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Addressing Shoulder Injuries in Swimmers

### SHOULDER INJURIES IN SWIMMERS

Swimmers and their shoulders, what sort of injuries do these athletes have around the shoulder joints and what are the latest treatment techniques available?

You are listening to ReachMD, The Channel For Medical Professionals. Welcome to the clinician's roundtable. I am Dr. Mary Leuchars, your host and joining me today from New York is Dr. Scott Rodeo. Dr. Rodeo is Professor of Orthopedic Surgery at the Weill Medical College of Cornell University. He is Co-Chief of the Sports Medicine and Shoulder Service at the Hospital for Special Surgery in New York. He is also an Ex-Competitive Swimmer and was Team Physician for the 2004 and 2008 US Olympic Swim Team. Today, we are discussing shoulder injuries in swimmers.

DR. LEUCHARS:

Welcome Dr. Rodeo.

DR. RODEO:

Thank you, thanks for having me.

DR. LEUCHARS:

So, what are the top 3 injuries that swimmers get in their shoulders?

DR. RODEO:

Well, the most common thing in the shoulder problems are common in some, whereas lot are related to overuse and lot of it sort of overuse tendonitis type of pictures or how they present. A fair number of swimmers have laxity as an underlying problem, so they have some instability in their shoulder, which can contribute to the shoulder pain and there are lot of which just kind of rotator cuff fatigue, rotator cuff overload from the repetitive loads, and the loads are so, so high from the repetitive use, I mean there are literally 1000s of overhead arm motions per practice for these athletes, so really kind of combination of overload, rotator cuff fatigue, and then the

underlying instability can combine to lead to shoulder pain.

**DR. LEUCHARS:**

Is there a swim stripe, in particular causes the shoulder problems in swimming?

**DR. RODEO:**

You see most in freestyle much of them may be because athletes train mostly with freestyle, but it is really any kind of overhead activity of butterfly in a freestyle in particular, meaning contrast, breast stroke, you don't have as much of the overhead activity and shoulder problems although they certainly occur, they are less common definitely in breast stroke compared to butterfly and freestyle.

**DR. LEUCHARS:**

You mentioned shoulder instability in swimmers, when can this be an advantage in the swimmer?

**DR. RODEO:**

Yeah. It is a good question, because really you are talking about a sort of a loose joints and joint laxity and it is really sort of continuing from kind of a tight joint on one side to little laxity, which can be helpful to too much laxity, which can become pathologic and so really it is a fine line between laxity, which may be a good thing and instability which denotes symptoms or pathology, so again that is really kind of a fine line, they had the difference at some degree, as your question implies, laxity could be a good thing. You know, loose joints can help the athletes be successful frankly, probably to some degree why they are successful and you see in a lot of lead athletes, I looked in our Olympic team, as it has been looked out and in lot of the Australian swimmers as well, there is certainly a degree of laxity, so in these high level athletes, this may allow them to be so successful, but again you get a little bit beyond that, little bit too much and now it can become pathologic, so our sense is that all these athletes have some degree of laxity and that fits fine that is sort of their inherent makeup and they cannot get by because they can stabilize the shoulder using the muscle rotator cuff in particular, so that is fine. Problem occurs is once they over train with the repetitive cumulative loads of training now the rotator cuff muscle fatigue and they lose the muscle contribution to stabilities and then they lose what we call the dynamic stabilizing effect of the muscles. Now that laxity, which heretofore had been well tolerated and not a bit deal now becomes symptomatic, so that is how that the underlying laxity can start to become a problem if the muscles can no longer compensate.

**DR. LEUCHARS:**

Is there a way to clinically tell if that is happening to a swimmer before they get pain or symptoms?

**DR. RODEO:**

The signs are often subtle. You can sometime detect subtle change in their swimming stroke, though so, I mean the answer is yes there are, there are some changes that make in their swimming stroke, which are indicative of sort of fatigue and the muscle is not quite functioning normally and so and that is where we really need really astute coach who can notice some of these change, but often times the athletes would not say much, you know, because it is not uncommon to have little bit of discomfort in the shoulders, so they kind of

get used to this or live with this, so they don't say much and the hard part is determining when you intervene and when you start the normal kind of expected shoulder pain of training.

**DR. LEUCHARS:**

So, is there a percentage of swimmers who should expect to get shoulder pain at some stage in their career or will everyone get it and never to blame?

**DR. RODEO:**

Yeah, I mean the study showing were from 50% to 70% will have some degree of interfering shoulder pain at some point in their career. The numbers are high.

**DR. LEUCHARS:**

And so when we talk about "swimmer's shoulder" what are we exactly talking about?

**DR. RODEO:**

Yeah. It is a bit of a, you know, catch all term that is used to describe shoulder pain in swimmers, but I think the majority certainly not all, but most of these swimmer shoulders relates to muscle fatigue, muscle overuse, and then the resultant sort of dysfunction in the muscles that will, you know, ultimate this kind of final common pathway causing pain is probably abnormalities in mechanics of the shoulders, so again if you think of the shoulder, you know the mechanics, their normal function being controlled by balanced muscle forces on one hand and ligaments on the other. If the muscle forces become insufficient or inadequate to control the shoulder as a fatigue, then there is a dysfunctions to the mechanics of the joint is not normal. It can ultimately lead to impingement, so lot of pain eventually comes from impingement, the other rotator cuff on the overlying bony arch of the acromion there so, but the underlying problem again often relates back to cuff fatigue, cuff overuse.

**DR. LEUCHARS:**

What is the best clinical test you use for impingement?

**DR. RODEO:**

You know, standard signs so called Hawkins test is one, Jobe impingement test is also another one. I also take the arm to the various provocative positions that the athletes describe and many times, which are the recovery phase in the swimming stroke, which frankly is identical to the Hawkins impingement signs. So these are signs the clinicians view for many years to reproduce impingement of the shoulder that test is exactly the position the arm was in during the swimming strokes. So, it is a quite a correlation there and that sounds a pretty good indicator. A lot of your diagnosis frankly comes from the history as well like many thing in medicine you listen to the patient, a lot of their description of symptoms in the provocative positions and maneuvers will give you a good clue as to you know what the diagnosis is. Then you go to your careful examination to look at rotator cuff signs, rotator cuff strength, impingement signs, and then laxity, you know, how much laxity is there in the joint and then compare that to the contralateral shoulder as well.

**DR. LEUCHARS:**

If are you just joining us, you are listening to the clinician's roundtable. I am your host, Dr. Mary Leuchars and today I am talking with Dr. Scott Rodeo about swimming injuries and shoulders.

Dr. Rodeo, which radiographic mains of diagnosis is most appropriate in swimmer's shoulders?

**DR. RODEO:**

Typically, MRI is the most helpful. X-rays are almost routinely normal, quite honestly and certainly, you know, our typical younger swimmers, they are, you know, in older athlete, your master swimmer, people in their 30s and 40s and older, you start to have a little broad or differential diagnosis and you can have early arthritis and AC joint problems and things like that, which can be detected on radiographs, but in general MRI is a much, much more sensitive imaging study, which allows evaluation of the rotator cuff, the bursa around the rotator cuff, the labrum, as well as the articular surfaces, so really it is a your best imaging study.

**DR. LEUCHARS:**

Do you ever do ultrasound or dynamic ultrasound?

**DR. RODEO:**

Yes, we have. Like we just started to use it more and more and the value of the ultrasound is it allows you to evaluate the rotator cuff and it allows us to do it in kind of you mentioned a dynamic test where you can bring the arm into provocative positions to evaluate the rotator cuff in different positions, evaluate from impingement so it can be very useful.

**DR. LEUCHARS:**

When you are looking after late swimmers, is there is any difference in your decision making as to when I really need an arthroscopy to evaluate a particular shoulder problem?

**DR. RODEO:**

In general, not really, I mean, I think you can adhere to the fundamentals and basic principles, many of these, in fact most will get better with appropriate rehab and part of it initially can be more modified in activity and try to treat the acute pain with activity modification, rest, avoidance of the provocative maneuvers, anti-inflammatory medicines, simple things like that, ice things like that, working with the therapist can be helpful, often times we will have swimmers may be do more kicking sets, but not as much as overhead activity, not as much pulling sets. You know, swimmers often use hand paddles or pull pulleys may have to diminish those things, all of which serve to diminish the load in the shoulder quite simply, and then as the acute pain settles down, the next phase is to get them into a good comprehensive rehab program. We cannot emphasize enough the importance of working with the good therapist. You can help assess for muscle strength deficits, deficits in muscle balance, you know, the coordinated, firing patterns of the different muscle in the shoulder are critical, and those can be interrupted in the painful shoulders, so you identify any deficits and then certainly address those through

good therapy and a comprehensive therapy program to really make a difference can sometimes takes 3 months or more. It can take sometimes 6 months or more. So, ultimately the athletes who really fail all of that then surgery may become a consideration.

**DR. LEUCHARS:**

At what point in time, do you advice an elite swimmer not to compete?

**DR. RODEO:**

Well, you can get to a point where they have persistent pain that is failed to get better with activity modification, rest, anti-inflammatory medications, appropriate therapy, and there is another swimmers who despite all those things the pain persist so they are you know kind of crossroads where we determine when do they stop swimming or do you try to do something operative and that will depend on the individual based on their examination. I mean if you think they have a lot of laxity, you may be more confident that you can improve things with surgery. Part of it the decision making process though is what are the athlete's goals and desires. At some point, some of then say you know what I am ready to move on and I am not going to be swimmer all my life and you know there is a lot individual factors that are taken into account, bur there are definitely certainly some athletes where they are just going to have pain with the overhead activities and some athletes may not be cut out to do this.

**DR. LEUCHARS:**

You talked earlier about having a good coach who can identify signs of fatigue by the swimmer's strokes early on, have you even been called upon to perform that role as well because you have such a great amount of experience?

**DR. RODEO:**

Yeah. I have looked at a couple of times. I have when I seen him with a bit of the athletes in form of harder things about you know evaluating swimmer and frankly it can be said for lot of athletes where as in position seen the patients in your office or in the hospital you do not often get to see them swim so it is hard to know what the swimmer stroke is like and it is hard to even make recommendations about correcting the stroke if you have not seen them swim, so it can be just like evaluating and say throwing athlete, it is hard to suggest the adjustments in the throwing technique if you have not seen them throw, so, so, yeah, I have on occasion where I had the opportunity to be on the deck and see swimmers with our national team and things like that, but that is why day to day when you cannot see the athletes it is important to have a coach you can speak with, may be the therapist you can speak with, sometimes the parents will tell you and they know the athlete, their child and how they swim, and so you kind of use that information to try to piece it together.

**DR. LEUCHARS:**

And as a chief medical officer of a very prestigious US Swim Team how do you feel when someone like Dara Torres or Mark Phelps comes to you with a sore shoulder?

**DR. RODEO:**

You know, again I think it is like medicine here to fundamental as you treat them. Frankly like anyone else, you do the right thing. I mean sometimes you get in trouble if you try to do something special or extra for the VIP athlete, but you know, obviously you would take care of them and do the right thing for the athlete. I think that you start with the basics and work through it, and then there is obviously there are different circumstances in that setting you know where there is at Olympic level or in an elite athlete levels whereas there may be different consideration that you need to take in account. Sometimes the athlete will take more risks than someone else would because for them is their livelihood, so you know there are certainly different considerations that are taken in account, but as far as evaluating the injury, recommending treatment, you know, you do what you know works.

**DR. LEUCHARS:**

Do you ever talk to athletes as a team about preventing injury?

**DR. RODEO:**

Absolutely. I think prevention is really critical here, like a lot of areas of medicine it is really very important here as anything else in prevention is a pound of care and so we do and a lot of that relates to recommending appropriate strengthening programs.

**DR. LEUCHARS:**

And is that mostly based in the gym or there are other areas?

**DR. RODEO:**

Yeah. A lot of areas what we call dry land, you know gym type exercises, but it can be done in the host of ways, not just weights, but also different types of resistance bands, and you know Thera-Band, and flexible devices that can be used to help exercise a lot. A lot of creative way you can do it, but a lot of it is exercise-based program, gym-based programs.

**DR. LEUCHARS:**

Is there is a place for Pilates or Yoga?

**DR. RODEO:**

Yes. Absolutely and those are great for developing a particularly strengthening so called core muscles, which is your abdominal muscles, low back muscles, pelvic muscles, you know these while the focus is on the shoulder and currently shoulder is important, but frankly a lot of strength in the upper extremity comes from the so called core, low back, abdominal muscles, all those, just like a pitcher throwing a baseball, you do not throw baseball 95 miles an hour just from the arm, a lot of it comes from the trunk, hips, and legs. A lot of that whole do in swimming too, so anyway point is yoga and exercises like that are very helpful for developing core strength.

**DR. LEUCHARS:**

Well my thanks to Dr. Scott Rodeo.

**DR. RODEO:**

Thank you.

**DR. LEUCHARS:**

We have been discussing shoulder injuries in swimmers. I am Dr. Mary Leuchars and you have been listening to the clinician's roundtable on ReachMD, The Channel For Medical Professionals. We welcome your comments and suggestions through our website at [reachmd.com](https://reachmd.com), which now features our entire medical show library and on-demand podcasts. Thanks for listening.