

Huffines Institute – Podcast Transcript

#172 – Karen Clippinger

- S1 00:00 Welcome to the Sports Medicine Podcast brought to you by the Sydney and J.L. Huffines Institute for Sports Medicine & Human Performance in the Department of Health and Kinesiology at Texas A&M University. At the Huffines Institute we're always working to facilitate, apply, and bring you the most up-to-date coverage of the wide world that is sports medicine and human performance - all in a language you can understand and share with your friends. And now, here's our host - the director of the Huffines Institute - Dr. Tim Lightfoot.
- S2 00:29 Well, hello, and welcome to the weekly edition of the Huffines Institute for Sports Medicine & Human Performance podcast. I'm your host, Tim Lightfoot, and I'm so glad that you took the time to download us and you're listening. Every week we strive to bring you an interesting person from the world of sports medicine and human performance and as we always say, and it's always true, this week is no exception. We have a wonderful guest with us here at Texas A&M that we've been given the opportunity to chat with. We have Ms. Karen Clippinger with us. Welcome to the podcast, Karen.
- S3 00:57 Thank you. Wonderful to be here.
- S2 00:59 Well, it's great to have you, I am going to take a minute and tell the audience little about you and then we'll just jump into our conversation. Karen is a professor at California State University in Long Beach. She has a Master's Degree in Exercise Science from the University of Washington. She specializes in functional anatomy for dance. Prevention and cure of dance injuries, body placement, and pilates. She has written at least two books. Dance anatomy and kinesiology - which it looks like I might to have to read, that looks pretty interesting - and pilates anatomy is another one. Again, welcome to the broadcast. We are so glad to have you. Tell everybody a little bit of what are you doing here at Texas A&M.
- S3 01:32 Well, I was invited here to work with various teachers and classes to really address the dance science part. Particularly looking at both teaching those students wanting to go into teaching and how can you bring this into the classroom to make it more practical to help your students learn more and hopefully prevent some injuries. Also on the younger student level just to help their technique, to help their performance. Understand the anatomy underlying techniques that they can hopefully perform with a little bit more ease, efficiency, and less risk of injury.
- S2 02:07 Now, I've always been puzzled, I guess, by the somewhat gap between dance science to some extent and exercise science. There really hasn't been a lot of crossover and it seems like there always could be or there could have been a lot of crossover over them. It sounds like you've made that bridge.
- S3 02:22 That's really one of my goals and I'm actually really excited here. That at Texas A&M, that you have your degree here-- dance science emphasis is within the Kinesiology department of the VSN Kinesiology, which is a little exciting. In our university, we blend so the students are BA in Dance Option and Dance Science, and it pulls from the Kinesiology department, Biological Sciences department, as well as the dance

curriculum.

- S2 02:48 There would seem to be so much to learn from both sides, but from the dancer's standpoint, so much more to learn about anatomy and the physiology and how it can help them with performance. And does that help them with performance?
- S3 02:59 It definitely does, on many levels, I think in the past there's been a lot of in-dance of just copying what your teacher did, and many teachers taught what their teachers taught them. So there has been less opportunity for the science to blend into it, that has, I think, in the-- because of the Olympics, and many other reasons blended into professional-- at least professional sports, and I'd say the last 20 years, there are starting to be more and more realization of how valuable the scientific perspective is for dance, and how much it can help dancers to be able to perform better.
- S2 03:36 Yeah, and it's just not injury prevention, it is better performance.
- S3 03:40 Yes, and so just as an example, if you understand more about what's involved in turning, and you want to do three executions of a turn, if you understand about alignment, and axis of rotation, and how you're generating the force for that revolution, you can make corrections that will
allow you to do three rather than two revolutions.
- S2 04:02 Yeah. We recently had a speaker at one of our big seminars - a guy named David Epstein - who talked about basically the use now by mechanical data to look at performance aspects. And what's interesting is I remember that when I was going to school back in the 60s and 70s, that that was happening, but then it just kind of went away. But now it's come back again, which is really kind of cool.
- S3 04:22 Yes. I'm really excited actually, in our university they're just building a new bio-mechanics lab, and we're going to be working with several projects with our dancers where they have motion capture, and force platform data, and all of that stuff. But on a level that's so much more easily accessible. It's movable, you can take it into the studio, you can-- you know, just so many advances since when I went to graduate school. It's really an exciting time I think.
- S2 04:46 Yeah, and that's what, I guess, our audience probably doesn't appreciate, is so much of that stuff, depending on you had to have cameras set up at certain angles. And nowadays they have the ones and you strap on the sensors and you can do it anywhere.
- S3 04:56 Yes.
- S2 04:57 So we had a demo of that. One of our seminars recently, was pretty cool. Yeah, so the portability's really great.
- S3 05:03 Yes. And just as an example, a study I did in the 80s literally used mirrors and cameras to do three dimensional cinematography, and you had to input every single data point. So, it took me about three months to input my data, in order to get my results that could be done in about 10 minutes now [chuckles].
- S2 05:24 Yeah, makes us all want to go back and redo everything, right?
- S3 05:26 Yes, yes, yes.
- S2 05:28 So, one of the things that we talk to our guests, when we talk to them, is we want to understand why they got into what they were doing? What was the underlying passion? Because you have to have passion in this business, or you're not a good

performing artist if you don't have passion about it. So, what got you into dance science, in particular?

- S3 05:44 Well, for me it was being a dancer. And I was in an era when most dancers that were injured were just told to stop dancing - stop for three months, stop for six weeks - and that was not acceptable solution, right? So, many dancers didn't get medical treatment, and danced through injuries, and had those injuries become worse, et cetera. And I always loved the sciences, I always loved math. And so it very clearly became that this is my niche. I have that passion for science, I have that passion for dance, and I want to blend those in a way that can help dancers to be more effectively treated when they do have an injury, and hopefully prevent a lot of those injuries also.
- S2 06:26 So what is - if someone were to really push you on this - what is the most common dance injury that could be prevented by dance science in this way?
- S3 06:36 Well, I'll use one example, and that is shin splints because it's so common. Ankle-foot injuries, but shin splints is one of the really common ones you see in dancers. And one of the related concepts is dancers that don't maintain adequate turnout, so that when they land, their knees fall in relative to their feet. And that's been shown in many other athletic endeavors to be linked to anterior cruciate injury--
- S2 07:03 And females really suffer from that, in particular.
- S3 07:06 And so, interestingly enough, we don't have as high an incidence in dancers of ACL injury, but lots of other things - Achilles tendinitis, shin splints, planar fasciitis. And so that ability to maintain that turnout - so when you have those very large impact forces associated with landing, that those knees are going over the feet rather than falling in where you're going to get all of the stresses on the inside of the foot and inside of the knee - can really help prevent the injuries. And a related concept is also understanding training principles. And so, that comes from the science arena too, that dance hasn't had that luxury that so many other athletic endeavors, to have off seasons and on seasons. But often dancers dance through the entire year, and some of them may think, "Okay, I'm going to perform next week, so I'm going to up my training and I'm going to up my conditioning, when it's just the opposite of what they need to do so understanding differences in floor surfaces, the idea of not over-training are very important for preventing those types of injuries too.
- S2 08:11 Let's talk for a minute about floor surfaces just because you brought it up and it was something that flittered through my mind there. There's been some recent talk about how much technology has improved in many different sports and how that has improved performance as a result of the technology. Has it been the same with dance?
- S3 08:27 Yes.
- S2 08:27 With sprung floors and does that also reduce injury rate as well?
- S3 08:32 A little more complex with dance I would say.
- S2 08:34 Okay. We like complex [laughter].
- S3 08:38 I would definitely say that having sprung floors and the resiliency in the friction too is very important for dance because of things like point work. Where if it's too slippery, if there's inadequate friction someone can fall, if there's too much friction they can't turn. It can be a very fine line to find the surface that's just right for dance. That

ability, that change and resilience has been shown to be really helpful. And, for example, some of our dancers that may have to do residencies in the school where all of a sudden they go from those types of floors to cement floors in the gyms. Now, many choreographers are adjusting the choreography or having them wear tennis shoes or something to help because we used to have a really high incidence of shin splints and stress fractures and those types of injuries occur from that sharp change and resiliency in floor surfaces. The complexity is that dancers, like many other athletes, can adapt to amazing things [chuckles]. And so some dancers that are used to, for example, dancing on really hard floors may not get a lot of shin splints or stress fractures but it seems to be a lot the change. And the number of hours where you go beyond that point that the body can adapt and those injuries start occurring.

S2 09:53

So it's over-training--?

S3 09:54

Yes.

S2 09:54

--plays a role as well.

S3 09:55

Exactly.

S2 09:56

So much of what we've talked about all ready it sounds like these dancers are athletes, but yet that term-- so many dancers that I have known really resist that term. They don't want to be labeled as athletes. Why is that?

S3 10:07

I think that's a long, very complex issue that I've been working with my whole life. Because I have a very similar philosophy too, that I think there's so much dance can learn from athletics, and from many other sports and activities that have been studied in more depth than dance. For example, jumping sports. I think the main reason is the desire to not lose the artistic end of it. For choreographers to not feel that they're going to be limited by saying, "Okay, that's too high risk. You can't do that. You can only do six jumps, not 12 jumps." There is that necessity, and I really try to encourage dancers when I teach anatomy and injury prevention type courses, that you need to be able to do what the choreographer asks. If that means you need to go out and do supplemental upper extremities strength training, because you're not going to be doing inverted support positions with your arms, you need to do that, right? If you're going to be in a piece that has 20 minutes of jumping, you need to start eight weeks before, right? 12 weeks before and start conditioning, so there is an overlying aesthetic demand that's very different than sports, and there's an incredible versatility that's being demanded of dancers these days, so you may have a very classical balancing choreographer come in that a company's very used to, and then the next piece someone comes in and they're doing a tap piece, and the next person that comes in is doing a contemporary piece that involves tremendous upper extremity strength, so the demands are very great on a dancer to be able to not just be an athlete, but also meet the aesthetic criteria of every choreographer that comes in.

S2 11:50

They got to be very adaptable.

S3 11:51

Extremely adaptable.

S2 11:53

We were talking earlier about bridging that gap between dance science and exercise science. In the exercise world, we have the same thing with coaches. Coaches learn by who coached them and often times that gap between coaching and exercise science was difficult. But, it sounds like a key person in your world would be the choreographers.

- S3 12:14 Yes.
- S2 12:15 How have the choreographers responded or have they responded to learning about dance science, and maybe some of the upper limits of human performance? Or, do they just say, we've got this in our head, this is what we're going to have them do?
- S3 12:27 I think there's a huge range in that. And, certainly those choreographers in a university setting in my experience are much more open to that. I've had various choreographers sit in on my classes and I know in other universities the same thing has occurred. So, that even though they want to meet their aesthetic vision they may be able to give preparation, help their dancers to be able to meet that vision with less risk of injury. And so, as an example, we have a choreographer that is very strength oriented, so he now integrates into his class push-ups and inverted push-ups. Arm supports and things like that, so that it won't be such a shock. The dancers will be prepared for that. Then of course you hear the stories on the outside of choreographers that resent any indication that they should adjust their vision for any reason. So we still have some room for improvement here and time. I feel like this is an area where the young ones-- each generation is going to get better. Because the more the younger ones have the knowledge, and the experience, and the realization that they can still have a very broad expressive pallet with which to perform. Without jeopardizing the longevity of their dancers. The better there will be a blend of artistry and physical science.
- S2 13:59 We've had some guest on that have provided physical therapy services to professional dance groups especially in Broadway and West End and so forth but that, to me, seems to be not the norm. What kind of medical coverage or sports rehab coverage are there for the average dancer out there? The same thing everybody else has?
- S3 14:21 It's changing now, of course, because of some of the-- Obama's plan and some of the things that are affecting on a more general basis. But I'll say, classically, prior to this, what we see is a very few number of major dance companies that can afford that. So, they've always been the ones that have had some combination of-- with Pacific Northwest Ballet for example, when I worked with them they had physicians that they worked with. I came in to work with more of the technique part. They had physical therapists come in, they had massage therapists come in, they had nutritionists, so there was a whole team of people that worked as well as outside referral sources. So that was sort of the ideal of that combination. There's a handful of companies in the United States that have the money to be able to do that. So certainly in the contemporary world or the smaller level companies, many of those dancers in the past have not had any insurance. Have had very little economic resources and many of them are in very difficult situations when they do become injured.
- S2 15:34 Help the audience understand, most of our audience, anyway, is familiar with what it takes to run a hundred yard dash. They may have experienced that, but they have little experience or knowledge about what it takes to be a professional dancer. What is the performance level - the stress level that goes on, how hard is it to dance say hour and a half ballet? So if you can explain that to our audience, you'll win an award actually [laughter].
- S3 16:04 Well, I think it's an excellent question and extremely hard to describe, I think, because there are such diverse demands with different choreographers. But to address some of the issues that I think are complex is it's such a huge range of motion that's involved. For example, with a hip, to have the large range to lift your leg up very high to the front or very high to the back. So there's that huge demand for flexibility, but at

the same time, the strength to be able to hold that leg up for extended periods or to be able to jump higher and the power to produce that force in a very short period of time for explosive jumps. So it's such a large range, and then the kinesthetic awareness, the balance proprioception that goes along with being able to say be on point and hold that position from the ballet world or in contemporary maybe, that you're supported on one arm as you're doing an arch to the back, so it's very complex on many different levels - strength, flexibility, and neuromuscular coordination. So, it's a complex training that goes into that and then the very few that make it to the level of the professional world have, as you suggest, that additional challenge of very rigorous training and performance schedule and often travel with less and ideal situations and rehearsals and often they can't afford to have the spaces many days ahead as would be ideal and so they may be doing very long and late rehearsals just prior to performing. Yeah. So it's very demanding and as you mention the psychological, I think, is an area that's getting more attention and I'm really excited to see that it's getting more attention because it's very stressful for many professional athletes but for the dancer the joke is always that there's ten people in the wings waiting for your job, hoping that you'll fall, hoping that you'll sprain your ankle that night, hoping that you'll get that hamstring strain--

- S2 18:08 It's competitive business.
- S3 18:09 --so that they can jump in and take your place. So there is always that feeling if you do have an injury, can I afford to show it, can I afford to not go all out, because of that it's such a competitive world, and there's so many people that want your position.
- S2 18:25 Right. If anybody in our audience is wondering how stressful it is, physiologically stressful anyway, you should try going to the wall and standing on point, and try to do anything. That's incredibly difficult.
- S3 18:35 It is.
- S2 18:36 Yeah. Take video of that and send it to us. We'll put that up on the website. So the other thing, you know, Al, and one of the things you talked about is, being the aesthetics, being in the air, knowing where you're at, but then landing without a sound, or very little sound.
- S3 18:51 Yes.
- S2 18:52 And I've made this observation on other similar types of podcasts. I'm just amazed that dancers can jump, and have the vertical leaps they do, and yet land quietly.
- S3 19:02 Yes. It really is a skill, and one of the things I think, getting to the artistry that distinguishes dance is, there is a lot of choreography that wants that illusion of effortlessness, even though it's extremely demanding.
- S2 19:17 They want to make it look easy?
- S3 19:17 Yes.
- S2 19:18 Never let anybody see you sweat, right?
- S3 19:20 Yes, or strain, or look, like you're saying, effortless take off, flying like you could stay there forever, and then this very quiet landing. Takes a lot of skill to do that.
- S2 19:31 Yes, yeah. Again, I challenge anybody go out there and make quiet landings [laughter]. Those are tough.

S3 19:37 They are.

S2 19:38 Karen, we've so enjoyed having you here, today with us - thank you for being with us here today.

S3 19:42 Thank you for inviting me.

S2 19:43 Our regular listeners know that this is the time we usually give our guests to give us a take home message. What's the one thing you want people to remember from this conversation?

S3 19:52 I think for me, the most important thing, is to realize how important technique is, for whatever activity - whether it's dance or something else. It's how you do it and the specific attention paid to exactly your alignment, your technique, your positioning, your landing, that can really make that difference between longevity in that activity, or getting an injury.

S2 20:15 Excellent take home message. Thank you again for being with us today.

S3 20:18 Thank you.

S2 20:19 Our listeners also know that it's about this time of the podcast where we have our podcast question of the week. And here with our podcast question of the week is our producer, Elin. Take it away, Elin.

S4 20:30 What is one of the most common injuries for dancers?

S2 20:32 That's the podcast question of the week. Be the first one to send us the correct answer in email. Send it to huffinespodcast@hlkn.tamu.edu. And if you're the first one to respond with the correct answer, we'll send you one of those nifty free podcast T-shirts. And don't think if you're hearing this podcast two or three days after it's released, that you still won't have a chance. So send it in, send that response in.

S2 20:55 So thank you again, all, for being with us. Thank you, Karen, for being with us once more. And we hope that you tune us in next week when we'll have another interesting person from the world of sports medicine and human performance, and until then we ask and we hope that you stay active and healthy.

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