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Elite Soccer: Preventing Injury to the Lower Extremities

What are the latest strategies for treating and preventing the types of injuries encountered by professional soccer players. Welcome to breakthrough in sports medicine on ReachMD. I am your host Dr. Sherwin Ho and joining us today to discuss treatment and prevention of injuries for elite soccer players is Dr. Riley Williams. Dr. Williams is an associate professor of Orthopedic Surgery at Weill Medical College at Cornell University. He is also the Director of the Institute for Cartilage Repair at the Hospital for Special Surgery in New York City and head team physician for several sports teams including the New York Red Bulls professional soccer team.

DR. SHERWIN HO:

Welcome Dr. Riley

DR. RILEY WILLIAMS:

Thank you Sherwin. Glad to be here.

DR. SHERWIN HO:

Speaking of elite soccer player injuries what we want to role into is a little about the prevention and may be preparation in the preseason or proseason that you in New York City has found it helpful with your athletes.

DR. RILEY WILLIAMS:

Of course, well, the soccer season, as you know, its pretty long. If you look at the first game our season here in the Major League Soccer is typically at the beginning of April and carries through October and then if you are fortunate enough to make the play _____ running into November. So in our season with the MLS, we have a relatively short off-season. Its usually somewhere between 4 to 6 months. So most of the guys fortunately do stay around. So we really break up our training into inseason and preseason training. We typically have the player show up for a preseason training schedule, which is 2 months in advance they are coming for physicals and our strengthening conditioning coach really look to the Pilates method as a way of doing 2 things; number one enhancing their ability to withstand eccentric muscle contracture which we think is preventative for some of the hamstring and groin and muscle strength in the lower extremity that plague these soccer players, and it does so well, you know, increasing strength and not necessarily bulking up the athletes, which really in this population you are really not looking to do. Their natural ability as soccer players is to run around and be life and quick and typically it's not desirable to really increase their muscle bulk especially in legs considerably. So interestingly enough, there is also the approach that the professional basketball team with whom I work uses too. So I have become a believer over the years

that the Pilates method for strengthening is very good. Now we don't use that in season. They typically stick with very light three-way training during the season for their conditioning routines as well as a lots and lots and lots of lower extremity stretching. Some of the guys are even doing yoga; the team brings in a yoga instructor, which they do early in the week well before game time again. All in attempt to maintain flexibility and keeping their muscles supple.

DR. SHERWIN HO:

For those who aren't familiar with the Pilates, Riley you just said a brief synopsis of what makes Pilates different from the sort of standard workout.

DR. RILEY WILLIAMS:

Well the Pilates method really is a method, which if you watch some of the late night exercise machine in for muscles. There is one I believe _____ support. I can't remember the name off hand in any event, basically consists of a device called a reformer and this think as the reformer is being a mobile board that lies on two wheel on a track that is able to be moved back and forth on this tracks and there are some pulleys on to which there are straps and the straps can be put around your arm, the straps can be put around the leg _____ and basically you can increase or decrease the elevation of either end of the boards such that you could use your arms, for example, to if you imagine them up of your head you could put your hands into loops in the cords and then pull your arm straight down by your sides like a swim stroke and that would pull your body weight superiorly. So you are really using mobility of these boards and your body weight as a resistance exercise again increasing your flexibility, enhancing your flexibility depending on the positioning while at the same time not really requiring any real weights or dumbbells or things you would typically associate with the weight training.

DR. SHERWIN HO:

So say I am team's physician for the local high school team and we had a rash, strains, and sprains, and I listen to this segment and I say, Pilates, we got a Pilates instructor down the street. Is there anything different in the type of training you do in for your elite soccer players rather than the usual Pilates that you know your wife might be doing?

DR. RILEY WILLIAMS:

You know, I think the focus for our guys is two folded, lower extremity strengthening and enhancement of flexibility. Whereas people in the community, I mean, they are going to do exercise various reasons whether it be toning, weight control, what have you. So I think that as long as the instructor or a person who is directing the program understands that you know for these particular players that's what the focus is and should be. Really there isn't anything different or unique about the types of exercise that these athletes do within the _____ Pilates itself, as they tend to focus on those particular things for most of their time on the reformer.

DR. SHERWIN HO:

Great, so we just have the instructor narrate down to the lower extremities or whatever we want to work on.

DR. RILEY WILLIAMS:

Exactly. I have to say, I don't how you encounter Pilates. I just rather its going to take an off in the last say 5 to 7 years. It's really epidemic here in New York City, I mean everybody is doing it, seems to be a very easy and sort of fun way if you are intimidated by weights and you know this really going to cut on, and I think the professional teams are probably little late in catching on, because they are such a _____ as you know with regards to the strength and conditioning coaches using what has worked and if you have a long history of success then usually have good _____ as you know. So it's actually fairly adamant what I think that our teams have taken up this method and used it so effectively.

DR. SHERWIN HO:

Particularly for eccentric injury that sounds like a great way to prevent those.

DR. RILEY WILLIAMS:

Yes, certainly it seems to have helped out a lot.

DR. SHERWIN HO:

If you are just tuning in, you are listening to breakthroughs in sports medicine on ReachMD, The Channel for Medical Professionals. I am your host, Dr. Sherwin Ho, and joining me today to discuss the treatment and prevention of injuries for elite soccer players is Dr. Riley Williams. Dr. Williams is head team physician for the New York Red Bulls professional soccer team in New York City.

DR. SHERWIN HO:

Dr. Williams lets move on to other hip injuries. How about the hip joint itself? The ball and socket joint. What types of injury that you are seeing in your elite soccer players.

DR. RILEY WILLIAMS:

Well, there are a couple of injuries, one which is really I think had been under appreciated prior to I think may be the past 5 or 7 years because of our ability now to image with highly sensitive MRI really appreciating the tears in the hip labrum, which is, as you know, a small rim of cartilage, which helps to keep the hip in place basically in a circumferentially if it surrounds the socket of the hip and again because these guys are using their legs essentially for all the activities during the soccer again much like the sports hernia, I think this is an injury that you see in players who have been around the block a while in mid 20s and up almost like an injury or attrition if you will.

DR. SHERWIN HO:

So you are talking about the labral injuries in the hip and going beyond that besides the labral injuries are you seeing what has been described as classic impingement in this population of athletes?

DR. RILEY WILLIAMS:

You know, we are not, really. I think that's obviously an area of great interest now. Brian Kelly who is at our institution is one of the top leaders in this area. He actually is involved with our soccer team as well. We have just not observed, I guess, the changes in the femoral neck and at the acetabulum in the hip that are sort of consistent with that. We still have not had any soccer players who has undergone any kind of procedures for hip impingement, but we certainly have a lot who had hip arthroscopy for the labrum anything from reattachment of the labrum with the formal repair to just cleaning up and doing a debridement. You do see also in the older players a few cartilage lesions of the femoral head to which we have done large reconstructive-type procedures or cartilage procedures on that, but clean out type procedures as well. We have seen that work pretty good, but hip arthroscopy again as you know is fairly nascent field and I think guys are just really kind of better understanding the indications and the type of procedure they are supposed to do, so we try to keep it relatively conservative.

DR. SHERWIN HO:

So for our audience, how would someone with a labral tear present?

DR. RILEY WILLIAMS:

Typically, obviously with pain, usually with extremes in range of motion either truncal rotation or actual hip rotation. Its usually centered in the groin, can be confused at times with an inguinal hernia about which we spoke previously. On physical exam, really flexing the hip up at a 90-degree angle with the body and then doing the internal rotation maneuver with some compression on the hip, you sometimes can elicit pain or palpable clunk or click in the hip joint, which should your increase clinical suspicion. Diagnostically, the x-rays really are not of much value. MRIs are goal standard imaging modality for this type of problem.

DR. SHERWIN HO:

In your practice, are you using MRI arthrogram. We found that here we miss a lot of the labral tears with routine MRIs and often time pick them up with an MRI arthrogram. I know your experience with Dr. Potter at your institute might be somewhat different than the rest of the country, but what has been your experience with MRI versus MR arthrogram.

DR. RILEY WILLIAMS:

Well Dr. Ho is speaking of Dr. Hollis Potter who is the director of our MRI group here at Hospital for Special Surgery, he is again a top lead in the area and we have the advantage of couple of things, number one very large magnets at our institution which allow for a level of detail that I think is not typical in the community. So I will give you a 2-part answer. I think we have not typically had to use MR arthrograms at HSS, but I think the literature would bare this out to that if you have an athlete or a patient even in whom you suspect this MR arthrograms will only enhance the definition about the soft tissue structures in the hip and will lead to more accurate diagnosis. So I think, you really just have to look at the facility with which you work and try to make a determination as best as you can clinically if you think that is appropriate, but certainly there is no downside diagnostically to doing a hip arthrogram.

DR. SHERWIN HO:

What I clear up like this, if you are within driving distance of the Hospital for Special Surgery and therefore a 4 Tesla magnet MRI exam otherwise you are probably are going to save more money by doing 1 test and doing the arthrogram.

DR. RILEY WILLIAMS:

Exactly.

DR. SHERWIN HO:

You spoke a little bit about cartilage injuries in the hip, can you talk a little bit about cartilage injuries particularly in the knee which we all know in the elite athlete once they hit about 25, 26, or 27 years old become much more common injury.

DR. RILEY WILLIAMS:

Yes, yes. Well this an area, which is kind of near and dear to me. You know cartilage lesion in the knee and ankle are very common in athletic population and are quite _____ because as you know, we have yet to come up with a reliable method that we can use in regular folks well-known athletes that would lead to a reliable and predictable return to sports, which is we all are very interested in the teams physician. Having said that the microfracture procedure, the ACI procedure have all been encountered at ways in soccer players in particular as effective methods that getting folks or athlete back to sport. We did a study out of our institution, prospective study, looking at this very question and really found a miserable 40% return to sport rate following microfracture at the 2-year followup interval with worsening results to longer adjuvant. As such, one of things I have been trying to figure out is you know basically what is the one stage procedure that might work more readily to reconstruct the defect and allow us not to debilitate our athlete because, so you know, that the things that make athletes good whether or not their knees are sound or _____ that their muscle _____ little faster, and their endurance is a little longer and when you are talking about doing surgery it is a 2 part question. It's like can you fix the problem, and can you help them maintain that physical advantage that physical fitness that made them so effective athlete in the first place. So I was never really enamored with the ACI procedure, not because I didn't like the signs, I think the signs were sound. Insisted that on a practical level you are really looking at may be 2 procedure that are minimum that in most case is 3 when you had to go back and after having harvested cells, then implanting cells, and then later debriding which you put in there, because it was overgrow or it was causing mechanical symptoms what we have. So I really look towards the allograft reconstruction as a nice way to reconstruct these and I have had experience with that in professional soccer league.

DR. SHERWIN HO:

So what you are saying for this elite group of athlete, perhaps what might be called the goal standard, the micro fracture may not be the most efficient way to get these athletes back on the fields.

DR. RILEY WILLIAMS:

Well. You are team physician and you understand that conversations always are very charged. These are professional guys who make a living using their bodies and this is not a question of recreation as to you know when and if they are going to make it back, they would like a firm time line, they want results, they want to know okay if I put in the effort from the rehab side, when will I be back and is really you know the difference between the livelihood or not. So increasingly, we are just very interested in trying to find a one stage procedure that if you wouldn't at least reconstruct to normal cartilage that it would give a some method of putting something there where the cartilage is efficient so that they could you know continue to play.

DR. SHERWIN HO:

Thanks Riley. It has been an informative and interesting discussion on elite soccer players.

I would like to my guest Dr. Riley Williams. We had been discussing the treatment and prevention of injuries for elite soccer players.

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