Common Skin Infections and Conditions in Athletics

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- [Calista] Today's course is titled Common Skin Infections and Conditions in Athletic Populations. It is my pleasure to welcome and introduce Dr. Ryan Musgrave to PhysicalTherapy.com. Dr. Musgrave is currently the AT program director and the department chair of Athletic Training and Health Science at Heidelberg University in Tiffin, Ohio. Before he became the program director in 2017, he served as the clinical education coordinator and the athletic trainer for the wrestling team for 16 years. Professor Musgrave attended Wilmington College where he was a double major in Athletic Training and Sports Management. Upon graduating from Wilmington College, he attended Indiana University where he completed his Master's in Kinesiology with an emphasis in Athletic Training while also serving as a graduate assistant for the athletic department. He recently completed his doctorate at the University of Findlay. Well, thank you so much for presenting for us today, Dr. Musgrave, and at this time, I'm gonna turn the microphone over to you.

- [Ryan] Okay. Welcome, everyone, I'm glad to be here today. Hope wherever you're at it's maybe a little bit warmer than it is in Ohio today. So we'll get started here. So as we go through the course today, some of the outcomes, learning outcomes today are identifying at least two common causes of skin infections and conditions, identifying at least four signs and symptoms of common skin infections and conditions, and then looking at at least two treatments for those as we go along too. Calista obviously presented some of my background there. Obviously most of my knowledge of skin conditions and things like that has come from my years of working wrestling here at the university. You get to see quite a few things working with a wrestling team over the course of 16 years. So obviously, what sport do you primarily think of when someone says skin infection? And I assume most people would say wrestling. Obviously that's the one you normally think of, but I've seen skin conditions obviously in all forms of athletics and teams, not just wrestling. So. And most of the return to play criteria that I'm gonna talk about today comes straight from the NCAA Sports Medicine Handbook

and the NCAA Wrestling Rule Book. So a lot of those things are straight out of those two books. I would encourage you, if you're working wrestling at the high school level, to look at your high school rule books for differences. I know, like, in the State of Ohio, I don't think they've changed it, but State of Ohio, if you have ringworm, you can't wrestle even if it's covered, and that differs greatly than NCAA rule book. So please check those out for your own states. So the prevention and education obviously is pretty important. Educating the athletes, educating the coaches, and educating the parents is pretty key to prevention. Pretty much all the things we're gonna talk about today are preventable somehow. The first thing that I always talk to my student athletes with is personal hygiene.

Sometimes it's not the greatest. Getting the kids to shower immediately after practice, especially freshmen when they first come in, obviously here at the university can be an issue. They wanna get out of practice and go eat or do whatever, but we make all of our student athletes, especially wrestling, obviously shower immediately after practice instead of go sitting in a dining hall for an hour and then going to their room and things like that. So their own personal hygiene is probably number one. Equipment hygiene, and that can be football helmets, pads, headgear in wrestling, the mats, shoes, things like that.

We've implemented some things here. Some of our student athletes, especially with wrestling, as far as equipment hygiene about not wearing their wrestling shoes off the mat, into the locker room, into the bathroom, things like that, so they're not tracking anything into the, into the wrestling room. We've also done preventative measures, skin checks periodically, if we have an outbreak of something, to keep that in check, and we've had to do that with a football team even here for a while, when they were coming down with some different things that they shouldn't be. Prophylactic medications, especially for athletes that have had herpetic infections, to keep the numbers of outbreaks down can be very beneficial. And then NATA position statement on skin

diseases and skin conditions is pretty helpful also. If you haven't read that, that's one of the references here that's located to the end of the PowerPoint today. And like I said, as we're going through here, virtually all of the topics, all the things we're gonna talk about today are preventable. Okay. So as we're going through today, there's sort of four categories that I kind of put together for this presentation. We'll talk about bacterial infections, we'll talk about different viral infections, fungal infections, and then I just created another category called Other, 'cause it's kind of random things. There's some parasitic things that we'll talk about there today too.

So those are the four categories we're gonna go over. So as we start with bacterial infections, the five here that we're gonna kinda talk about and cover are staphylococcus, staph infections, folliculitis, impetigo, cellulitis, and then furuncles and carbuncles. Okay, so, first staph infection that I'm sure everyone probably is at least familiar with is MRSA. MRSA obviously has come into play here quite a bit in the past I would say 10-15 years. Obviously it's been around before that, but obviously the MRSA is caused by a staph infection, which become resistant obviously to the many antibiotics that are used to treat just ordinary staph infections. And then the picture there is just a microscopic view of MRSA. Signs and symptoms of MRSA, I've seen it anywhere on the body.

Usually see arms, legs, or arms, legs, and feet, for the most part. I've seen it other places too, but you can catch it anywhere on your body. Usually starts as a swollen sorta painful red bump, kinda looks like a pimple. Some people think maybe it's a spider bite or it's a pimple and they pop it and then it gets worse. It looks a little bit different, I couldn't find a picture that was a sharable picture today, but any of you, if you've seen MRSA, it sorta looks like a pimple to start with, and the ones I've seen have the center of the pimple is almost like black. It'll be warm to the touch. It's usually full of pus or other drainage. You don't want to try to pop it or drain it, there might also be accompanied by a fever, and it's generally just a singular spot. Some of the other

things we're gonna talk about like folliculitis, you're gonna have multiple spots, but MRSA is usually just one singular spot, and the redness around the spot will grow fairly quickly. We normally just take a pen or a marker and circle the redness around the pimple, if you wanna say, and see how fast that spreads, if we're not sure if it's MRSA or something else, and then obviously we can get a culture and get them on medication as soon as possible. Obviously MRSA can be highly contagious, can be very life-threatening if it's not caught right away, and it can spread pretty rapidly internally and also externally. We had an issue here on campus probably about six years ago with football camp in the fall, where we had, I don't know, five or six cases of MRSA.

One young man, we found out sort of who the, the original carrier of it was, and he had a spot on his arm and he happened to be a defensive lineman, and he didn't say anything about it, he just thought it was an infected hair or something, and he eventually obviously, he spread it to somebody else, and then a couple of other people also caught it, so we had to go through and do skin checks for the entire football team for about a month every day, so that was a good time there. Moving on, treatment-wise for MRSA, obviously referral to your physician as quickly as possible. They'll normally take a culture to determine if it's MRSA, put them on some form of antibiotic, oral, or they might be admitted to the hospital obviously if it's a severe case, and the IV antibiotics.

Return to play for MRSA, and these is what I saying, these come straight from the NCAA Sports Med handbook and/or the NCAA wrestling handbook. The athlete must be without any new lesions for 48 hours before competition. They have to be on at least antibiotics for 72 hours and no moist draining lesions at competition time. And then any type of MRSA lesion obviously cannot be covered to allow participation. There are some other ones that can be covered to allow participation, but obviously MRSA is not one of those. Next one we'll talk about here is folliculitis, and folliculitis, just like the name says, is just an inflammation of hair follicles. Folliculitis can be, it

either can be bacterial or it can be fungal, and you're normally gonna see folliculitis in areas that have been shaved recently or commonly, or then taped areas, so ankles, wrists, things like that, but it can develop anywhere where you have hair follicles on your body. Here's a picture of folliculitis. Appearance-wise, it's gonna be a cluster or clusters of small red bumps, white-headed pimples, and obviously those, if you look at the picture closely, all of those pimples have a hair, they have a follicle coming out of them. They can spread, and they can turn into sorta non-healing sorta crustied sores, and like I said before, they're usually clustered in an area of the body or multiple areas of the body. Communicability, obviously it can be contagious, it can spread in the body. It's not life-threatening. Antibiotic creams and pills are usually used to control the infection. Sometimes oral antibiotics can be used for maybe more severe infections. There are also creams, shampoos, and other pills if it's a fungal, if it's determined to be a fungal folliculitis. Most of the ones I've always seen have been bacterial infections. The other thing that can be done, if it's someone that has recurring folliculitis for whatever reason, is laser hair removal.

Obviously, if you're removing the hair follicle, there's nothing to get, to become infected anymore. Return-to-play-wise, as we're looking at folliculitis, very much the same or exactly the same as MRSA. They can't have any new lesions that have developed 48 hours before competition. They need to be on antibiotic therapy or antifungal therapy for at least 72 hours, and then the same, no moist, drainage, lesions, and then active lesions cannot be covered to allow participation. And folliculitis is one of those things, it's confused sometimes with herpes and vice versa, and we'll talk a little bit about that when we get to the herpes section here in a bit. The next one here in our bacterial section of skin infections is impetigo. It's very contagious. It tends to be a superficial bacterial infection on the skin. There's two classifications of impetigo. There's bullous and non-bullous. The non-bullous is the most common form and the ones that you're normally gonna see. Signs-and-symptoms-wise for impetigo, it'll start out as sorta red sores. It might look like a herpetic infection at first, and then it sorta develops and

rapidly increases in size. It'll usually, I'd say it usually oozes drainages, or drains for a few days, and then a sorta yellowish-brown crust forms over the top of it, and that's sort of the identifying feature of impetigo. Usually gonna see it on the face. I've seen it other places on the body, but normally gonna see it around the face, the nose, the mouth area, but like I said, it can spread to other areas of the body. It can spread to other individuals, obviously. There might be some itching and soreness with the impetigo infection, but not severe. Probably the worst case of impetigo I ever saw, one time, one of our wrestlers had a spot on his face. He didn't really, it wasn't, it just kinda started and he shaved, and he cut the spot open and it basically spread, like he basically had impetigo down the one entire side of his face. So large infections like that can take a little bit longer to go away.

As far as treatment-wise, we have usually used, Bactroban is the thing that we normally use, and that's a prescription-strength antibiotic that's usually pretty good at controlling the impetigo and getting that to go away. The return to play with impetigo is much the same as before with the MRSA and the folliculitis. And obviously this one cannot be covered to allow participation. Once that crust kinda forms and it's sort of dried, they tend to be not, they're non-contagious then usually after that. The next one here in our bacterial section is cellulitis. And cellulitis is obviously caused by a bacteria. They live on the skin surface and can infect the deeper layers of the skin and that's fairly common.

If you've seen cellulitis, it can be potentially serious. The bacteria's normally gonna enter, it's gonna enter the skin through some type of disruption on the skin. Maybe they had a scratch, a blister. I've seen kids get a blister on their foot and then it gets infected and turns into cellulitis, but there's usually some type of portal through the skin where the bacteria's gotten through the surface of the skin and then down below. The skin's gonna appear very red, swollen. It's usually fairly painful, and it's usually pretty warm to the touch. And cellulitis is normally not contagious. And here's a picture

of a cellulitis that's obviously taken over part of this person's lower leg, and you can see the outline of, the line that's been drawn around the redness. You're normally gonna see, I think all the cases of cellulitis that I've seen have normally been the lower leg somewhere, but you can develop cellulitis in any part of the body. Treatment-wise, cellulitis, you're normally gonna, they're normally gonna be prescribed some type of oral antibiotic. A serious case like the one on the picture in the previous slide, that person probably, that person was obviously in the hospital, but they're probably gonna require some IV antibiotics in a hospitalization for a period of time until the infection starts to go down. And return to play here with cellulitis is the same as we've seen before with the previous ones. No new lesions for 48 hours, 72 hours of antibiotic therapy, no draining lesions, and obviously, it can't be covered to allow participation with cellulitis. The last one here for the bacterial section is furuncles and carbuncles. Furuncles, also known as boils, very similar to folliculitis. It's a single infected hair follicle, but appearance-wise is different than, it doesn't look like a pimple like you would see with folliculitis. And then a carbuncle is actually just a group of infected hair follicles.

Carbuncles tend to be much larger and much deeper than a furuncle themselves. So when you hear furuncle, carbuncle, boils, they're all sort of interchangeable terminology. The carbuncles just happen to be multiple infected follicles and they're obviously larger and deeper. Treatment-wise, if you catch them right away, a warm compress and drainage can work with them. If they get to be large, they might need to be incised and then drained, obviously, talk to your physician about that, and then some type of treatment with antibiotics to help the infection. The return to play, similar to all the previous ones that we've talked about, 48 hours with no new lesions, 72 hours of therapy, and then these cannot also be covered to allow participation. Okay, so moving on to viral infections. I mainly talk about herpetic infections. Herpes simplex 1 and shingles are the two that we're gonna kinda touch on under the herpes heading, and then we'll also talk a little bit about molluscum contagiosum. Sorta common

characteristics of viral infections for the most part, is they all tend to be highly contagious and most of them will be painful, whereas when we get the fungal, obviously, itching is a common characteristic of most of your fungal infections. So herpes simplex virus, there's multiple types of herpes viruses, and I've listed eight of them here. We're gonna focus on herpes simplex 1, oral herpes, cold sores, fever blisters, and then the one we mainly focus on is herpes gladiatorum, and that also known as mat herpes, which you see in wrestling there. And herpes simplex 2 is genital herpes, simplex 3 is varicella-zoster virus, and that's chickenpox and shingles, 4 would be Epstein-Barr virus, which causes mono, and then you can see the other four types of herpes simplex listed there.

Okay, so mat herpes. There tends to be a three to 10-day incubation period with the herpetic infections, so once the athletes are exposed, maybe at a tournament, something like that, it'll be three to 10 days before they have an eruption of the herpes virus. The herpes virus, when it's not active, it lies dormant in the trigeminal nerve, and you can see here in the picture sorta your distribution of your trigeminal nerve throughout your face. So that's normally, that distribution there is where you're normally gonna see mat herpes on someone. Usually, cheek, zygomatic area, mandibular area, and then around the eyes is normally where you're gonna see a herpetic infection when it erupts.

And like I mentioned before, it's often confused with folliculitis because the appearance initially is pretty much the same. When someone has an eruption, they usually tend to have a low-grade fever. They'll have some swollen glands, usually neck area, and then they usually have the fever and the swollen glands. That usually precedes the appearance of the sores or blisters. In athletes that I've had that have herpes, they usually can tell, they can feel when it's getting ready to erupt from the skin. They'll feel that sort of tingling sensation in the area that's affected by the virus, and it usually, if you have an athlete that has it, it usually comes out in the same spot over and over. I

had one heavyweight wrestler, he had herpes and it would, his spot was like his zygomatic arch is where he would always, when he had an eruption, is where it would come out. And it tends to be painful. So they have that tingling sensation for a day or so, and then the next day they come in and it will have erupted through the skin and it tends to be a little bit painful. Treatment-wise, what we've normally done is acyclovir, valacyclovir seven days. Those are for the recurrent outbreaks, so daily there. The primary infections are gonna take a little bit more to knock them down, to make them not as severe, and we normally put our student athletes that have herpes, we put them on a prophylactic dose that they take daily. It seems to help lessen the amount of outbreaks that they have during the season. Return-to-play-wise with herpes here, the blisters must be completely dry and covered by a firm adherent crust at time of competition. There'd still be some sign of it obviously on the face, but it needs to be completely dry and a crust, and they must be on a dosage of medication for at least 120 hours before competition.

So that's, obviously that's five days. And then if it's an active herpetic infection, it shall not be covered to allow participation. I believe Minnesota, the State of Minnesota had to shut, I think it was a couple years ago, had to shut down the entire wrestling season for like a month because of the herpes outbreaks. They were getting new herpes outbreaks that people were getting. So obviously, herpes, once you've been infected, you continue to have recurrent outbreaks with that herpes, and it usually seems to be someone gets stressed, either physically or mentally, always during exam time here at the university in December during exams, you're getting less sleep, getting tired, and that usually seem to be, I can almost guarantee that one of the guys would have an outbreak of herpes during the exam time just because of being tired, being up studying, being stressed physically from wrestling practice, and obviously also the mental stress from studying and things like that, so. Moving on here a little bit, and still with herpes virus, shingles. And this is simplex 3. It's varicella-zoster virus. If you've had chickenpox, you can develop shingles later in life. And very much the same as

herpes simplex 1, the shingles virus lies, it's gonna lie inactive in the nerve tissue, and then maybe, and reactivate years later. It can occur anywhere on the body. It's usually a single strip of blisters which wrap around either side of the torso. It never, I don't wanna say never, but it normally does not ever cross the midline of the body, so it'll be around one dermatome around the torso, maybe from the sternum from the front to the back to the spinous processes. We've had a couple individuals college-wise with, that have come down with shingles, but it's not common in a younger population for the most part. There is no cure, but there is a vaccine that is available for shingles. Obviously there's a vaccine now for chickenpox too, but there's a vaccine for shingles, and that goes by the name Shingrix. So that is available. The valacyclovir that we talked about earlier with the herpetic infections, that will help to lessen the severity of a shingles outbreak if someone does come down with that.

And return-to-play-wise, the skin lesions must be covered by a crust, no secondary evidence of bacterial infection, but I have seen a couple cases of that with the student athletes here, but like I said, it's not normally common with the younger population. Okay, the next one here for our viral section of skin diseases is molluscum contagiosum, normally just go by the term molluscum. It's a fairly common viral infection of the skin. You see the picture here on the slide with the molluscum. They're tiny, round, they're firm, painless bumps that kinda look like little tiny warts.

They don't usually get much bigger than an eraser head, pinhead to eraser size, one to 10 millimeters with molluscum. A lot of people, if they're scratched or injured, they can spread to the surrounding skin. It's pretty highly contagious as far as giving it to someone else. I've seen a handful of cases of molluscum, which usually starts out just in one spot where you get a couple little clusters, if you catch it right away before it spreads to anyone else or anything, the better it'll be. Treatment-wise, if you type in treatments in Google or something for molluscum, there's a bunch of different things out there as far as treatment goes, but the best treatment for them is they need to be

physically removed like you would for a wart or something like that. The lesions must be curetted or removed before competition, and obviously that's gonna leave a bit of a wound and a scar there. Solitary or localized lesions, they can be covered with a gas-impermeable dressing, pre-wrap, and then stretch tape, so they can wrestle with that if it's a local cluster that can be, it's somewhere that can be covered that can't be dislodged. Okay. There is a question up here I just noticed about Shingrix. Is it only for those 50 years and older? I honestly, I don't know as far as what the recommendation is for that vaccination for the Shingrix. Moving on here to fungal infections. There's a bunch of different things we'll cover here in fungal infections. All tineas: tinea corporis, tinea cruris, tinea pedis, tinea capitis, and then tinea versicolor, and most of you have probably seen some of these or all of these at one point. The common characteristics of most of your fungal infections are skin changes of some type, usually red and possibly cracking, peeling skin is normally what you're gonna see. Almost all of them are gonna itch in some form.

The tinea versicolor is really the only one that you're not gonna get any itching with, and then obviously the same thing with most fungal infections, funguses like to live in moist, warm environments. The first one, probably the most common tinea that we see is ringworm, or tinea corporis. And it's, if you haven't seen ringworm, very circular, red, circular sorta raised spot on the body. Usually tends to be a little bit clear in the middle, and then raised on the edges. And it tends to be obviously, ringworm tends to be pretty itchy. And normally you're only gonna, for whatever reason, normally only see ringworm above the waist. It can be below the waist, but normally, cases you see are gonna be above the waist. Return to play, like I said earlier, check your local state rule books and things like that, but NCAA-wise, need to be on some type of topical therapy for most tinea infections. The active lesions may be covered to allow participation, if they're in an area that can be adequately covered. There are some places, head, face, depending on how large it is and where it's at, that might be a little bit difficult to cover to prevent spreading of ringworm. Question here. I assume, it says, can covering them make them

worse? I assume, I'm gonna assume covering you mean ringworm. Covering them for competition and then taking the covering off so that they can dry out would be the best thing. I wouldn't leave them covered all the time, because then it's gonna get kinda warm and moist under that covering and make them spread or get worse, but if you let them dry out, put the medication on and let them dry out would be better. Tinea, moving on here, tinea cruris, also known as jock itch, obviously this is more common in males, although females obviously can get jock itch too.

Normally gonna see it during warmer weather when people are wearing wet and tight clothing for a period of time. Obviously your genital area. Your upper inner thighs and buttocks are the normal places that you're gonna see jock itch or tinea cruris. Identification-wise, signs and symptoms, sorta scaly pink border with the jock itch, can be quite itchy and can be painful if it's not taken care of and treated as soon as possible. It's more common during the summer months, but obviously you can see it throughout the year, basketball, wrestling during the winter, you're gonna, you can see jock itch. It's mildly contagious, so it can spread. One thing, those with, if they have a case of jock itch is, tell your athletes to be careful taking on and off underwear, socks, things like that, 'cause you can spread jock itch and athlete's foot to other parts of your body by putting those things on.

Treatment-wise, your antifungal creams or lotions for it can be helpful, miconazole, ketoconazole, wanna say Lotrimin, Lamisil, Tinactin. Keep the area dry as much as possible. If they can wear loose-fitting undergarments to help the area dry out, will be better. Got a couple questions here. Let me just check these real quick. For molluscum, the question is for molluscum. Do you need to have them medically removed? Yeah, I would recommend seeing your physician and having them physically removed by your physician. I personally wouldn't feel comfortable removing molluscum. And then, weird question, can it be in the armpit as well? I would assume you're talking about one of the fungal infections that we just talked about. Yeah, anywhere, you can get it, a fungal

infection in your armpit too, 'cause obviously it's a warm, moist area. Okay. Okay, tinea pedis, also known as athlete's foot. Most of us have probably seen cases of tinea pedis before. Usually, it obviously starts out between the toes. You get that scaly, itchy rash, sort of a stinging and burning sensation. Can be spread via contaminated floors, towels, or clothing. And it can develop in, I always mispronounce this, onychomycosis, which is that fungal infection of the nails, of the toenails. Treatment-wise, tinea pedis, your over-the-counter ointments, lotions, powders, sprays, that have terbinafine in them, Lamisil is one of those. Your more severe cases, and I should've mentioned this earlier with ringworm, things like that, they might need a prescription dosage of ointment, or there are oral antifungals that can be prescribed to treat some of the fungal infections. Tinea pedis, if it gets to the point where it's scaling and cracking and even bleeding, I've seen some cases where it gets really bad, it might just be beneficial to hold the athlete out for a couple days just to let the area start to heal and dry out before it can turn into a cellulitis or something like that.

So as far as returning to play, just as long as it's, you're keeping it dry and it's not getting any more severe. Tinea capitis is another fungal infection, and this is just basically ringworm of the scalp. You see a picture here of young individual with tinea capitis, and there's three or four spots there on the back of his head. They tend to be brown, patchy, gray sort of scaly portions of the scalp, and as it develops, at first, I've had some individuals with this before, in the winter they think it might just be dandruff or something, or they just have an itchy scalp, especially if they have longer hair and they can't see it. Once it develops a little bit farther, they'll start to lose hair like you see here in the picture. The hair will start to fall out from those spots where the ringworm is at on the scalp. Treatment-wise, tinea capitis is gonna be a little bit harder to get rid of than let's say just ringworm on your arm or something like that. Usually gonna require oral antifungal medications and might take longer than 14 days for that to take effect and for that to get rid of. There's also some antifungal shampoos that can be used for the tinea capitis. And these individuals are gonna require a minimum of two weeks of

oral antifungal therapy for the tinea capitis lesions. A couple questions here I'll just take real quick while we're going through here. Is tinea cruris curable? Yeah, obviously with treatment it will go away, and then just educating the athletes so it doesn't come back, and obviously, there's quite a few over-the-counter things that you can do to get rid of tinea cruris or jock itch. Tinea capitis, obviously the same answer there. Tinea capitis, is it curable? Yes, it just takes quite a bit longer to get rid of than you would with ringworm on your arm or leg or something like that. Can it result, permanent, can tinea capitis result to permanent hair loss? No, I haven't seen it be permanent, but it will take a little bit of a while for that hair obviously to grow back. I've seen, had a couple wrestlers with it. I had actually an athletic training student that had tinea capitis a few years ago, and she had the long hair, and she was pulling out long chunks of hair when she got it.

Tinea capitis, is it just ringworm on the head? How contagious is it? Yeah, it's basically just a form of ringworm, but it infects your scalp instead of your skin. Contagious-wise, it's gonna be just as contagious as any of the other, as ringworm is, and it obviously will spread, and the problem with tinea capitis is people can have it for a while and not realize it. They don't really realize it till the hair starts to fall out, 'cause a lot of times they just think it's a dry patch of scalp and it's just itching. Another question. Is there any benefit to wrestlers using antifungal body wash or shampoo as a preventative? There are some things we use, I'm trying to think of what shampoo that we use in our showers downstairs, but we use a sort of multipurpose body wash, hair wash, that the guys use every day after practice.

The problem with some of that stuff is it tends to dry the skin out a little bit, and then you can develop some other things, but if you're having an outbreak, obviously, using those antifungal body wash or shampoo, that's very effective, or that can be effective in preventing some of those things. Does capitis get worse with helmet use? That's a good question. It probably does not help, 'cause if your head is in that helmet all day

for two/three hours of practice, you're gonna be sweating, it's gonna be in a warm environment, so it probably will develop and get worse with helmet use. I would talk to the individual and maybe try to keep their, take the helmet off as much as possible when you're standing on the side, they're not in drills, things like that. That would be one recommendation there that I can think of with helmet use. I've never seen it in football, obviously because they're normally wearing a helmet, but that's a good question. Is folliculitis caused by a fungus? Yeah, folliculitis can be caused, it can be fungal or bacterial. It's normally bacterial. Your physician would be able to help you determine what the cause of that is, if they wanna do a sample, a sample of that to see what it is. Ringworm, is ringworm contagious via skin-to-skin contact only or also through mats and other objects? It's contagious obviously from skin-to-skin contact and there is some evidence obviously of it being, of you catching it from mats and other objects if they're not cleaned on a regular basis. I can't think of the timeline, but ringworm can live outside of the body for a period of time. I would have to look that up to see exactly what the timeline is on that.

Next question here, you guys are good today. Have you seen light therapy used on any of these conditions, and if so, does it help healing time and effectiveness? I've seen that in the literature where light therapy can be helpful for some of the fungal infections, ringworm especially. Anecdotally, I can tell you that wrestlers that I have had that go to the tanning bed rarely if ever get ringworm. So that's just my anecdotal evidence there, but I have seen some evidence where some of the light therapies will help some of the fungal infections and kill those. Okay, I'm gonna move on here. Next fungal infection, most of you probably have seen this but maybe not realized what it was, is tinea versicolor, and the name is there. It tends to be, it's a yeast, it's a superficial fungal infection of the skin. In the picture here you can see the light patches on this person's back. It's often, or often, it's often confused with vitiligo, vitiligo, and that is, what do I say, a very whitening part of the skin, almost looks like a birthmark but it's white, so that's a little bit different than tinea versicolor. Tinea versicolor, the yeast infection is

gonna affect the skin's pigmentation. Typically gonna see it on the trunk and shoulders. Normally I see it in the summer, with warm, humid climates, Florida, somewhere like that, you're gonna see it. I see it here quite a bit. Usually it tends to be like cross country runners that have been running all summer and training. In Ohio, in the summer it tends to get pretty, it can get pretty warm and pretty humid. It's not itchy, it's not contagious. It just looks funny on their skin. And a lot of people have it. I see it every once in a while with our student athletes here, but it's not contagious, it doesn't itch, it just, where the skin almost doesn't tan would be a good way to describe that. Treatment-wise for tinea versicolor, there are some antifungal soaps and creams, and they're listed there, that can be used to get rid of it. There are medicated cleansers, there's antifungal pills, if the soaps and creams don't get rid of it.

And the athletes, since it's not contagious, it's not itchy, they don't necessarily need to be removed from competition or participation from it. It's just more of a how things look. What causes tinea versicolor? Like I said, it's a fungal infection of the skin that people pick up usually in the summer, if they're running with t-shirts on, things like that, the t-shirt gets wet and it sort of creates that warm, humid environment where funguses like to live. So it's a form of yeast actually, is tinea versicolor.

Okay. Okay. The last section here that we're gonna cover today is the Other category, and we'll talk about some insects and parasites, specifically scabies, bed bugs, talk a little bit about spider bites, and then we'll also talk a little bit about dermatitis and urticaria too. Quick question here about tinea versicolor. Are the medications over-the-counter? Yeah, there are some that are over-the-counter, there are some antifungal medications. Go to your local pharmacy, they'll be able to help you out, but there are some that are over-the-counter. If it's severe case, you might need to go see the physician and get a prescription for some of the medications for tinea versicolor. Next, or another question here real quick. How can tinea versicolor be prevented in hot climates? Just a prevention, you know, it's maybe making sure that when they're done

running that they dry off, they shower, that they keep the area dry. If you're taking that warm, humid environment out, I know that's not always possible, if you live in Florida or somewhere where it's warm there. So that would be one thing to prevent tinea versicolor. Will versicolor resolve naturally? I have seen some cases where it will resolve naturally and kind of go away. In the winter months here, it will go away, or it can go away, depending on the athlete's activity level and what they're doing, so, yeah, it can, it can resolve naturally on its own. Yeah, there's a comment here. Tinea versicolor looks like skin peels after a sunburn, and that would be a good, yeah, a good comparison, kind of what it looks like. And depending on how tan the person is, you might not notice it as much. Another question here that just came in.

Can athlete's foot cause jock itch? Are they named or designated by region or two different infections causing similar symptoms? They can cause each other. They're basically just classified as what area they infect. That's why I was saying earlier, if someone has jock itch, you need to tell the athletes to be careful when they take off their underwear, that they aren't necessarily touching their, stepping on their underwear in their feet, because obviously that can spread to their feet, and things like that, so, yeah, they're basically named from where they infect, for the most part. Okay. Alright, scabies. Scabies is an interesting little creature. I've seen a handful of scabies cases here at the university.

They are little tiny mites that burrow and lay eggs under the skin. This leads to relentless itching and a rash, and the biggest indicator of a scabies infection is intense nighttime itching. When a person goes to bed, they'll have severe itching. Usually normally see scabies in the webbing of fingers and skin creases: elbows, armpits, groin region, waistline, knees, things like that, is normally where you're gonna see scabies when it starts. It can spread obviously to other parts of the body. It can spread to other individuals, but it would take close contact to spread the scabies to another individual. Usually the scabies might, if it's away from human skin for two to three days, it will die

without a host for that long. Probably worst case of scabies I ever saw, this was a number of years ago, I had two football players come into the office in like January or February, and they were complaining of itching, not being able to sleep at night because they were itching like all over. I had the two individuals take off their shirt, take off their pants, and we kinda did a skin check of them, and they had scabies, tunnels, whatever you wanna say, all over their body from pretty much head to toe. And come to find out they had moved into the dorm in August for football camp and they were roommates and they hadn't washed their bedsheets since August. So they were sent home for a period of time, their room was fumigated, and they basically had to do like a full-body bathtub emersion treatment every day for like two weeks to get it to go away, 'cause like I said, the scabies will burrow under the skin, it lays eggs under the skin, and then the larvae come, they hatch and they come back out, and they'll leave little tunnels under the skin. You can kinda see it a little bit in this picture here. The rash kinda looks like little blisters or pimples, but they don't really have a head on 'em, they're just kind of raised bumps.

People will like try to pop 'em like you would like a regular pimple and there's really nothing in them. There'll be like a clear fluid that kinda oozes out, but you'll see it between the, like I said, this is the webbings of the finger, is normally where you'll see it first for scabies. If you have individuals that come down with scabies, you need to make sure that all their clothing, all their bedding needs to be cleaned. Temperature of a 122 degrees Fahrenheit for 10 minutes will kill the scabies mite. They might possibly need to fumigate the house, the bedroom where the individual is sleeping to get rid of the infestation, kinda like you would with bed bugs or something like that, and the scabies mite is microscopic, you can't see that. Also, washing or getting rid of pillows, hats, coats, things like that. Not necessarily getting rid of hats and coats, but at least washing them, putting them through high heat to kill any mites that might be in that there. Couple questions here, going back a second. How long do you have to be on antiviral treatments before returning back to sports for herpes simplex 1? The

recommendation is 120 hours of treatment of medication at least before they return back to sports, and then that also, you also wanna look at the appearance of the lesion, is it crusty, is it firm, is it dry, have they not had any lesions in that timeframe. I've had individuals that have been on treatment, they hit that five-day mark or that 120 hours of treatment, and they're like, okay, I can go back to play, and I'm like, no. Yes, you've been on medication for the correct amount of time, but it's not healed and you can't go back to play till that is completely healed, and it's coverable then too, so good question. Another question here. Was there medication in the tub to help with the scabies removal? Yes, there is a, and that's the next slide here for treatment with scabies is, there is some lotions, there's some cream, so when they were doing that sort of tub soaking, they had something that they added to the water to help with that. So there's the scabicide lotions, there's creams that can be used, and those need to be used head to toe just to make sure that it doesn't spread to anywhere else on the body.

Yeah, and it's a permethrin cream, it's 5% permethrin, and it's called Elimite, is how I say it, I don't know if that's correct or not, but that is the scabicide lotion and cream that will help with that, and obviously, just with many of the other things that we've talked about today, the sooner you catch that before it spreads, spreads on the person themselves or spreads to teammates, the better that will be. Return to play? The athlete must have a negative scabies prep at competition time, and your physician can help you with that, with the lab work for that, and at least 24 hours after treatment has began can they go back to play. The other thing with scabies I forgot to mention was, any locker rooms and things like that, if it's on a team, probably need to have those cleaned and sanitized too, if they aren't already. Question here, what is a scabies prep? Scabies prep is just a, they take it, they scrape the area, from what I understand. They scrape the area, put it on a slide, and look at it under the microscope to determine if there is actually scabies mites present there. That's my understanding of what a scabies prep is though. Good question. Okay, moving on with it. Okay, bed bugs, and I

put this on here because we've seen a couple cases of bed bugs, we've had teams traveling, spring break, things like that, staying in hotels, staying in townhouses and things like that, and kids come back with beg bug bites. Hopefully they don't bring the bed bugs back with them, but a little bit different than scabies. Bed bugs are visual, you can see a bed bug, whereas a scabies mite you cannot. So the bed bugs tend to be sorta small, oval, sort of brownish insects, and they live obviously on the blood of humans and/or animals. They have, they're sort of flat, and they're about the size of an apple seed. If you can imagine how big an apple seed is, that's about the size of the adult bed bug.

The bodies do get bigger after they feed, and they tend to be more of a reddish color then. They're not known to transmit any diseases that I found in the literature. Normally they're gonna be found in mattresses, along the edges of the mattresses, in the creases, box springs, the bed frames, and the headboards. If you Google obviously bed bugs, there'll be all kinds of different things on what they look like, what kind of droppings and things that they leave, so if you're inspecting a bed or something in a hotel before you stay there for yourself. The bed bug bites is obviously normally what we see or what I've seen kids come in with. They've got these spots on their legs or their arms or something like that.

The bites themselves are painless. You can't necessarily feel a bed bug bite you per se, but they turn into itchy welts, and they tend to be on areas of skin that are exposed while you're sleeping, so depending on what you wear to bed, legs, lower legs, arms are the common areas, but obviously, you could have a bed bug bite anywhere on your body. And they don't tend to have a red spot in 'em like flea bites do, if you've seen cases of flea bites. They're red bumps, there'll be intense sort of itchiness that'll get with the bed bug bites, and they tend to appear in a linear row. You can kinda see it here on the leg, the bites are in a row for the most part, up and down this way, maybe across here, 'cause the bed bug will feed, take a bite, move on, and they just tend to

go in straight lines. So that's the bed bug bites. A little bit different than if you would see like flea bites. If you have anybody that you've seen with flea bites, flea bites tend to be more toward the ankle, the lower leg too, but they are almost sort of randomly scattered over the skin, flea bites. So flea bites, bed bug bites, kind of look similar, but the beg bug bites will definitely be in sort of a linear row, and like I said, most commonly found, face, neck, arms, hands, areas that are exposed while you're sleeping. Prevention of bed bugs, be vigilant when you're traveling. Putting your suitcase and things up on the stands that are provided, not setting your suitcase on the bed itself, taking clothes and things like that, washing and drying the clothing on a high heat will help to kill any bed bugs that maybe have traveled along in your suitcase. I tend to, when I get home from traveling, I'll leave my suitcase in the garage for a couple days, depending on what's in there, to let them maybe hopefully freeze to death as cold as it is in Ohio today. Treatment-wise, just cleaning the area in general.

Pesticides, there are obviously pesticides that people use for bed bugs, and their treatment and killing that way, so, anyways. Next sorta section here is, are ticks. I wanted to talk about ticks a little bit 'cause you'll see them on skin, or bites that show up on their skin. There are three sort of things that were sorta commonly, diseases that are sorta transmitted by ticks. You have Lyme disease, you have Rocky Mountain spotted fever, and then something called alpha-gal syndrome, and we're gonna talk about each of these in a little bit. So Lyme disease is transmitted by the deer tick, and that's what you see in the top-right picture, is a deer tick. If you live in the eastern part of the nation, obviously Lyme disease is, I don't wanna say fairly common, but is more common, and then Rocky Mountain spotted fever, and that's caused by the dog tick and the wood tick. The one thing I wanted to touch on here was alpha-gal syndrome, and that is transmitted by the lone star tick, and that's what you see here on the bottom right, and it's a tick that has a little white spot in its back. And these are found pretty much across the United States. We have them in Ohio, in the southern part of Ohio, but the alpha-gal syndrome is like my like worst nightmare I think because if

you're bitten by a lone star tick, you can develop what's called alpha-gal syndrome, and you actually develop an allergy to red meat. Our provost's husband actually has this. Didn't know he had it and he went out one night to, had a hamburger or steak or something like that, and he had a severe like anaphylactic allergic reaction. They had to go to the hospital and everything. And that allergy to that red meat lasts for, from what I've read, from like four to six years, and then it just kinda goes away. So that's five or six, four, five, six years of eating chicken and fish, so no steaks, no hamburgers and things like that, so that's one thing I just wanted to bring up that's sort of a newer syndrome around. Tick prevention? Every once in a while we'll have some tick issues, not too many though.

Obviously baseball, softball in the spring, is usually where it's most common. And this is just sort of for your own prevention too as maybe you're out hiking and doing things like that. A chemical repellent with DEET, permethrin, picaridin, those are things that will help to repel ticks. You know, I always tell people to wear white-colored protective clothing, 'cause you can see a tick easier on a white shirt than you can on a black or a brown shirt. Tucking your pant legs into your socks to prevent them from crawling up your shoe, up your sock, and then under your pant leg, so that's one way to help prevent that.

Obviously avoiding tick-infested areas, areas that have longer grass is where you're gonna see ticks. Check yourself and your pets daily. We've had, for the past two springs and early summers, we've had pretty bad, I don't wanna say tick outbreaks, but dog comes in with a tick on him or something, even though they have, they're on medication, they still can bring the tick in on their skin even though it's not attached to them, so different things like that. And there are, you can obviously Google it, but there's ways to remove ticks, obviously with tweezers, getting as close as you can to the mouthpart that's going into the skin and pulling them out. The picture you see here on the right is sort of the typical sort of tick bite sort of bullseye with the center and

then the ring around it. So if you have a tick bite, it's always obviously beneficial to go to the physician, have them take a look at that to make sure you didn't contract something from the tick bite. Couple questions here I'll go through real quick. How do you check for bed bugs if you're traveling in hotels, et cetera? What I would do is pull the sheets up off of the bed, check around the headboard, around the mattress itself. There'll be little brown spots where their feces or their droppings will kind of collect. You might see, you might actually see a bed bug. I've never physically seen one myself, but I would check, pull the sheets up off the mattresses, off the box springs if there are, and look around those areas for like little brown spots. If you go on to Google and type in bed bugs, you know, mattress, something like that, you will see a bunch of different pictures of what you're kind of looking for with bed bugs there. So, good question.

Lyme disease, is it curable and is it contagious? It's obviously contagious from the ticks, but Lyme disease sort of presents itself as sort of flu-like symptoms, aching, soreness, things like that. If you identify that you've contracted Lyme disease, obviously if you see a bite, something like that. If you start the treatment, there is some treatment for Lyme disease if you catch it in its early stages. It can be fatal as it goes on and gets worse. If it's not treated, it causes some neurological issues I believe. So but you can't catch Lyme disease from another individual. What tests confirm these diseases?

I assume you're talking about Rocky Mountain spotted fever and the Lyme disease and things like that. As far as I know, I'm no expert in those things, but I would assume most of them would be blood. A blood sample would probably help to confirm some of those. Obviously with the alpha-gal syndrome, there are no other symptoms than obviously eating red meat and having that allergic reaction that comes with that. Okay, moving on. Other thing I wanted to touch on, I didn't include any skin pictures of spider bites 'cause some of them are kinda nasty looking, but there are two spiders that you

need to be aware of that can cause serious damage obviously to the body. The brown recluse, which is the picture you see on the bottom left with the penny. Sort of an innocuous-looking little spider, but brown recluse bites, if you Google brown recluse bites, they cause a pretty large necrosis of the skin where the bite is, almost like a MRSA wound after it's been debrided, sort of a hole in the skin, and that can cause serious necrosis with the brown recluse bite there. And then the black widow is included there on the right, and obviously the black widow spider, from the bottom it's a black spider as the name says, but it has that little red sort of hourglass on its abdomen. And brown recluse bites obviously can be pretty dangerous and in potential cause some skin death along with those. So those are just two to kinda be aware of if you have those in your area. Flea bites, I mentioned flea bites earlier when we were talking about bed bugs.

I just included a small slide here. They're different obviously than the bed bug bites. They tend to be a little bit smaller. They tend to be a fairly irregular pattern. Normally see them on ankles and feet, and obviously, the people that have flea bites normally have some type of pet, a cat or a dog or something like that is normally where you'll see flea bites with individuals, but just recognize the difference between those and talk to them about prevention and getting their animals treated and then also themselves and possible fumigation.

Dermatitis is one that I included here, is because it's pretty common. There's a bunch of different types of dermatitis that you might see your athletes come in with. The contact dermatitis is the most common probably. They come in, the skin comes into contact, direct contact with some type of allergen or irritant. Seen soaps, cosmetics, fragrances, jewelry can cause contact dermatitis, and obviously poison ivy can be considered a type of contact dermatitis. We've had a couple issues. Obviously it's usually, the ones I've seen have been from, they change what soap they're using, their laundry soap they're using. It's been a number of years ago here, but in the middle of

football season, for whatever reason, the equipment manager had to change what type of laundry soap he was using to clean uniforms and the things that the guys were wearing on a daily basis, and it'd been the same soap they'd been using for years, and when they changed soap, that next week, all, I don't wanna say all the football team, but a good majority of the guys had some type of contact dermatitis, usually where their t-shirt was at, or their shorts, or their compression shorts were at, so if you see something like that that's in the shape of where the clothes are at, you're normally gonna be looking at maybe some type of soap or something that's been changed that's gonna cause that. Obviously there's gonna be a red rash wherever the contact was made. Avoiding the irritant or allergen obviously is gonna help to prevent further inflammation of the dermatitis.

And there's all types of over-the-counter, hydrocortisone cream, Caladryl, those are just two of the things that I can think of off the top of my head as far as creams and medications that are gonna help to reduce the itching wherever the case may be, or wherever the case, wherever the dermatitis might be. I've seen some, I was looking online, there was some like I wanna say temporary tattoos that people had put on their skin, and when they washed the skin off, they still basically had the tattoo because the dermatitis was in the shape of the rub-on tattoo on their arm or their back or something like that, so those are some interesting different things that you might see there.

Cold urticaria is one of those things that maybe you've seen, you see it every once in a while, people have cold allergies, cold hives. Take a ice bag off of 'em and you can see where every ice cube was at in the ice bag. They tend to be obviously raised welts, they're sort of swollen, or kind of both. Hives or urticaria are usually localized itchy areas, they're swollen. They're fleeting, once the skin warms up, they usually go away fairly quickly, but that's one thing that you might see. And most people that have sort of a cold allergy or cold urticaria that's happened to them before are gonna know it and not use ice as much as they would before or use it at all. And those raised welts are

gonna last, usually last less than 24 hours and then they're gone. They don't leave a trace, there's no scar or anything left behind there. So, okay. All right. Well, that is, I'm sorry, but that's everything that I've covered today, so I would be more than happy to take any questions and all questions that I can clarify from anything that we talked about today. My email address is listed there, my office phone number is listed there, if there's anything that anybody comes up with during seasons, I have people text me, people on staff that come to me all the time with different skin diseases and people text me pictures and things and say, "Hey, what's this? "What do you think this is?" Not that I tend to be, not claiming to be an expert on anything, but I've seen quite a bit, so, I'll kinda start combing down through some of the questions here, if anybody has anything, feel free to type them in and I'll try to answer them as quickly as possible. First question is how, is about Lyme disease. How long is the incubation period before symptoms start? I'm not sure on the incubation period with Lyme disease.

I think it's a little bit of time, between a week or a month I'm gonna guess, but I can't give you a definite answer on Lyme disease as far as incubation period goes. Is permethrin the active ingredient in Off, Cutter, et cetera? Permethrin tends, I use a can, I'm trying to think of the stuff, what it's called. Oh, it's Permanone, is what I use, and that is a spray that you can buy, I can't remember who sells it, but with that spray, you actually treat your clothing, you don't actually put it on your skin.

You treat your clothing, let your clothing, you hang your clothing up, spray your clothing with the Permanone, it has permethrin in it, and that is really good at keeping ticks off. I'm in the outdoors quite a bit in the fall and in the spring, so I treat most of my clothes with the Permanone. Most, the active ingredient that you're gonna see in Off and Cutter, most of those, the active ingredient is gonna be DEET, and a lot of those will say, they'll give you a certain percentage of how much DEET is in them. And there's obviously some side effects, possible cancer-causing things from DEET, so that's why I use the Permanone, because it's not going directly on my skin, and it's

going on the clothing, and I feel a little bit safer using that than putting bug spray on my skin, but that's just me personally, so good question. How do you approach doctors if you suspect a skin infection in your athlete? What kind of responses have you received? There's sorta two parts to that. I've dealt with a number of doctors and nurse practitioners and things like that that we've had here at the university, depending on what type of skin infection it is, a lot of the times I'll go, I'm a little different situation than maybe some people are if you're a high school setting, if I have an individual here and I'm pretty sure I know what the case is, I'll take the athlete to the doctor myself, I'll go with them to the visit and say hey, I think it's impetigo. I did have a couple issues when I first started with physicians that were a little conservative, and I don't wanna say I questioned their diagnosis, but sometimes their diagnosis wasn't always spot on. So that can be a touchy subject, but it's getting that respect with your physician and what you're working with.

And sometimes it's even sending, sending documentation with the athlete, saying this is when it started, this is what it looks like, this is how much bigger or smaller it's gotten in the past day or two. So that's sort of how I've dealt with athletes in going to see the physician there. I hope that kinda answers your question. Next question. Also West Nile virus has an incubation period before it shows signs and symptoms. I've heard of West Nile virus, but I'm not, I can't tell you what the incubation period is there for that. I would assume it's probably similar, but that's just my guess. What actually causes hives?

The hives, the urticaria that we were talking about, is sort of that skin reaction to the cold where it becomes swollen and itchy, so it's going on obviously at the cellular level where they kinda have that irritation, and I've had it. My daughter actually kind of had a cold allergy when she was younger. If she would go outside and play in the snow, her skin would get, where the snow would touch. She came in one day and her whole hands were all red and swollen, so it's that irritation at the cellular level with the cold,

and sort of actually being allergic to cold basically with the hives. A comment here. Incubation for Lyme is five to seven days, and a blood test obviously to confirm that. So thank you for that. If you have an athlete with cold urticaria, how can you deliver cold without causing the hives swelling for injury? Any risk in those, any risk in swimming for those people? Okay, so two parts. If you have an athlete that has a cold allergy, you can try using like a cold whirlpool, would be one idea there with that, 'cause the cold whirlpool isn't gonna necessarily be as cold as the ice directly on the skin. You could try a thin towel between the skin and ice to see if they still have a reaction that way, just so it's not as cold as the ice directly on the skin. If you have, you can also try like a Game Ready unit.

That would be another way of using cold for an injury. If you have someone with cold urticaria, let me think, obviously you probably wouldn't wanna use ice massage. That would probably cause the same as an ice bag would. You maybe try a ice bucket, but I would lean more toward maybe cold whirlpool, using a towel under the ice, or some type of Game Ready unit would be my three suggestions for that. Any risk in swimming for those people that have cold urticaria? I don't know. Unless your pool is really cold, unless I'm reading that question wrong. Are there any herbal supplements that could possibly be a fungal prevention? Living in Florida and many parents don't like chemicals.

Ooh, herbal supplement that can, could possibly be a fungal prevention. Not that I'm aware of. I'm sure there's probably some anecdotal evidence out there for herbal supplements maybe, but I'm not familiar with anything in the literature or anything that I've read about fungal prevention with herbal supplements. Yeah. Okay, I'll keep going down the list here. What's the best way to remove a tick? Isn't it bad if the head breaks off? The best way to remove a tick, and there's a bunch of different instructional videos and things out there, obviously don't burn ticks off, don't pull 'em off with your fingers, things like that. Don't pour alcohol on 'em, things like that. The best way is, there are

special-made tweezers that are very tiny that you want to put the tweezers down onto the skin and then try to pull, how to say this, pull the mouthpart directly out of the skin without sort of pulling the head off or getting the tick to sort of regurgitate into your skin. The closer you can get those tweezers to the body part that's actually penetrating your skin, and obviously the sooner that you can remove that tick before they become more embedded in your skin and start to swell and feed, and you'll, I've had a couple tick bites, or ticks on my skin that I've had to pull off, and you'll kind of, you'll feel 'em. The ones that I've had, you'll kinda feel sort of a pinprick like a bug bite would kind of feel. So the closer you can get to that head of that tick next to the skin and slowly pull them out, and then usually treat the area with rubbing alcohol, some type of neosporin, something like that, and then obviously watch that area over the course of the next couple days to make sure you don't develop sort of that bullseye sort of Lyme disease indicator.

And then obviously go to your physician. Okay. How does one contract the fungus that causes tinea versicolor? It's a yeast, it's a fungus. The spores obviously with most funguses are in the air. It's just that you've created a great environment on your skin for that fungus to attach and start to grow with the tinea versicolor. Like I said before, with any fungus, the drier and more, the drier that you can keep the area, the better. It'll keep those funguses from growing, so keeping it dry. Obviously if you can, I don't wanna say keep it cold, but a fungus obviously thrives in those dry, warm, or those moist, warm environments, so. Another question here. If a wrestler is not known to practice proper hygiene, would it affect participation to competitions? If someone, if someone, if someone smells, if someone smells, no offense, and another athlete does not feel comfortable competing against him but he does not, I'm trying to scroll again, it's a long question, but does not want to offend the other one... How do I wanna answer this? If a wrestler does not practice proper hygiene would it affect participation in competition? I've known some wrestlers, not, well, I shouldn't say not on my team necessarily, but I've heard of guys talking and telling stories that so-and-so wouldn't

shower, so that they would smell and somebody wouldn't wanna wrestle them, but as we're doing, as I do skin checks for wrestling tournaments and meets and things like that, throwing a wrestler out of competition because they smell isn't, it's not against the rules. It might not be ethical, but it's not against the rules. If there's some other reason that they need to be ruled ineligible because of their hygiene, obviously if they have some type of skin disease, that's basically what I'm looking for. We're looking for obviously skin diseases when we're doing the skin checks. We're looking for participants to be shaved, although that's changed a little bit in the NCAA now, and we're also looking at fingernails to make sure that they're cut and they're trimmed.

So those are the three main things that I'm looking at when I'm doing skin checks with the athletes before competition. You know, I've said stuff to the guys before about you smell terrible, you know, go shower, and sometimes they usually have an hour or two between skin checks and weigh-in that they might go shower. It might just be a temporary body odor issue that they are having there 'cause they were cutting weight or something along those lines, so. Have you seen any parasites lead to lymphedema? No, I can't say that I have actually. I've only seen a couple of parasitic issues here and there, the bed bugs, the scabies, and things like that, but no, I have not. When your athletes is with an active viral or bacterial infection and you are seeing them for something like an ankle sprain, is it still appropriate to continue therapy and treatment?

Yes. It would depend on a couple different things. So if an athlete comes in with an active viral or bacterial infection, obviously you need to be, if you're treating them for an ankle sprain, like you said here in your example, being very careful of where you're treating them, how you're treating them, where you're touching them, obviously, and using proper hand cleaning and sanitation, but then obviously, on what equipment they're using. Your viral/bacterial infections, a lot of them that we talked about today are gonna be in the head/face region, so that shouldn't be an issue, but if they have something on their lower leg and ankle, I would be very careful, you know, that you

don't transmit it to yourself, and/or you don't transmit it to other patients that you're seeing in the clinic, whether it's being on a table, wiping things down and sanitizing, those type of things. So I guess it would sorta kinda depend on where the infection's at, how severe it is, can it be covered too, could you put a dressing on it to cover it temporarily while they're in therapy, those are some things that I would look at as far as treating them, doing their rehab and doing their treatments. Using e-stim pads is another thing that I can think about. That would be the proper time to just use, give them their own set of e-stim pads and then clean those on a daily basis so you don't keep spreading it back to them, or using a different set every day if your budget allows. So yeah, good question. Is there a way to confirm bed bugs have been killed? If you see them dead I guess.

No, if somebody comes in and sprays, that's supposed to be fairly good to kill them. I saw a documentary a while back where they were using beagles, like drug-sniffing dogs that are specially trained beagles, to sniff out bed bugs in hotels and things like that, but confirming that they've been killed, obviously seeing them dead, and then the bites going away and not starting back up would be a good way to confirm that they've been gone, but visually inspecting things, maybe even getting a new mattress and throwing your bed springs out would be another option. If, next question here, if the head breaks off, will it eventually come out by itself?

I assume you're talking about the ticks that we were talking about. It probably will eventually come out. I would try to, if you can, use the tweezers to pull it out if you can, if it does break off, if you have a good set of very thin tweezers, and there are special tick-removal kits that have very small tweezers that are designed to remove ticks from people's skin. But I would try to get it out if I can, if I was pulling a tick off myself and the head stuck in there. Comment here. The Original Tick Key for tick removal three pack. Yeah, that's one of the things I was thinking about. There's a removal kit and they have three dogs that run with them in the woods and it works pretty well. I've seen that

used before. Okay, so that's one. Footwear suggestions for athlete's foot. What I have normally told my athletes, if they have a case of athlete's foot is obviously during practice they need to obviously wear their cleats or whatever they're wearing. So start with that, and then making sure that they're drying their practice shoes out between practices so their shoes are dry when they're practicing, so that's obviously as far as practice shoe-wear goes. What I have normally told my athletes that have a case of athlete's foot is when they're not at practice, to wear flip flops, sandals if they can. That lets the foot air out and dry out. Wearing wool socks and boots is not the best thing if you have athlete's foot because it's gonna keep promoting that sort of warm, moist environment as your feet sweat while you're sitting in class during the day. Obviously if they have athlete's foot in the winter, here in Ohio, that's a little bit different, but if they're gonna be in the dorm and they're not walking outside to go to class, wearing flip flops and sandals so that foot can air out and that case of athlete's foot will start to hopefully diminish, but the big thing is getting shoes, their practice shoes to dry out between practices too, 'cause if they're at practice for two or three hours and they put their cleats on from yesterday and they're still wet from the day before, that's just gonna promote that warm, moist environment.

Easy way is, for drying shoes out that I've used, is just taking newspaper, crumpling it up, stuffing it down in the shoes, and that newspaper kind of soaks some of the moisture up out of the cleats and out of the shoes and will help dry them out, and you can change that newspaper every couple hours as it gets moist. You'd only need to use that once or twice to kind of keep those, keep the shoes dry. Next question here. A lot of patients come with shingles, what could we do, send them home until recover as long as it's very, a lot of patients come with shingles... Shingles-wise, as far as treatment while they're home until they recover, you can treat the symptoms with that, but they need to, it needs to run its course kind of like chickenpox a little bit. The acyclovir, the prescription meds will help the severity and the outbreak of shingles, and hopefully, if you catch it soon it enough to make it not as severe, acyclovir is designed

to work on the herpes virus, and obviously shingles is a form of herpes. So you can treat, with the shingles it's sort of blistery, so you can treat the symptoms if they're having pain, you can take some analgesics if you want to lessen the pain with that, but that's really pretty much all you can do as far as that goes. Tinea capitis causes an infection. You mentioned this before. Tinea capitis is just ringworm. It just happens to be on your scalp. Your scalp is a different surface than your skin on your arm would be. So the ringworm, once it gets on the scalp, it attaches itself a little bit more strongly I would say than it would like on your arm.

So that's the cause of infections with the tinea capitis, is that ringworm getting actually into your scalp instead of the ringworm getting on your skin on your leg, or your arm, or your torso, or somewhere like that. Does charcoal insert help? I'm gonna assume you're asking about a charcoal, like, insert for the shoe. I'm not familiar with those, but I would think that the charcoal would help to maybe keep it a warm, or a dry environment, possibly. I'm not sure, I've never heard of that being used, but that would be something to research and kinda look at a little bit more to see. Hmm, okay, here's a comment from someone that's here today. Just a note, never tried it but I've heard of it, if you run a hot blow dryer over a mattress seam, the bed bugs will run out and make for a better visual inspection.

That makes sense, if they die, what the temperature was, 120, that we said earlier with the bed bugs, so a warm air dryer that, try that next time you go, go to the hotel and see if that works, and ask for a different room, so, interesting. Based, next question here, based on my years of experience, what's the most common skin infection condition you've seen with wrestlers? Hmm. Most common I would say is ringworm. That's probably the most common one that I've seen. Just 'cause it's not taken, I don't wanna say it's not taken as seriously, but guys are like oh, it's just ringworm, and they'll get rid of it. The second probably would be, after ringworm, would probably be folliculitis. That would be probably number two probably the most common that I've

seen. My first couple years here at the university, it was herpes, only because before I got here, our team went to Florida for a tournament over Christmas break and they didn't do skin checks, and, like half, I guess like half, I wasn't here at the time, like I said, half the team came back with herpes, primary herpes infections, their initial herpes infections. So we had 30 guys on the team and 20 of 'em had herpes, so at my first, when I first started, that was probably the most common just because there were so many guys, but we've obviously been here longer than that, so we've kind of, most of those, all those guys have graduated by now. So those are, ringworm, folliculitis are probably the two most common that I've personally seen, so, okay. What classification of infection is impetigo? Impetigo is a bacterial infection, is what impetigo is classified as. And impetigo is probably the, my opinion, it's probably the grossest skin infection just because it gets, it like, it oozes, it's usually quarter-sized, it can obviously be bigger, but it will sort of ooze for a day or two sort of a kind of a clear fluid, and then it'll scab up and sort of be a very honey-colored crust that encloses the impetigo, or over the top of the impetigo.

Then I've seen some, probably the worst, I mentioned the one case earlier, the worst case I ever saw was a kid had, how do I wanna say this, he had impetigo, or no, he had herpes on his face, didn't realize it was starting to erupt, he shaved, and then he spread the herpes over his face with the razor, and then also got impetigo over the herpes, and that was probably the worst thing, grossest, I can take a lot of gross things, but that was probably the grossest thing I've ever seen, so, alright, moving on. A comment here. I thought shingles only occurred on those that were 40-plus years old. Is it that common in younger athletes? How common is high school-aged, collegiate athletes? I've seen one, we just had a kid this fall, last spring, we had a kid that developed shingles. It didn't have, chicken, or how was this, he had had chickenpox, but he developed, it wasn't a very large spot of shingles, but he had a spot of shingles on his back. It's not that common, I think I mentioned that earlier, in younger athletes, but I've seen a couple more cases of it here in the past two years. A

lot of kids are, obviously there's a chickenpox vaccine that they can get now, so, yeah, it's not common as far as I know in college-aged, high school-aged athletes. You're probably not gonna see very much in high school, but maybe in college a little bit more. Does the ringworm of the scalp get mistaken for any other condition? Hmm, the one I think I mentioned earlier was, it first, a lot of the cases that I've seen of it, they'll say, yeah, I had this itchy spot, but I just thought it was dry scalp, I just thought it was dandruff or something like that, and they kept itching it. So that's one case, before the hair loss obviously, that somebody might think it's something else. That would be the one thing, but I can't think of anything else that it would, off the top of my head, that it would necessarily be confused with. And obviously, once the hair starts to drop out, that's kind of pretty indicated there.

Can, next question, can I cover the ringworm completely when I play? Yes, covering the ringworm with, we do it all the time with our wrestlers that have ringworm and they wrestle. There's a couple different things you can do. You could use a bio-occlusive dressing over it and then some stretchy tape around it, and it depends on where it's at too, if it can be covered. Other thing we've used is, oh, I'm trying to think, was it, Coverlet, Cover-Roll that you would use, like with McConnell tape, that, you can put that over, maybe cut a little piece of gauze, put that on the ringworm, and then cover it with that. That tends to stick pretty good.

And like I said, a lot of it depends on where it's at, what the sport is, and what they're doing, but yeah, I would cover it just so you don't transmit it to anyone else. Okay, couple more questions here. Cause of plantar warts, as far as I know, I don't know if I've ever seen a case. I've seen maybe one case of plantar warts. I think plantar warts caused by a virus, I'm pretty sure. I don't think I've ever seen a case of plantar warts in wrestling, to tell you the truth. So, sorry I can't be more of assistance with the plantar warts. Have I had any experience with head lice in the team environment? I have not had any experience with head lice in the team environment. I can't think of any time

here at the university where we've had any head lice. Normally when I hear head lice, it's my daughter coming home from school, you know, with something, you know, we've had a case of head lice in the classroom or something like that. You know, and depending on the sport, how is, who was the carrier of the head lice to begin with, how are you gonna get rid of it, and getting the treatment that you need to eliminate the head lice on the team, you know, not sharing clothing, hats, coats, things like that would be one thing I can think of as far as prevention there with head lice. How can one discern between tinea versicolor and a food allergy? The tinea, the thing I can think of, the tinea versicolor obviously is gonna be sort of those white patches of skin on the body that don't itch, they're not sore or anything like that, it's just a discoloration of the skin. If someone has a food allergy, I would think that would show up a little bit differently on the skin as far as redness, itching, things like that, as far as discerning between tinea versicolor and a food allergy.

Another comment here. I understand head lice prefer clean environments, so sweaty kids might make it difficult to transfer or survive. Okay. Good comment. That was the last question that I have here on my board, so if anyone else has anything, okay, here we go. A individual says they have a patient that's a beach volleyball player and his big toes crack all the time. They will close and open again and never fully heal. Is there any way to protect the wounds from sand? Ooh. I'm in Ohio, I don't deal with a lot of beach volleyball. I'm trying to think. They open, close, never fully heal. Is there any way to protect the wounds from the sand? Some type of covering when they're playing in the sand that's gonna stay on there. The person commented, finger condoms would maybe work there to keep the sand from getting in there. I don't know how long those would last on the toes in that environment. Moleskin might be a good way to cover that toe during play to keep the sand from getting in there. Dermabond, superglue, different things that I can think of that I might look at as far as that cracking. And obviously it sounds like he has pretty dry feet if his toes are cracking when he's playing in the sand, so that would be my suggestion. Okay. Oh, the person meant to say finger shoes not

condoms, sorry. Finger condoms might work too, but maybe not as good. And then somebody also commented Sand Socks would also work, so. Yeah, I've never worked with sand volleyball, so thanks for all the suggestions here. Next question. If a younger person has issues with getting skin infections, does that mean that the likelihood of them getting them when they get older is higher? I guess it depends on what type of skin infections they're getting when they're younger. I've had an individual here wrestling-wise, really clean kid, showered every day, but he was just really susceptible to ringworm, and he would get like multiple patches of ringworm. It might have something to do with their, I don't wanna say toughness of their skin, but how fair-skinned they are or dark-complected they are, some of those things are gonna have an effect on some of the skin infections. Obviously if you have something like herpes, that's something that you're always gonna have, but some of that might have to do with, you might wanna look at hygiene and things like that if they're getting a lot of skin infections as a younger individual, and hopefully their hygiene would maybe improve as they get older, so. Okay?

- [Calista] All right, that was the last question that's in the cue right now, but I do have one for you.

- [Ryan] Yeah.

- [Calista] Can you walk us through like the process when somebody comes in and you decide in your, when you look at them, that it's something that could be contagious, how do you go about discussing that with like the rest of the team, is there any privacy issues setting up the process of checking others, how do you report to the school, the AD, and other schools if they've been in contact?

- [Ryan] Okay. How do I say? So privacy depends on the individual. There's not usually, we don't usually have an issue with that if they don't want people to know. If we have, I

have had some cases, never my athletes necessarily, but I've had, there was an issue a couple years ago with a wrestling team that the coach new the kid had herpes, he didn't get caught in skin checks for whatever reason, their athletic trainer had to call all the schools that their individual wrestled and just say, hey, FYI, check your guys if they have any eruptions, they were exposed to herpes over the weekend at this tournament, so-and-so, and they knew who wrestled each other, so I've had to go through that before. As far as reporting things to the school, we've had a couple of issues, like I mentioned earlier, we had a MRSA outbreak here, five or six people, and that's something that, you know, we talked to the school about and we've put steps in to make sure that that doesn't happen again. But that was something that we had to report 'cause there was so many cases, I mean, there was five or six, but that had to be reported to the county health department. It was on the regional news that time. That's one example I can think of. And then anything that we get here obviously at the university that can spread quickly, like scabies, bed bugs, those are some issues that we've had to deal with and notify housing, student housing, our resident assistants so that they're aware of it, and we've done some educational sessions obviously with not only the student athletes on the teams, we do a yearly or twice-a-year thing about MRSA as far as hygiene and education and what to look for and when to report it. The issue we get is, kids, they catch something, and they don't say something about it till it's bad. They're maybe embarrassed that they have something and they let it go and they let it go and let it go, and it gets worse, so that would be, that answer the question?

- [Calista] Yes, I believe so. And I think that is all. So I don't see any other questions, I just see some positive comments. Oh? Oh?

- [Ryan] Thank you. One question here, as a PTA outpatient clinician, how do you approach the 73-year-old or the 20-year-old? I'm not sure what you're referring to there, so. Thank you all for your good questions today. It was a pleasure.

- [Calista] Thank you so much, Dr. Musgrave, for sharing your expertise with us today on such an interesting topic, and I've got a lot of comments coming in saying thank you for the course and great class, you know, thank you.

- [Ryan] Thank you.

- [Calista] And have a great day, everyone. We're gonna officially close out today's course.