Consider the scenario that your star high school football quarterback, who is also the school’s starting center fielder, has dislocated his shoulder several times this season. He opts to have surgery after the football season so he can return for baseball as soon as possible. Once home from the hospital, he is referred to you for rehabilitation. As an athletic trainer or therapist at a high school, you do not have the budget to provide the most recent shoulder rehabilitation equipment. What materials can you use to create innovative tools for this athlete’s shoulder rehabilitation?

We all recognize the lack of resources that many of us experience. Yet as athletic trainers or therapists we are expected to provide a thorough accelerated rehabilitation program to return our injured athletes to their pre-injury status. This article discusses innovative and inexpensive rehabilitation tools athletes can use to regain shoulder range of motion, strength, and proprioception following injury or surgery.

**Increasing ROM Through Active-Assistive Measures**

Range of motion (ROM) is usually the first concern in shoulder rehabilitation. The rehab tree is an inexpensive piece of equipment that can be built to accomplish the task of restoring ROM (Photo 1). This device is constructed from a 2 x 8-ft piece of lumber attached to a solid wall. By placing large eyescrews every few inches along the length of the rehab tree, you can move the attachments and allow for a wide variety of exercises and individuals.

One such exercise is a rope-and-pulley attachment that can be placed on the rehab tree...

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**Key Points**

- Rehab trees are easy to construct and can be used to increase ROM, flexibility, strength, and endurance.
- The T-bar is extremely versatile in rehabilitating the shoulder through all its ranges of motion.
- Inexpensive sand bottle weights can be issued to athletes for performing progressive resistance exercises.
so that athletes can perform active-assistive ROM. The technique calls for grasping one end of the rope with the injured extremity and moving that arm into the desired range of motion until pain, muscle spasm, or capsular tightness prevents further movement. With the uninvolved arm, the athlete pulls the rope to move the shoulder into a greater degree of the desired range of motion. Each shoulder motion can be worked by adjusting body position and/or pulley placement.

For example, to provide active-assistive ROM in abduction, the athlete is seated and the pulley is placed directly overhead. The affected shoulder should be actively abducted while the contralateral hand holds the other pulley handle. Once the involved shoulder is abducted to the end of its active range, the contralateral hand can pull down further on the handle to assist the involved shoulder into further abduction. It is important that the athlete maintain a static trunk posture in order to isolate the ROM to the shoulder.

Another rehabilitation tool that is used to increase range of motion and which can be fabricated at a minimal cost is the T-bar. A T-bar can be made from PVC pipe, as shown in the drawing. In using the T-bar, the athlete places the hand of the involved extremity on the crossbar while the hand of the other extremity is placed on the long portion of the T-bar bottom. The athlete moves the shoulder in the plane of motion being restored until he or she feels tightness or resistance. Then the unaffected extremity pushes the injured shoulder into a greater degree of movement.

The T-bar’s versatility in rehabilitating the shoulder through all its ranges makes it a valuable and essential tool in the rehabilitation facility. If budget constraints prevent obtaining PVC materials for a T-bar, a similar stretching stick can be fashioned from broom or mop handles after sawing off the mop or broom. Although not essential, shoulder-pad webbing or other strapping may be attached to one end to provide a loop handle. Additional items that may be used in place of T-bars are golf clubs and baseball bats.

**Increasing Active Range of Motion**

Once the athlete reaches his or her full ROM with active-assistive exercises, it is time to concentrate on maintaining active range of motion. Early active ROM can be enhanced through ball-on-the-wall exercises. The athlete faces the wall while standing approximately 12 to 18 inches away and, with the hand, stabilizes the ball against the wall and moves the involved shoulder into various motions. Internal and external rotation are difficult to recreate, but flexion and extension may be accomplished by rolling the ball up and down the wall, respectively. Similarly, abduction and adduction may be performed at different heights by rolling the ball medially and laterally.

The types of balls may be varied to change size and weight as needed for different levels of progression. If ball-on-the-wall exercises are too demanding in the early stages, the same techniques may be initiated on a treatment table or the floor. A folded towel may be substituted for the ball. In this case the athlete is instructed to slide the towel along the surface under the palm.

**Increasing Strength**

It is important to include strengthening exercises in the rehabilitation program while maintaining range of motion. Strengthening should address the scapu-