Swimmer’s Shoulder: Return to Swimming Protocol

**Basic overview of swimming injury:**
Swimmer’s shoulder is a term commonly used to describe overuse injuries suffered by competitive swimmers. The most prevalent shoulder injuries seen in any age group and college age swimmers is tendonitis secondary to impingement syndrome. Treatment of overuse syndromes focuses on a gradual return to play, in addition to correction of faulty mechanics or identification and elimination of the habit causing the problem. Treatment also consists of cooperation of the sports medicine team. This includes the athlete, coach, parents, therapist and doctor. The purpose of this protocol is to allow the swimmer to slowly increase strength and neuromuscular endurance in order to prevent future injuries and continue swimming.

**Freestyle Biomechanics:**
Proper technique of the freestyle stroke is important to injury prevention. The freestyle arm stroke is generally divided into four phases: catch, early pull-through, late pull-through, and recovery. Catch phase sets up for the pull through. As the hand enters the water, the elbow should remain flexed while the torso rolls toward the pull side. This “high elbow” position engages the latissimus dorsi muscles and sets the swimmer up to pull the arm under the body. It also prevents the swimmer from “dropping” the elbow, which results in the humerus riding up into the subacromial space causing impingement of the supraspinatus muscle and tendonitis. During the mid-pull through and late pull through phases, the arm moves in an “S” shaped pattern accelerating until the thumb brushes the thigh or suitline. The late-pull through phase is known as the point of power as the arm presses the water backward prior to exiting the water for the recovery phase. Throughout the recovery phase it is important that the elbow is flexed and “high” to set up for the catch phase. Note that the majority of the freestyle drills in Appendix A focus on maintaining a “high” elbow during recovery. Although not highlighted in this protocol, an even 6 beat kick (3 kicks per individual arm revolution) and alternate breathing pattern is helpful for developing a freestyle stroke with correct biomechanics.

**Guidelines:**
The following rehabilitation program serves as a guideline for return to the pool. For best results, as in any functional return to play program, the swimmer, therapist, coach and parent (if athlete is a minor) need to cooperate and work as a team. It is necessary for the swimmer and coach to understand that the athlete should progress slowly. Increases in pain or increased discomfort need to be recognized by the swimmer as a warning sign to decrease training and have the coach re-evaluate stroke mechanics. For prevention of further injury, stroke drills should be emphasized during a swimming return to play program. Finally, each swimmer will respond differently to a program, so a practice’s yardage and frequency will need to be adjusted accordingly.

**Guidelines Cont.:**
We rehabilitate our patients similar to a primary ACL reconstruction except with a slower timeline. Rehabilitation is customized to each individual patient, depending on other findings at surgery, particularly if any other concurrent procedures were performed. Return to cutting activities is limited for six months and sports are not allowed for 6-12 months and when functional studies show 90 percent functional capacity of the normal leg. It often takes up to 1 year for the athlete to perform at their previous level of activity.
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This protocol is intended as an aid in progressing competitive swimmers into their normal routine following rotator cuff tendonitis or impingement or as a return to swimming progression following shoulder surgery.

Goals:
- Keep swimmers in the water.
- Maintain aerobic and anaerobic condition.
- Keep heart rate around 140-160 beats per minute during aerobic workouts.
  \(220 \text{ – age} \times 65-75\%\)
- Return swimmers to regular workouts and competition safely, as soon as possible.

Additional Information:
Not all shoulder conditions are the same. Please consult your physician, physical therapist or athletic trainer and work with your coach. This progression is based on an average competitive swimming workout of 4500 Yards (180 lengths of a 25 yd. pool) per day, 5 days a week.

Instructions:
Start with Phase I and continue until instructed to progress to Phase II. Swim every other day (except final Phase VIII) as soreness rules allow. Swimmers must complete the phase they are in 3 times without pain before progressing to the next phase. Phase progression should be monitored by a physician, PT or ATC.

Phase I
No swimming phase, but in water as long as other swimmers doing the following:

**Kick 1500 yards** (mix distance and intervals)
- No kick board or keep kick board close to the body to decrease stress on the shoulders.
- Avoid extending kick board in front of you.
- Vary kicking drills; under water, side, front, back etc.
- May use water shoes, fins, or zoomers for kicks if no knee conditions.
- If swimmer has a knee condition or develops knee pain, report to coach and/or athletic trainer and consider a medical consult.
- Practice turns.
- No starts, no pulls, no single arm drills with involved shoulder, no swimming.

Phase II

**2000 yards total**
- 1500 kick (As above) Broken up or some before and some after swims. Vary drills.
- 500 swim (Breaststroke only) Broken swims. Start with repeat 25 yds at moderate speed and rest. Progress distances and speed as tolerated.

Phase III

**3000 yards total**
- 1500 kick Broken up or some before and some after swims.
- 1500 swim (1000 breaststroke, 500 crawl with maximum body rotation and breathing bilaterally (every 3 strokes)). Broken up. Start with repeat 25’s at moderate speed and rest. Progress distances and speed as tolerated. Retro swimming drills ok if tolerated.
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Phase IV
3500 yards total
- **1500 kick**: Broken up or some before and some after swims.
- **2000 swim** (1000 breaststroke, 1000 crawl with maximum body rotation and continue bilateral breathing). Broken swims. Speed and distance as tolerated.

Phase V
4000 yards total
- **1500 kick**: Some before and some after swim.
- **2500 swim** (1000 breaststroke, 500 crawl with maximum body rotation, 500 crawl with normal rotation, 500 backstroke with maximum body rotation).

Phase VI
4500 yards total
- **1500 kick**: Some before and some after swim.
- **3000 swim** (1000 breaststroke, 1000 crawl with normal rotation, 500 backstroke with maximum body rotation, 500 backstroke with normal body rotation).

Phase VII
4500 yards total
- **1000 kick**: Some before and some after swim.
- **3500 swim** (1000 breaststroke, 1000 crawl with normal rotation, 1000 backstroke with normal rotation, 500 butterfly).

Phase VIII
4500 yards total- complete Phase VII for 2 consecutive days, then 1 day rest, then 2 consecutive days

After completion of all 8 phases, swimmers should be ready to return to normal workouts. It would not be advisable to take part in single arm involved arm drills or pulling drills until pain free for a considerable time. Continue bilateral breathing as much as possible to even out the stress on shoulders. *Swimmers may be able to compete in meets prior to completing this progression depending on stroke, and due to the total distance swam being shorter in a meet.*

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Thanks for contributions and/or reviewing:
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### Instructions
- Begin with phase I and continue until instructed to progress to Phase II.
- Mandatory 1 day rest between swim days for Phase II through VII.
- Complete each phase 3 times without pain before moving to next phase.
- Phase progression should be monitored by a physician, physical therapist or athletic trainer.

### Soreness Rules
- If sore during kick portion, take 2 days off and drop down 1 phase.
- If sore during swim portion, take 1 day off and drop down 1 phase.
- If sore after completion of phase, stay at same level.
- Complete each phase 3 times without pain before moving to next phase.

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