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**Video Lesson: 01:13:52**

In today's module, will be taking you through a little of a journey on what it means to be a Chiropractic Sports Physician, both ethically and by foundational exercise. So, hope you enjoy this module. I had a lot of fun putting it together and we will see how we move through it.

**Let us first start with what is Olympism?** An Olympism was created by Pierre de Coubertin way back 120 years ago, and his whole concept was really the basis of what the Olympics stand for still today. His idea was really to make a global community of a healthy competitive-free, cheating, and discrimination-free society. This really is the basis of what we should strive for the Olympics to stand for and is a really fabulous concept. If you think about the playing field and what we try to promote in sports, it is the basis for a wonderful sense of friendship, togetherness, fair play, and integrity. So welcome to this concept and thinking about how we and what our role is and how we could make it a better place and promote the sport in a healthy way for the youth as well as for the professional athlete.

**So, why is this Olympism important?**

It is important because we are teaching and modelling excellence, friendship, and respect. Since so many athletes are role models for so many young children as well as all ages, we want to model this triad of excellence, friendship, and respect. I think that looking forward to promoting that from our point of view, we always wonder what our role is as a sports physician. We are going to be promoting this from the sidelines and going to be encouraging this type of behaviour. I think that really understanding where our role is, is important.

**IOC Code of Ethics**

The International Olympic Committee has a code of ethics that we should be familiar with as we are participating in Olympic as well as non-Olympic sports. All sports should follow this code of ethics because it creates a standard for our sporting community, which I feel is important. If we look at the International Olympic Committee and all of its members, all of the participants, all the organizing committees, and all the games participants and that includes us as healthcare professionals, we undertake a culture of ethics and integrity in our respective areas and we want to serve as role models for our self too and for our community.

We look at the fundamental principles of the IOC Code of Ethics, the number one fundamental principle is respect for the Olympics spirit, which requires a mutual understanding of a spirit of friendship, solidarity, and fair play. This really encompasses so much in what we think about what should happen on the playing field with athletes, respecting the principle of political neutrality, of Olympic movements, and maintaining harmonious relationships with state authorities. Thinking about that, when we step on the playing field, all socio-economic-political ties are dropped, and we are just truly there in the spirit of sport and fair play.

We have to have respect for our international conventions in so far as looking as they apply to the Olympic Games. Respect for human dignity, rejection of discrimination of any kind, whatever grounds that may be color, sex, sexual orientation, language, religion, political or other. Everything on the playing field should be what we call a Level Playing Field. We should just be there for the spirit of sport and the spirit of excellence in playing. That is what we are going to try to help maintain and promote as we work closely with these athletes as anybody else. Of course, we are looking to know forms of harassment or abuse, physical, professional, or mental of any type. In some instances, we are the guardians of this because we work closely with athletes, and sometimes an athlete might tell you more than they tell parents or coaches. You listening to that and understanding what your role is as we are looking to protect

the athletes in many ways. The idea of Fair Play is something that is been present since the inception of the Olympic Games. It is a priority for our Olympic organizing committees and the IOC, and this dates all the way back to the Greeks when they first started the idea of the concept of the Olympics. We want to still the values of Fair Play. Having what we call a Level Playing Field contest in the spirit of essential to the fulfilment of enjoyment and success of the sporting competition. Making sure that we are harassment-free and judgment-free as well as there is no discrimination, there are no political ties to who wins and does not win and making sure too that we are providing a Level Playing Field for athletes.

**What exactly is Fair Play if we look at it?** I feel like this picture really encompasses what we should really see a lot of them on the field. This is just amazing to me, is that athletes are there for each other. They are training together. They are competing against each other, but in the end, even different teams are there for each other and I think that is just the essence of what we are talking about with Fair Play. It is several fundamental values. You can read them here on the left side of the screen, respect friendship, team spirit equality. This sense of integrity, tolerance, excellence, and joy are the building blocks for Fair Play. And it comes down to getting on the field, laying it all out there, and doing the best you can do in the best of circumstances on a Level Playing Field.

**We are going to move on now to what is a Chiropractic Sports Physician.** We really think about it as you are taking this journey and moving through these modules and learning more about how to treat athletes, we need to think about what it is that a chiropractic sports physician is. It is not only the care of athletes and all the great new techniques that you learn, but we must think about whether we are there for their mental, emotional general health, and their preventive care wellness as well. Preventing injuries is just as important as knowing how to treat these injuries. Being the eyes and ears on the field if there is a situation that maybe we feel is not safe for, if the weather is not conducive to that sport, maybe the heat index is too high. We need to be up on preventing injuries just as well as being up on treating them. I cannot stress that too much, I do not think. A sports medicine practitioner consults with and cares for athletes on all different levels. You have to think about it, you are not only there for the elite athlete, but you are also there for all athletes. I think that being a Chiropractic Sports physician, you will see a lot of people in your practice that will come in that are weekend warriors or maybe they are just runners or maybe they are just doing their first 5k walk.

Those are all athletes in the frame of mind that I think of as an athlete. Somebody that wants to excel in physical fitness and do the best they can do. This way as you become a sports physician, you will see that you will use these tools for a myriad of populations. I think that this is really a critical set of skills to have for the practice. As we think about taking you on this journey of what it is to be a chiropractic sports physician, I think of a picture like the one on your screen at moment is sometimes that first line of triage treatment defence, preventive care or they are on the field for an athlete when they are injured. We need to know what to do when to do it, the right thing to do, and the correct order of events, and that is what we are going to go over today. We are going to teach you today how you should be thinking on the field and where your brain should be as you approach such an athlete like this on the field. What do you need to think of first, second, third, and so on? Then how do we work that athlete, all we back into the very successful return to play? That is going to be a little of the journey that we are going on today with this lecture.

**What does it mean again to be this chiropractic sports physician?** Do you have to work on the field or travel with teams? You do not. It is how it is whatever you want to make it. For me, I do travel with a lot of athletes and a good number of teams and work with a good number of athletes. But I also use all my skills every single day in my practice. I see athletes of all ages and all calibres, and it is just as rewarding if you want to stay in your practice. There is nothing wrong with that and treat, that is very successful. Do you want to practice a certain way? The nice thing about this specialty is you do not have to practice a special way. You can find what resonates best with you and what avenue you want to go down and how

you want to practice if we are practising in a safe way for the best of our patients. The philosophy of the chiropractic sports physician is we want to really think about providing an optimal approach to the health of the athlete. If we think about that and think about all the hands that touch an athlete in a day from the training coach to yourself, or maybe they are orthopedic, maybe the EMTs on the sidelines, maybe physical therapist, massage therapist, understand that we sometimes form a community of practitioners that are working with an athlete. We must understand what our role is. That is a big part of your philosophy knowing in each circumstance, your role might be very different and understanding what we need to do in our lane, so to speak, staying in our lane, and understanding sometimes you will need to go out of your lane and know when that is appropriate. That is what we are going to go over today.

**What are the sports physician's responsibilities?** This means that we are operating a different role and the team that you were looking after. As we talked about, what is different, what do we need to do for that particular circumstance? How can we look at the situation differently? If we look at other health care professionals, are we working alongside a massage therapist like this picture here on the left? We might be working with four other chiropractors. Whereas we travel with a team, you might have a physical therapist, a massage therapist, and an athletic trainer, to understand what your responsibility is for that event or that circumstance that you are in. What are our responsibilities as a chiropractic sports physician might encompass game-day treatment or seasonal coverage, preseason screenings, practice session, and care. It might be when you are travelling with the team. It might be where you just see them in your office on their off days. Understanding that your responsibilities could look very, very different depending on your circumstance.

Know the sport you are working with. Understand what injuries might be incurred by each sport so that way you are prepared ahead of time knowing that if we are working with gymnasts, those injuries are going to look very different from if we are working with the track athlete or a sumo wrestler, being prepared before you get to an event and really understanding what type of injuries you might incur on that day or with that population of an athlete is important. Look at the mechanism of injury for a sport. How did it start and why did it start? Thinking about each different athlete in a different way for what might be the causative agent for injury is really an eye-opener as far as diagnosing goes because really the diagnosis appropriately we really need to know that mechanism of injury.

Thinking about that as we move through this lecture today, what are our basic goals and guiding principles. We want to think about the treatment of injuries directly we think can also think about treating to improve athletes' overall ability to return to sport something that I am passionate about. I like to think about returning an athlete better than they were before correcting those functional faults and treating any underlying cause. We talk about this all the time. We could have a patient with low back pain, but is it from a faulty hip mechanic or faulty ankle mechanic? Are they missing doors of reflection? Open your mind up to look at the tracks and the mechanical faults and the whole system. We are going to go through this in later modules as well.

### **What is your treatment plan?**

What guides your approach to care? How do we want to go ahead and think about this athlete laying on the field? What am I going to think about? What is your greatest predictor of injury? I want you to just think about that for a minute. The greatest predictor of injury is past injury. If I have this athlete here laying on the ground and he seems to be grabbing his left leg, do I see a brace there? As I am approaching this athlete on the field, I am going to think about, does he have a previous surgery? Why does he have a brace? Did he recently sprain it, thinking about what is going to guide my approach to care there? How am I going to think about this injury a little bit differently than someone maybe that has no history or does not wear a brace or they just wearing a brace preventative?

Open your mind to those types of concepts. When we are treating two, what are we doing pre-practice? Pre-practice or pre-competition. What type of treatment and how is that going to look differently? Where do I set up? What does my role fit in? This is me. I travelled with USA track and field. I am working alongside an athletic trainer. We set up on the field. Sometimes you have shade, sometimes you do not, you have got to learn as you are travelling to a new location, you need to work with what you have and try to set up the best situation for an athlete, understanding your role and what you need to do pre-practice or post-practice, how those treatments are going to look different. We will cover that further as this lecture moves forward.

**Classification of sports injuries.** Are they acute? Are they chronic or are they acute on chronic? Very important to think about this difference. This is a picture of a patient of mine post cervical fusion. He kept on telling his doctor that he had some pain in his neck, post-surgically, and they just told him that was normal. Finally, when he took off the bandage and went in, he had a large infection at that surgical site. So sometimes you are the person that might be checking on this person regularly or seeing them more frequently than their doctor. Know your role again and know when maybe to intervene a little bit and take a look and guide somebody to refer them back to their doctor.

**What are the actual stats on sports injuries?** Which sports have the highest predisposition for injury and what are those injuries? These are all important concepts to know and understand, do we see more injuries in males or females? What is the difference? What about age groups? How do age groups play a role in what I am going to be looking at? We are going to be looking at that as we move through this. We talk about intrinsic and extrinsic factors in sports injuries, and this is important when you think about what the causative factors are. As we are looking at injuries of athletes, we want to think about how do these injuries originate, and can I manipulate that to get rid of those injuries? We know that the largest number of injuries are muscular-skeletal origin or muscular-skeletal origin, but these intrinsic and extrinsic factors play a huge role in these injuries.

If we look at extrinsic factors such as level of competition or weather or protective equipment clothing, these things could be problematic or not problematic. An extrinsic factor-like bracing or tape might help or hinder an athlete depending on how it is done or if the brace is effective or not effective. The intrinsic factors in sport are those that we can maybe a little more easily sometimes not manipulate or manipulate like age or gender. Nothing we can do with that. Hormonal changes also are huge for injuries. History of the previous injury, as we said, is a big predictor of future injury treatment so we can provide better treatments. That is an important intrinsic factor. Body type and size. Some of these things for intrinsic factors become a little bit more difficult to manipulate. We must up our game, I feel and investigate the cause of the agent of injuries. Just do not put your blinders on and see a knee spring. Yes, there is a knee spring that we need to treat and triage and take care of and rehabilitate. But we also need to step back out of that myopic view and get an eye on what is really happening to the system that might be predisposing. Do I have a fallen medial arch, and so I am getting a valgus deformity as we are stepping down and that might be more medial knee stress. I would have chronic medial knee problems. Thinking about these intrinsic and extrinsic factors is important when we are really trying to consider providing the safest, most successful environment for optimal performance of each athlete.

### **Placement within lecture: 0:19:56**

Here is a graphic on injuries in sport and you are getting an idea of what sport you are working with and what type of level of injuries you are going to be predisposed to. This is men's American football's highest incidents of injury and men's wrestling and it moves on forward down the line all the way down to women swimming, which we see the least injury. Know if you are covering a swimming event, we might see some shoulder tendinopathy, but likely you are not going to see a whole lot of concussions unless you are working synchronized swimming, of course, which has a high concussion rate. Thinking about what your predisposition is prior to covering an event or working with an athlete is also very important.

Women's soccer high incidence of concussions higher than men's soccer. One theory on that is that women do not have the strength in their necks as much as men do. This creates a little different scenario when we are considering how I am preparing to cover an event. What tools do I need to bring with me if I know that men's football is my highest, American football is my highest injury and I am asked to cover that type of event, same as wrestling. I am probably going to bring a larger kit with more supplies, right? Understanding which injuries I am going to see. In men's wrestling, I am going to see very different injuries than men's football. My kit is going to look different when I am travelling with is going to look different. Make sure you are doing your homework and really preparing yourself well for each sport that you are working with.

**Practices versus games coverage.** If we went back to that previous graphic, we saw that there are fewer incidents of injury in a practice than a game during games. During games, adrenaline is running higher, and when we researched this, we found that there was a much greater predisposition for injury on a game day. Understanding your practice might be a little more relaxed as far as supplies that you are there, you will still need your necessary supplies, but I tend to be a little more amped up with stuff that I bring with me on game day. What is the schedule that the athletes are holding? Are they practising early in the morning or late at night? How might this vary? How does the scheduled practice correlate with their nutrition? It is very important.

If it is a super early practice in the morning and it is a very hard practice, were they able to have breakfast? What type do I need to have fluid with some glucose in it? Do we need to have some type of fuel there for them if they are having a practice early in the morning? Or what about late at night is that post-dinner time. Do they have enough time to digest or what is my post-perennial movement looking like, in other words, are we going to get some abdominal cramps if they are runners. Thinking about that type of stuff, where your practice sits in the day, and how that might impact injury predisposition is also very important. Working with a team when you work with a team, what is expected each day? Am I covering the event? Am I just there doing paperwork on the sidelines? Am I required to report to coaches? Do the coaches only want a, report every evening, or do they want them as I see them? What is my communication with doctors. Am I working with a primary care doctor? Is the doctor on site all the time or do I just need to see the doctor once a week? What is my athlete's availability to see the doctor? Is the doctor going to come when I need him or again, is he only there once a week or twice a month? Do I communicate with families? We need to know about the age of the athlete and what are my release obligations. In other words, if this athlete is under the age of 18, tell me do I need a release from the family a written consent prior to commencing treatment? Do I have that on file?

### **Placement within lecture: 0:24:00**

This picture here is working at World's Games. This was rhythmic gymnastics making sure that we are having all our consents to treat, if there is an emergency procedure, making sure that we have a good line of communication with the coaches there. We are also working with local EMTs that covered the event as well. Knowing all these little details ahead of time, that way, when the situation arises, you are well prepared to act accordingly and you are not treating a youth person that you should not be treated, and we are not treating often a corner somewhere by ourselves that things are supervised and that we have proper coverage of the event itself. There are eyes on the mat or eyes on the field. If we are treating somebody separately, we need to make sure is somebody still watching the field for injury.

Working with a team can be really rewarding, to be honest, it is something I enjoy quite a bit. You have a patient-doctor alliance that you form, and you have consent to treat. You also need to understand that athlete's wishes. This was an athlete that I worked with at the world games. That was just, a truly great experience. This is a gymnast, and I think that understanding what the athlete's role is, do they want to express to the coach the full breadth of their injury? Do they want to be treated in a private area so that others do not see them strategically for competitive reasons?

We should understand all these things and how that might change the way we treat really looking to the athlete to make them comfortable in your treatment regime is something to think about. But also think about how you are protecting yourself in today's climate. We need to make sure that we have supervision with treatment and that we are not putting ourselves in a position where we are treating in a private area without any type of supervision. Looking towards those things, what is your obligation to tell the coach about an injury if the athlete does not want you to tell the coach. You do have a doctor, patient rapport there, and you are obligated to listen to that rapport first and above all things. And my best advice is an athlete does not want to relate to the coach about an injury, you need to ask more questions. Why? Is it just that they want to compete that day, or are there negative ramifications for reporting an injury, which I have seen several times.

You need to listen carefully and ask a couple more questions and think about the safety of an athlete. If an athlete does not want to report an injury to a coach, you need to find out the why. If you feel that that is not a safe environment for the athlete, you need to counsel them and strongly advise them and document that, that they need to disclose all injuries and you really need to let them know that it is not a safe thing. I find that educating the athlete, the super-intelligent people, they get it, and their bodies are the tool that they use to get their dreams or get to Optum performance. They are going to understand the negative ramifications of moving forward with an injury that maybe will be deleterious for their success.

**Is the age of the athlete a factor?** How do you need to think about that? I always will look at athletes and I think about what type of injuries might we see with different ages and different genders, thinking about the age is huge. What growth plates are open at certain ages? This is critical to know. If we are talking about a gymnast and we are talking about elbow pain, while patterns disease is only seen up until the growth plate closes, well, there is several growth plates in the elbow. At what age does each growth plate close and think about patterns, disease and thinking about that pendulum area of the elbow as the radius hits up against the humerus and slowly chips away, knowing that we see this in gymnasts, and we know that we see this in gymnasts that are younger than the age of 12 and post the age of 12, if we see an injury like this, we are going to call it something different. We are going to call it osteochondritis, really understanding all these different nuances for injuries and age and growth patterns and Salter-Harris fractures. If somebody's growth plate is open, really knowing where those growth plates are and what sport has a predisposition for which growth centre injury. At what age does that growth centre close because it is different for different ages and different growth centres, so embracing that knowledge, and in that way, I feel like you can more accurately diagnose an athlete and you can more safely return them to the sport.

### **Placement within lecture: 0:29:12**

If we look at this World Games event, if we look at this these two athletes here, they are two different ages? We have a male a little more muscular built. We know he is a little bit older, and we have the females, which are younger because they are light? If we want to be able to do these types of lifts and tosses here, we need to have some difference in age? Thinking about how the injuries will be so different depending on which of these athletes is injured? If we have the female part in this team injured. We are going to have a whole different set of theories and cerebral processes to go through than if we have the male counterpart in this team injured? Thinking about how we are going to determine that overall prognosis and outcome based on these factors.

Let us talk about the age of the athlete and how I want to move forward. If I have somebody that is close to those growth centres closing, I might be able to move them more quickly through injury through recovery versus somebody that has a wider growth plate. If we are talking about a Salter-Harris fracture, what type of, is it a type one type two type three? Those all take different durations to get better. If we have a type one Salter-Harris fracture and in a young youth athlete know that that might be a quick return

to play. Knowing these little tricks and what I call medical math will help us form more realistic return-to-play goals for ourselves as well as for the athletes. The gender of the athlete is an interesting concept to think about for injuries, women and men use their muscle groups very differently, and therefore their injuries are different. You will see hormonal changes in a female that are different from a male. Are there injury predispositions for that? How that might be different. For one example, we can think about a male, with a higher testosterone level than a female, of course. If they were to get a very large quad contusion, we think about their incidence of something called myositis ossificans is greatly increased. The testosterone will drive the calcium formation and they might be more likely to develop a myositis, whereas a female, not as much so. Thinking about how is that different.

If I have a deep quad contusion for a male athlete, let us say it is a football player. I think I would hold them out of the sport a little bit longer than the female in the same- the strength and the return to sport guidelines are the same, just because of that testosterone level, because I am going to see a quicker conversion over to a myositis ossificans which I would not see with a female. Understanding all these nuances for something as simple as a deep quad contusion will really help you again with that successful return to play because we really do not want something like myositis cropping up in an athlete that is going to preclude them from long term return to sport.

What are the stats on injuries to females and males? We talk about injury predisposition, let us look at some of these very interesting factors. Women have a decreased stroke volume because their heart is smaller. That makes perfect sense. But they have a 30% decrease in max cardiac output. If their stroke volume is decreased, they are not going to have the same cardiac output. We think about that for sport and think about because of that, the ramifications would be they probably have a higher respiration rate. They probably have a higher competitive heart rate as well, to make up for that decreased stroke volume. They have less total lung capacity than men. Endurance sports are different for females than males, just on the basis of physiology. But for some reason, women have a greater fatigue resistance than men equally trained, really interesting. If we think about that, that they are fatigued less than men, we need to also consider, how does that affect you when you are covering an event, understand that is going to take a female a little longer to fatigue. I wonder about heat exhaustion on a hot day. If they are going to last a little bit longer, does that mean they are going to be a little further along on that heat exhaustion train than a male might be, would a male stop sooner in competition than a female? We need to think about that. We know that men and women perceive pain drastically differently. Understanding those nuances and the physiology of female versus male athletes is important as we are grabbing this concept of what it is to be a chiropractic sports physician.

The interesting factor is that women outperform in cold water endurance challenges. That does not sound fun to me, and nor would I want to outperform somebody at cold water endurance, but that is an interesting piece of research there that I found. We need to do more research on that to figure out the whys. But we do know that that is the fact. If we look at ACL injuries and gender, just look at these two bullet points here. Women jump in land with their quads contracting. Men jump on land with their hamstrings contracting. Well, how is that different? How might that affect my ACL? If we think about the ACL and ACL is under most stress with knee flexion, foot planted, we are pushing off from its own internal rotation. But if I jump and land with my quads, how is that different than if I jump and land with my hamstring? If you jump and land with your quad, you are going to get that a little more anterior tibial translation, just based on where the quads insert. If that typical translation comes anteriorly with that landing, understand that is what the ACL's trying to prevent. In other words, that is predisposing them more for that anterior tibial translation. More stress on the ACL for females. Men jump in land with those hamstrings. That is preventing anterior tibial translation. If we think about this and I like to think about my basketball players, how do I train them in the off-season differently than the men so that I can counterbalance this? Things that we like to do is a lot of jump training and we like to retrain the females how to land and take off with more hamstring activation. This is something fun that we videotape in the

preseason for athletes as we work on them and then work forward to the postseason. We can see a drastic reduction in ACL injury. Catching these people early and retraining the use of muscle contraction would be just amazing to prevent so many injuries. Understanding the physiological process in healing when treating athletes and I call this term medical math. You really cannot see in this picture so well, but if we are looking at this track athlete, as he jumps, his tibia fractures. You can just about see the break in the tibia if you look at the bottom portion of the screen as he is taking off there. As we think about something like that, what is my medical math for a fracture? Because the first question they will ask you is when can I return to sport. Think about answers because you will be asked these answers and think about the type of fracture it is. Are we talking about surgical or nonsurgical repair? Why are you fracturing when you are just running and taking off? I think about what your bone density is like. Do we have a predisposing factor in the tibia? Was there a non-ossifying fibroma or something that might have contributed to the fracture? Or are we talking about vitamin D deficiency? This athlete has a very slight stature with a very thin ectomorph-type body type. Why would he fracture spontaneously? What is his diet like? We need to think about all these things when we think about an injury, not just the injury itself, and we need to step back and work on the why. What is the physiological process of healing?

If I am going to heal this patient, I cannot just myopically think about the fracture. Why did it happen, do I need to get vitamin D on board? Do I need to check some blood levels for vitamin D, look at an x-ray or imaging to see if I have an osteopenic situation and why. is that. Are there other predisposing factors to this athlete that may be predisposed? Think about as we are returning somebody to sport, let us look at the big picture as well as the small picture. If we really dissect a complaint of an athlete, which is one of my very favoured things to do, we want to think about so many things at once. The mechanism of injury, where we talked about the track athlete here on the left. We look at this baseball player on the right. What happened was he hit by a ball? Did his shoulder dislocate as he was pitching? I see these two coaches' just squatting down and saying what the heck is going on here? I think they are trying to figure it out first. We need to ask the athlete if they had any sounds with the injury. Did you hear any pops, any clicks, or any cracks? Do you have a history of the previous injury? We have talked about that earlier in this lecture. What is your quality of pain? Is it throbbing, burning, aching, stabbing? We know all these things from our chiropractic training, tells us a different story. Burning nerve pain, throbbing vascular pain, thinking about that quality of pain, can they stand and put weight on it? We know the Ottawa guidelines for ankle injury tell us something different if they could put weight on their ankle, then not as far as necessary for imaging, and could you continue playing? I asked this of all my athletes that come to my practice with an injury. It is a very important because it speaks to the severity. Sometimes you have the person that continues even when it is severe and you need to be able to tease out personality types too. But these are very, very important and necessary questions when you are trying to dissect the injury of an athlete.

Where did the injury occur? Was it on turf for grass? How is that different? We know that turf injuries are very different from grass injuries. Did it happen on the road? I always ask my track athletes. Were you running on a track, on a road or running on a sidewalk versus a road? Because a road may be curved. I want to know if they are on that curve surface, if they have, an injury of some type that might be from the surface they are on or if they are running on a flat, are they on hills? Are they on cross-country-type stuff trails? Is it a gymnast on a mat? Did she fall on a mat? What was the size of the mat? Was it an eight-inch mat? Was it a 16-inch mat? I need to know, was it just the St what we call sting mat, which is just the thin mat. All these things help to formulate the dissection of the injury. Are we in court? Was it a clay court or was it a grass court or was it a concrete court? One interesting story that I can relay is I was working with some soccer athletes, and we had a very large spike in sports hernias over a, at the beginning of a season and running through this one season. It was like exponentially high. I went to the personal trainers. I went to the strength coaches. I went to the regular coaches, and we looked at their training. How is it different? Was their preseason different? Is the warmup different? Is the terrain different?

It turned out that they had just gotten a new turf put down prior to that season, and when we looked at it and that was the only thing, I could figure out that was causing all these sports hernias. We went back to the turf company, and we had them come out and assess, and it turns out that the type of turf had a fault in it. It was one that they replaced and turned. There was no under-surface cushioning put down and the turf didn't give with the athletes, so it provided that quick abrupt stop. When they were kicking and swinging through, they were having problems. Do not negate the thing that maybe you think sometimes might not cause it. Once we fixed and had the turf replaced, guess what, no sports turn. We are going through and working through that terrain is important. We cannot just assume everybody's suddenly getting injured for no reason. Looking at these different surfaces thinking about all these different athletes and what type of surfaces they are on, and how does that relate to injury predisposition? What is your onset of complaint? Did it start when you were on the mat wrestling? Did you dislocate your shoulder when you were in this position here on the right side? I think about the man in blue that dislocation or did it happen after practice was over, which is going to speak to so many things, severity, injury type we do not spontaneously dislocate after practice is over.

What is the time of day, did it happen at night? Is it worse when you wake up in the morning versus at night? Has it ever happened before? When does it happen the most, what are you doing when it happens? Does it happen when you are sitting at the computer? Does it happen at a practice? Understand that not everything is a sports injury. We could have biceps tendonitis simply from leaning on your chair all the time as you are doing your computer work. Teasing that apart so that we are guiding them correctly. How are our treatments going to look different in different timelines? Let us talk about our pre-game treatment. It is going to look very different from your during-game care and your post-game treatment. Your off-season and on-season treatment. All these regimes are very, very different. If you are doing them all the same, I have to say we need to re-look at that. Let us look at pre-game or maximizing performance, we are facilitating muscles, we are turning on muscles, we are not doing a whole nice relaxing tissue massage, we are not going to get in there and do friction massage or something deep and irritating. We should be thinking about something like getting optimized performance, turning on muscle groups, into increasing tissue temperature. Your pre-game treatment should not be a long-drawn-out treatment, it should be something quick. Do not forget about the psychological component of pre-game. We do not want to get an athlete pre-game and say, this looks really bad, you are going to go out, and tear this muscle. This is not going to hold up very well, there is a huge psychological component to the sport. Please think about the words you would use, as these are powerful, so use those words wisely and choose the right adjectives when you are guiding an athlete and educating them pre-game, during the game, post-game, or anytime. The psychological component is critical.

Let us talk now about post-game, and how that is going to look different. We are going to triage injuries postgame. So typically, post-game, we have a time where the athletes can come. Sometimes it is the day after, sometimes it is right after. Come and show me your injuries, let us assess them. Maybe they weren't enough to stop you from competing that day, but it is enough to bother you now. I want to take a look at them the same day if at all possible. I want to reassess injuries that happened pre or during the game. This is all post-game. I want to grade and score to project care on any of these injuries. I want to develop my treatment plan post-game. Think about post-game as compression, stabilization, stretching, and flushing out lactic acid. Are you icing, or not icing? This is a philosophical question at this stage of the game. Think about that post-game treatment and how that is supposed to be different than pre-game, during the game, or pre-season and post-season. We are talking about that psychological component of post-game performance too. We can never forget about the words that we use and how it impacts the athlete. Talking more, a little bit about these psychological considerations, we are working sometimes multiple times a day or multiple times a week with athletes. Understand that the advice you are giving them is considered active care. I like to point out the positives and keep my athletes on a forward momentum of treatment. Even if I need to take a little step backwards in care, let us say I have a knee problem that is swelling too much with their current treatment plan and I need to reassess that treatment

plan and regroup, I try to think of something positive about that, as opposed to, "this is really bad, you have to stop, we cannot move you forward. You cannot do the marathon." I like to never close a door because athletes are pretty impressive. Their physiological healing time sometimes is more than impressive. I think that we as the practitioner nurture that and should understand that the athlete can take control of the psychological considerations in injury, so you need to give them those tools. If you are not sure or uncomfortable with that, please refer to someone who works with athletes. That way they can give them the tools to recover.

What are you allowed to do on the field for the athlete? There are different rules for every sport. If you are working wrestling once you pull an athlete off the mat, they might be done with the competition that day. With wrestling in some of the competitions depending on the level and type of wrestling you are doing; you only have a couple of minutes to assess. If you have two or three minutes to assess an athlete and you have to decide if they can return or not, you better be ready. So do your homework ahead of time and find out what sport you are covering and what you can and cannot do on the field with these athletes, and how much time you have. For wrestling, we have a certain amount of time to control bleeding. If I cannot control bleeding in that amount of time, they are off the mat. You better have your tools with you and have your bag packed, so that you can get to what you need quickly. Be able to move through your whole injury and your return to sport assessment in an efficient manner. This is you been prepared ahead of time. Do your homework, talk to people that have worked the event, and know the rules, as that will help you be successful, but we are there mostly to help the athlete be successful. It is not about us; it is about being there for the athlete. If we come on the field or on the map for a wrestler and we are not prepared and we do not have the right gauze, or we cannot control the bleeding, or we cannot really assess a concussion in a couple of minutes, they lose. It is our job to be well prepared.

What are we going to do on the field of play for examination when somebody gets injured? How does that look different than in your office or on the sideline? Remember, on the field of play, you need to be out there, you need to know what you are doing, and work through your series of events. It needs to be brief, but thorough. You must have a plan and communicate with the athlete. Knowing the athlete's previous history is a bonus. Working with a team is so nice, because you become familiar with the athlete's injuries. I think that that is something that speaks to our ability to be more efficient as you run out there. Is this a new injury or did they re-injure the same knee that was injured prior to the game? Can you transport the athlete? Thinking about our ultimate goal and guideline is safety for these athletes. We want them to continue with sport and reach optimal performance without getting injured more or suffering an injury that is precluding from the sport in its entirety. Thinking about that and how we are going to work through all these things and how we will do our examination on the field is going to be so different. As you come on the field with an injury, first, you are always checking scene safety. That is your basic EMS guidelines. Make sure everybody around you is safe and you are safe to approach the athlete. Do your primary survey, your basic first aid, ABCs, Airline Breathing Circulation, and then locate the injury. Some athletes are rolling around on the mat and not necessarily grabbing or pointing to the area of injury. Get them to take a breath, take a minute, talk to them and locate the injury. Do not forget about your pulses, your sensation of motor control. I always start with having the athlete calm down. What is bothering you? What is injured? Did you ever have an injury there before? Can you wiggle your toes? Can you wiggle your fingers? Getting the athlete to concentrate on controlling their body will calm them down. Communicate with the athlete in a positive way and be confident. Do not freak out and say, "Oh my, this is terrible." That is going to get them more upset. We want to avoid any shock-type situation to the athlete that might escalate the situation more.

I have had the worst of injuries, open dislocation fractures, dislocated ankles. By just keeping the athlete calm, you being calm and direct in your treatment, you would be amazed at how well it is handled from the athlete's point of view. Do you need to immobilize on the field? Do you need assistance? Do you have somebody on the sideline to help you if there is a problem? Understanding what, your protocol is. Can

the athlete walk off? Do we have to carry them off? Do I need help? If you are covering the event alone, how are you getting these people off the field? Do you have EMS on standby? Are they on the sidelines to come and transport somebody for you or you have got to call somebody and then shut the game down while you wait for somebody to get there? Working through all these things ahead of time, we will save a world of problems.

**Placement within lecture: 0:53:29** - Here is a setup a sideline football and thinking about what you are doing now on the sideline. We have seen the athlete on the field, we have evaluated them on the field, we have taken pulses, we know they have good strength, control, pain, but we are able to safely get them off the field onto the sideline. In other words, this would be the athlete that you did not have to transport to the emergency squad. They do not need spine boarding or any type of cervical collar. This is the athlete that you can safely get to the sideline to reassess an injury. They are not bleeding, nothing is life-threatening. Make sure that we are clear with who we are bringing to the sideline. Somebody that needs to go to the emergency department or to the hospital will not be in this category. They will already be transported. As you get an athlete to the sideline, you are going to reassess again. Sometimes on the field, there is a lot of adrenaline going, and the patient is nervous. They are not necessarily clear on what is going on. I like to just start from the beginning. I like to briefly run through my questions. Can you bend your knee? Can you straighten your knee? Where you tender? Then you begin your ortho tests. You are assessing these injuries in a little more detail. Safely get them to the sideline and then you can begin your in-depth sideline assessment, and as you get to the sideline, reassess them, can they be safely returned to the field, or do we need to transport them back into the training room for some treatment? Should they be off the field? Think about your staff you have helping you. Do I have people to take them off the field or do I have to keep an eye on them and keep them here? Sometimes if you are the only person working, you might want somebody up on a bench, table or sideline icing so you can keep an eye on them. Particularly if we had a head injury, do not send anybody back to a locker room alone or somewhere alone. We need to be reassessing these head injuries every five minutes or so. Please keep them with somebody or keep coming back to them frequently to assess them. On that sideline, we are going to do a more in-depth look at the injury. We start with, rule in or out injured structures and severity. Do we have a grade one, two, or three knee sprain or ankle sprain or is the shoulder dislocated? If it is dislocated, did it just sub-blocks and pop back in or is it dislocated and we need to get it back in there if your scope of practice allows, or do we need to transport it?

Who do you have on the sideline with you? Do we have athletic trainers to taper brace? Do we have orthopedists or doctors that can help relocate something that is dislocated? Do we need to splint? Do we need to get to the ER, or do we need a surgical console? You might pull somebody to the sideline and say, "You know what? I am thinking I need to get them off to the emergency room." Or you might bring the doctor over to where you are to take a look. If you are working with an integrated team, you have an athletic trainer there, so you might use the tools of the other people you are working with. But if you are the only person there, you are the only person there and you have got to run all this on your own.

Think about, are they able to return to sport? As you get your sideline plan and you assess them you may be thinking all right, it seems really mild, there is not a lot of swelling, no deformity, no ecchymosis, and no prior history of injury. Well, then we can start thinking about how I am going to return this athlete to the sport. Understanding some injuries, preclude them from a return to sport the same day, such as concussion. Talking to the athlete about how they feel, and establish their place as far as, do they feel they can stand and start trying some more functional evaluation? Do I want to tape it first? Do I want to give more stability? Is this competition important? It is a big factor. If it is an unimportant competition, then why am I pushing it and chasing greater injury? Or is it very important? Are they qualifying for a larger venue such as the Olympics or world games? Then I need to think about are they going to push it a little bit more with this injury? Then how I can facilitate that with taper progress.

When you are considering if they can play, we see here on the far left football players getting taped, we are asking ourselves, do I need to tape up the athlete, offer a brace, give a little more support. Do not forget, **it is safety above all else**. If you truly feel they are too unstable and they cannot return to play, please advise them strongly and pull the plug and get them off the field. Alert the coaches and make sure that your chain of command is executed properly. If you are deciding that they can return to sport, let us start a functional examination on the sidelines. This is a step-by-step process where we try to decide if the athlete can return to play. What are the criteria for them to be able to play? If we explore this though, we need to consider what sport they are playing and what is going to be required from each sport? What I like to do first is, get them seated and talk to them a little bit, paying attention to whether their pain levels are going down and ask what their pain level is on a scale of one to 10, 10 being the worst pain, of course, one being the least pain. Then we start moving in a stable position. I have them stand and walk a little bit. Let us pretend it is a knee or an ankle and then we see how they feel. If they have no pain, typically I will have them try to jog in place a little bit, and see if they have any pain or problem. Understanding, if they cannot perform a one-foot hop, they probably should not be running. Because, if we think about a run, it is a series of hops. If it is a football player, do they need to cut? As I get them to begin running and jumping, I need to see them cut. Understand the progression of this too. If they start running forward then maybe we do not want them to cut till the last functional evaluation. I usually have them stand, walk, hop in place, jog slowly, give me a medium speed, a sprint, and let us do some cutting. That would be my typical for a soccer player, football player type of functional return. To return on the same day, the athlete must not have a concussion or instability of any joint or any suspected fractures. They should not have any visual changes or any altered mental status, no vomiting, dehydration, or thermal injury. These are what I call no-goes. We are not allowing this person back on the field. That is a big, big, big chance for a serious injury.

Make notes on the athlete as soon as possible on the sidelines. I like to keep a notepad, this is great where you can just write, talk right into your cell phone or make yourself a list of reminders so that when you get back, at the end of the day you can more adequately fill in your electronic health records or your notes, however, you keep them. Make sure the athlete is safe and the chance of re-injury is low when you are returning them to play. Keeping an eye on what time of the season is it? Is this competition important? If it is early in the season, it is a preseason event or the first competition, it is not as important as the later season competitions. Understanding where you are at in that athlete season is important. Do we tape or brace on? Keep in mind what you can and cannot do. I cannot tape the bottom of a gymnast's foot. If she is going on the balance beam, that is going to be a problem. We need to think about that. Think about what tape is allowed. For gymnastics, for example, we need to have the beige tape. We cannot have tapes on certain surfaces because it will be a problem for the athlete. Like I just mentioned, on a balance beam for the athletes bottom of their foot or having an orthotic for vaulting, on their hand for an even bar, that is not going to work. Understanding what are you doing, why, and is it functional? Returning an intra-athlete to play, we also need to discuss the risks with the athlete. Make them part of the decision. They are in control of their bodies. Their body is a well-oiled machine, they know themselves better than anybody. Understand and have a conversation with them first and foremost, letting them know all the ramifications of return to sport, as well as non-return to the sport. Then our role is to inform the coaches if that is the relationship you have with the team, and that is the relationship you have with the athlete. But do not forget about that psychological part of the injury, it is huge.

We have done our secondary sideline, assessment as we discussed, the active assessment of the athlete, having them run, jog, hop, and cut. For a gymnast, I would put them through a whole different myriad of things. For example, for basketball players, we might have them shoot. After I have them run full speed, cut a little bit and change directions. Then I might have them try to shoot and pass. For a gymnast, I might typically start my sideline the same way as all others. Can you stand? Can you walk? Can you hop on your feet? Can you jog? Can you cut? Can you do a Cartwheel? Can you do a back walk over? Can you do a back handspring? Let me see a couple of these things. Working through what is functionally required from that

sport is very important. Watch carefully for changes in techniques. For athletes that are more motivated to return to play, we might have to be a little keener on their overall effect. Is there a change in mental status, are they trying to cheat their form to execute a task? How might that affect their overall performance? For example, if I have a gymnast with an acute gastroc strain and she is not effectively punching well or jumping off that foot for a skill, is she going to do a double back and fall on her head? We need to think about these things. If it is going to negatively impact them, it is got to be a "you can't do that, **no-go**". Sometimes you must make the hard call. Athletes need to know what they can and cannot do, and it is your role to explain to them, if you cannot punch, you are not going to be able to get the height needed to do that double back, or be able to land on your feet. Adrenaline is that powerful drug, we need to keep the goals realistic. Think about our medical factors, our sports risk modifiers and our decision modifiers.

**Psychological Considerations of athlete – Placement 01:05:18** - I cannot stress enough, do not forget about this one. Every physical injury has a psychological ramification. If you do not think so, you are mistaken. These athletes, this is all they have. Remember to play sport, be athletic, elevation and heart rate, has a changed, as well as so many chemical processes in the body, particularly for long-distance runners. Thinking about those changes and what is the early signs of depression, and how can I combat that? What I like to do is give them homework to do where they dance around the problem. If I cannot get them long-distance running, because of a foot injury, maybe I can get them on an upper-body pedometer, maybe I can do some core exercises, I can take this chance to regroup and train the upper body. Thinking about how you are going to calm at the psychological ramifications of injury and keep those lines of communication open or refer to the proper professional. We especially notice affect changes post-concussion. Paying attention to your athletes and their overall effect following physical injury is very important. There are some negative connotations, sometimes it is seeing a sports psychologist. I love the term, **mental strength coach**. Athletes resonate with that and then they feel it is a more positive thing versus a negative thing that you advise them to a psychologist, and the first thing they say is, "There is nothing wrong with me." Well, if I say I would like you to see the mental strength coach so you can build up your strength", that is something that resonates with them and they are more compliant. If you are thinking that would benefit an athlete, consider using that term. I use it quite frequently to help the athlete engage in a little more follow-up and a professional care.

We talked a little bit before about what your role is as you are working with a team. Are you the only provider on the field? Are you part of a team? Are you working with EMS? You need to know this way ahead of time, so you know not only what supplies to bring, but what your role is and staying in your lane, so to speak, or when you are going to be sending someone to EMS or massage. Working with a team is truly rewarding and it is great to pull on everybody's knowledge, but understanding you cannot do it all well. Utilizing that team helps the athlete exponentially. Communicating with the coaches is a critical and important part of treating athletes if you are working with a team. Think about how you can effectively communicate with the coach and how the coach accepts that communication? Different coaches perceive different injuries. I have worked with coaches that reject athletes with injury, I have worked with coaches that really embrace it and worked through it. You must feel that out and understand the position that you are in is a strong position for the athletes. You need to be able to open those lines of communication with the coaches up and the coach needs to respect your decisions. The coach also needs to understand your return to sports protocols so that you do not have an injured athlete where you have them jogging and he has them sprinting. Opening those lines of communication forms a cohesive team in the return to sport process and speaks to the overall success of the athlete's optimal performance and return to sport. In the United States, we have the US Center for Safesport. I love this. This is an online program that could be taken by coaches, medical professionals, and athletes. Basically, it is just an online curriculum that teaches everyone what safety and sport are. What is acceptable behaviour for coaches, healthcare professionals, and athletes, and what is not acceptable behaviour? Who is reportable, and who is not reportable? I think in today's society, athletes need to be empowered by knowing and

understanding what **is** okay and **not** okay. Particularly since the number of youth athletes is so high, these young children especially need to be educated and know what can a coach do, or cannot do? What is my avenue for reporting a coach for bad behaviour if I feel nervous to do it independently and approach him directly? This empowers the athlete, and empowers you, and empowers the coaches with knowledge as to what acceptable behaviour is. I strongly suggest using a program like Safesport just to get your team and staff and medical group all on board with proper protocols in sport and participation. This speaks to your ability of you to coordinate care with your team. Everybody should be on the same page.

Understanding your role and understanding the role of each person that you are working with. It makes for a just a terrific event, but also it really speaks to how much we can provide for those athletes. If we have post-practice flushing by massage therapists, wow, that is awesome. If we have pre-game muscle activation and our chiropractors are working on optimal performance, wow, that is great. So that team is great. Or are you everything? We talked about that. Take a minute to understand again, how you are going to treat differently before, during and after the game, or if it is just you that is working with the team.

Remember we have different approaches for different conditions. Some conditions have only one viable option for treatment. If we look at the picture here on the bottom right, that is a fractured tibia. We seem to have this tibia roll in today's lecture. There is not going to be too many courses of action, but check for pulses, peripheral pulses, get that person braced and get them off to EMS. We are not going to do any fancy treatment or braced or anything like that on this patient. All these different conditions that do have a myriad of approaches are pretty great, and I think to keep it interesting and fun. If we all did one treatment that would be boring. But take the time to talk to the athletes and ask what works for them. This is their body, they know it well, and they will have had several professionals working on them more than likely. Find out what works for them and build off of that instead of reinventing the wheel on a game day and maybe that does not work for them. Have a clear and defined role within your team. So having a team meeting and deciding who is doing what the night before, the month before, and the week before an event is very important. As you are leading up to the event, keep the discussions and protocols and procedures in place, review your emergency action plan making sure you have sat down with everybody and practised. Are we spine boarding, not spine boarding, using a cervical collar? Let us form the team and understand who is doing what? Practice. Take the time to practice. As you come together the days and months before an event that makes for a nice cohesive high, efficient team.

**What is your legal exposure as a team physician?** Some states/countries have travelled to treat laws, meaning you can go into the state or country and treat an athlete if you are travelling with a team. Somethings you have to apply for a temporary license to cover an event. You need to contact your insurance carrier and find out if you have coverage to work on the field and event and what your legal exposure in general contains?

Understanding this is different for different regions globally. Do your homework and find out what your exposure is in make sure that you are adequately covered.

Thank you so much for spending the time today with me on Module 2. Never stop learning because life never stops teaching. Somebody that believes in continued education and the most wonderful thing about this profession is I feel like there is so much to learn out there. So good luck as you proceed through these modules.

**[END]**