

Written Transcript  
On The Line Episode 1.3 “Injuries in Wildland Firefighters”

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Charlie Palmer: We're back on the line a podcast for today's wildland firefighter brought to you in part by The Black. Today's guest, I'm super excited about. Val and I started together at the university about 11 years ago, I guess, so super pumped to have her on the podcast today. She is the program director of our Athletic Training Education program at the University of Montana. She's also somebody who has spent a fair amount of time and energy researching injuries in wildland firefighters, and that's our topic today is injuries amongst the firefighter population, so Val, despite the work that you've done and that other people have done, is it fair to say that injuries and our understanding of injuries in wildland firefighters from an empirical or a research standpoint is really limited? Is that fair?

Valerie Moody: That is a fair comment. I think largely because of how the data's been collected or looked at, it's posed some challenges from a research standpoint to be able to actually get a clear picture of what's going on with our wild land firefighters and the injuries they sustain.

Charlie Palmer: Yeah, it seems like we know a fair amount about firefighters on the structural side, but that when they move then into that wild land side that we just don't really know that much from a research standpoint about how they're getting injured and what those injuries are and that sort of thing.

Valerie Moody: Yeah. I think the biggest challenge is just the setup of wild land fire in general, just because of all the different agencies that are governing. There are different wild land firefighters where you don't see that necessarily with other tactical athletes, like structural firefighters or police and you know, they tend to run under a centralized agency that can collect that data. And with wild land. Firefighters are so many different agencies involved. They don't have a uniform system of reporting.

Charlie Palmer: Gotcha. So some of the things that we do know, Carla Britain and some other researchers looked at about five years worth of data in wild land firefighters. And these were nonfatal injuries that they analyzed over this five year period and these were injuries then reported to the Department of Interior and they ended up with about 1300 total injuries that they looked at over that five year run. And slips, trips and falls ended up being the most frequent mechanism as far as injury goes. Is that a surprise?

Valerie Moody: Not really. I mean, I think when you look at the terrain that wildland firefighters operate under, very challenging dynamic terrain that they work in. So to me that makes sense that, that's going to be the number one cause.

Charlie Palmer: Yeah. And then the resulting injuries, then it ends up being sprains and strains is the most common. Again. Does that make sense?

Valerie Moody: It does. And certainly just because of the nature of the jobs that they're doing and the repetitive nature. Musculoskeletal injury seems to be the most common. It makes sense.

Charlie Palmer: Yeah. And then lower extremities ends up being the most common body part.

Valerie Moody: It does, when we're looking at their data in particular in some other studies, you know, lower back injuries, you know, obviously looking at the lifting that's involved with the job and just the repetitive nature of swinging a Pulaski or digging line that obviously makes sense to me just looking at some core stability there. But then you look at like knees and ankles, again, that just ties back to the terrain that they're working on. Surprisingly to me though, I thought at least going into more upper extremity shoulder injuries with some of the repetitive nature, but certainly from what we've looked at and what we've been able to collect, we haven't seen that yet.

Charlie Palmer: Okay. And then equipment tools and machinery ended up being the second most common mechanisms, so in other words, the things that firefighters are using to help them do their jobs can be a common source, of where these injuries are coming from.

Valerie Moody: Yeah, and certainly can present some risk for injury. Obviously using the equipment itself or using it incorrectly.

Charlie Palmer: Where that's a pulaski, or a chainsaw or a pump or whatever that might be. And then some other things that at least I found kind of interesting because may be some of them may be intuitive, some of them maybe not nearly as much that injuries late in the season where more than two times likely to be severe compared to earlier peak season. What do you take from that?

Valerie Moody: So it might take on that is you know, the farther you get into season your body obviously is, you know, worn down from the season and being so physically demanding and rigorous when you're out on a 14 day roll, it just makes sense to me. The farther you get into the season that you're going to see more fatigue contributing to a injury. And that's been documented in other studies in other populations as well. The farther you get into it, you're likely to see more severe injuries just because you're tired and your body is not recovering as quickly as maybe it was early season.

Charlie Palmer: Yeah, that's a good point of recovery is something that we'll cover in a future podcast. And this one seems intuitive, at least to me. The two thirds of all the injuries occurred during the peak season, so in other words, when things were really rolling, when fire season was here and people were going, that's when most of these injuries occurred. At least two thirds of them.

Valerie Moody: Yeah. I mean that's just they're cranking and working hard and just busy busy time, so it makes sense to me. That's where you're gonna see the most reported injuries.

Charlie Palmer: Okay. And then we get into some research from Aria Mangan, who was actually a student of ours, a Master's student at the University of Montana. Her study was titled Barriers To Wildland Firefighter fitness training, so she was focused more on the fitness piece of it and how to train, but she did cover injury as a part of what she looked at and she ended up with a mixed methodology, which I won't bore you with all the details, but in other words, she had some qualitative data and then some quantitative data as well. So qualitatively she talked to some key informants, people who knew about training and were firefighters, but then she followed that up with a survey too. I think ended up being 1100 subjects overall, which is really pretty impressive sample size from a survey standpoint to get information from those folks and what she found was that nearly half of those who suffered an injury that happened on the fire line, 46 percent of that. So anything you can read or interpret from that finding?

Valerie Moody: Honestly I think looking at that number, that almost seems a little low to me just because you would think with that number of participants in that short period of time if they were reflecting, I think it was just the previous season and half those injuries occurring while they're out fighting fire. That's not surprising when you look at some of the previous research and honestly I would expect it to be maybe a little bit higher for that. So you know, obviously questioning the reporting mechanism.

Charlie Palmer: Okay. Twenty eight percent of the injuries happened during PT, which I find kind of surprising. So in other words, folks are trying to get ready to do their jobs and trained to do it, got themselves hurt. So over a quarter of the injuries.

Valerie Moody: Yeah. And that's, I think probably consistent across a lot of the research is looking at you know, what's going on during their physical training in a lot of the injuries that we're seeing during physical training. But again, even the injuries that are sustained on the fire line, a lot of the feedback that we've received in that study, particularly when we looked at it, was they were attributing it back to their physical training. So whether they were adequately trained, or overtraining that influenced their ability to do their job and maybe got injured on the job because of some of the things they were doing trying to get ready to go to the job.

Charlie Palmer: It seems like you've maybe got a little bit more control over how you're preparing yourself if it's your own training, right? You kind of dictate some of

that versus the ambiguities or whatever of being out on the fire line and getting injured there where it's a much less predictable or controllable environment.

Valerie Moody: Right you would think. And I think one of the key pieces of information we were able to get from Aria's study was a lot of the wild land firefighters that were getting injured PT, a lot of it was because they were pushing themselves farther than what they maybe were able to do physically and largely it was a function of the culture in which they were working in their crew. And so maybe there were a lot of different fitness levels heading into that crew to train. And so maybe someone who is less fit was trying to keep up with somebody more fit and they were overexerting themselves creating injury and then you know, just getting people to realize what their own limitations are and accepting their limitations. That's probably the biggest thing that we learned from that feedback.

Charlie Palmer: All right. And then this one really literally hot off the presses. Taylor Percio's work. Taylor defended this work just last week actually. His study title was a descriptive analysis of injuries sustained by wild land firefighters. So you were the chair of this project and intimately involved with it. Taylor ended up with 360 respondents. Then to his survey, the survey that you collectively crafted to try and get a better handle and a better understanding of injuries in the wild land firefighter population. So almost 70 percent of his respondents and reported at least one injury in the last five years. Again, thoughts on that?

Valerie Moody: Yeah. I think, you know, we certainly face some challenges in getting participants for this study and so we would have liked to have gleaned larger numbers to learn a little bit more and expanding that to the last five years, you know, obviously requires somebody to, to recall what injuries they had and you know, sometimes that's not always easy if you can't even remember what were doing yesterday, let alone five years ago, um, and how you handle it and how it was treated and those types of things. But the information we were able to collect and was very insightful in terms of looking at different demographics for people that were injured and then looking at some of the environmental risk factors that we were interested in terms of time of day that they were getting injured or how far into their role, were they getting injured and how late in the season, those types of things. So that was really interesting for us to look at it. And then obviously looking at types of injuries that they were sustaining.

Charlie Palmer: Yeah, 91 percent of those who were injured on the fire line. It happened in rocky mountainous terrain about that one.

Valerie Moody: Yeah. So again, you just kind of reiterating some Britton's work and maintenance work. They've seen the unstable, steep terrain that are wild land firefighters are working in. It just, it's a very challenging dynamic environment to work in.

Charlie Palmer: So at least for his response and a team, like I mean over nine out of 10 on average, their injury happened on the fireline.

Valerie Moody: Yeah. And then when you looked at some of the qualitative feedback, still a lot of them tied it back into their physical training to some extent, even though they were getting hurt on the line or reporting that it happened, out on the line, a lot of them are still attributing it back to their PT in summer.

Charlie Palmer: So they were predisposed maybe in some way because of their training?

Valerie Moody: At least they felt that way.

Charlie Palmer: So they thought that way, nearly half of all those who were injured, they were sprains and strains to either the lower back, the knee or the ankle. So that, that kind of aligns with what little other research has been done. Correct.

Valerie Moody: It is. And it's Nice, you know, obviously we've talked about some of the challenges in collecting this data and how it's reported. And so, you know, looking across the last 15, 20 years, we're seeing some consistent results in terms of where they're getting injured. Uh, what type of terrain they're getting injured in. And then obviously what types of injuries.

Charlie Palmer: And then his last, finding 76 percent. So over three fourths of those who were injured, that injury directly impacted their ability to continue with a normal duty. So in other words, this wasn't a little cut on the thumb and put a bandaid on and I'm good to go and absolutely zero impact. So over three fourths of the time, the injuries these folks are getting impact their abilities to do their job even if they're continuing to work.

Valerie Moody: Yeah. And that's what was surprising for us when we looked at that information. So we asked them, you know, how were you treated? Did you treat yourself or did you actually seek help? And then also in terms of what we're able to do with your job, did you continue working without restrictions? Or with restrictions? And overwhelmingly most of them continue to work and so they reported having these injuries and some of them significant injuries, but they essentially pushed through true to themselves and try to do their job to the best of their ability even though it did impact their performance.

Charlie Palmer: What do you take from that?

Valerie Moody: Well, I think that's a culture piece honestly. Um, and just, you know, look at any sort of athletic environment and certainly to me the wild land fire community seems like an athletic environment to me. And so you see that across the board, you don't want to let your teammates down and you don't want to let your crew down so you want to be out there trying to help the team as best you can. And so I think for them they're going to do whatever they can to, to try to be there for their teammates and their crew members.

Charlie Palmer: So it's beneficial to a point, right? I mean their cowboy and cowgirl up there, let's do it. And it's, it might not be 100 percent, but I'm going to, I'm going to go.

Valerie Moody: They're going to pull their weight and be there for morale for their team.

Charlie Palmer: If that crosses some blind somewhere, then that's a problem because perhaps they're doing more harm to themselves when a little bit of time off might be the most beneficial

Valerie Moody: or at least treating it, you know, in the interim to try to facilitate their recovery and maybe still keeping them on the lines with some different modifications that maybe they didn't think of and hopefully not prolonging the recovery.

Charlie Palmer: Gotcha. So we can look at those previous studies as few as they might be, still gather some helpful information from them, some useful information and yet we can get lost in the numbers to a degree in this percentage of that and that percentage of that. I mean we throw that aside and then bottom line just kind of cut to the big question of what. What can we do about it? I mean, what can be done with regards to injuries in wild land firefighters?

Valerie Moody: Well, I think the big key that we found in the last two studies, you know, they were flat out asked in the survey if they thought that their injuries were preventable. And so when you look at that prevention piece in the Mangan study, I think upwards of 50 percent, so half of those participants in that study, I thought that their injuries could have been prevented. Largely that was attributed to better or improved physical training programs. In Taylor's study, it was a little bit different response. We had smaller numbers, but we still ended up with upwards of 20 percent felt that their injuries were preventable. So if you look at the numbers one in five wildland firefighters, that's huge in terms of prevention and cost to, you know, the forest service or whatever agency they're working for in terms of minimizing risk of injury. So I think we have to start looking at ways to prevent these injuries and how can we best serve our wild land firefighters so they are prepared to go out and do their best, during the fire season.

Charlie Palmer: Yeah. There's a saying an athletic populations that there's those who have been injured and those who haven't been injured yet.

Valerie Moody: I saw you quoted that in one of your presentations.

Charlie Palmer: Thank you. Does that got any validity in this population? I mean, if you do it long enough, is it fair to say if you're going to fight fire, for more than a few years, you're probably going to get hurt..

Valerie Moody: ...at some point and they'd be hard pressed not to. So I think if we look at specific strategies to try to best prepare them in the off season and things that they can maintain during the season and educating them in those different techniques. So looking at low back injuries. Okay, well Geez, simple things like looking at your posture and how you carry yourself while you're working in a functional way and then also looking just what can you do in your training

programs to enhance your core stability. So that you're maximizing your dynamics stability while you're working in doing your job. So I think little things like that can be incorporated throughout the day and throughout their season and certainly in the off season for their training that will help them.

Charlie Palmer: So tips or tricks or strategies, and you kind of alluded to it there, are there other things that come to your mind as far as trying to mitigate or countermeasure some of these injuries before they happen?

Valerie Moody: Well, I think when we talked the other day in Taylor's defense, I think a really valid point came up is when you look at any athlete that's going to go out and compete, the very first thing they're doing is warming up. And so when you look at a wild land firefighter who's to say, you know, when you get out of the truck and you're getting ready to go do your job, could you take five to 10 minutes and do a dynamic warmup to get yourself ready to go compete and fight fire that day? You know, I, I think if we can switch the mentality to think that way and make it mandatory or really encourage that be done within the community, I think you might see a decrease in injury there. That's an easy thing to do. Five minutes of time to make sure that you're ready to go to do what you need to do. I think it's pretty easy and then just looking at improving education or opportunities for more education for our PT crew leaders and helping them become more knowledgeable and ways to incorporate some of these strategies into their day to day routines if they're working with their crews.

Charlie Palmer: And it seems like they're doing, at least from an anecdotal standpoint, from my perspective, it seems like the population is doing a much better job with that. People are really much more in tuned with and interested in how to better themselves.

Valerie Moody: Yeah, if you can structure it somewhat, I think it might be better or at least steer them in the right direction because there's so much misinformation out there in the media and mainstream that if that's what they're looking at, it may not be the best piece of advice. I think if you can guide them maybe in the right direction to look at some of those things and incorporate into their workouts, I think that'd be better.

Charlie Palmer: Yeah. Yeah, and then that warmup could happen just as easily for a project work or just duties around the station as well. Correct. In addition to getting ready to go out actually on the line.

Valerie Moody: Yeah, I mean I look at when we walk in, there's construction on campus right now, and we walk in the office and every morning at 7:30, the crew before they even go work on the building, they're working out. They're out there doing stretches as a team before they split up to go do their jobs.

Charlie Palmer: The construction crew?

Valerie Moody: Yeah. So you know my mind, I'm like, well Geez, why can't we do that? You know, elsewhere, it doesn't matter what you're doing. So yeah, it seems like it'd be easy to implement.

Charlie Palmer: So final thoughts on injuries in wild land, firefighters, what do you got for us?

Valerie Moody: Well, I think obviously it's a very dynamic and challenging environment to work in and I think the risk for injury is high, so I think anything that we can do to try to help them understand the types of injuries that are likely to happen and come up with some different strategies that are going to work for them to incorporate into their day to day routines and give them some information to help reduce those injuries is going to be important.

Charlie Palmer: All right. Dr Valerie Moody. Thanks so much for your time.

You've been listening to On The Line a podcast for today's wildland firefighter, our audio engineer's Mike Matthews, production assistant Joey Moore, and I'm your host, Charlotte Palmer. Thanks for listening and we hope to connect with you again in future, On The Line.

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