progresses.

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**Skiing**

*Starting position:* Vertical in deep water. *Action:* Bring your knees to your chest, push them down toward the floor at a 45° angle, then back to the chest, and straight down toward the floor. Continue alternating sides. A variation is to go forward and backward, as well. *Note:* Keep the pelvis in line with the shoulders through the entire motion. Keeping the gluteal muscles strong helps keep the pelvis in position.