

## Written Transcript On The Line Episode 3.3 “Running”

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Charlie Palmer: Welcome back to On The Line, a podcast for today's wild land firefighters. I am the host of the podcast Charlie Palmer and today we are going to on episode three of season three, focus on the topic of running. There's an old maxim in the wild land firefighter community that says if you're running it means that something has gone really wrong on the fire line or words to that effect with maybe a few colorful expletives thrown in as well; and yet many, and I dare even say most firefighters use running as part of their physical training. In fact, some resource types like smoke jumpers have a timed running tests that they have to pass each season to be red carded and for many crews and individuals running is probably the most frequently engaged in PT activity by far with running being so ingrained in our community. The question becomes how well then does running prepare you for the job demands of wild land firefighting. Today's two guests are repeat offenders on the podcast and we're glad that they are and they're going to help us answer that question and hopefully a bunch of other questions as well. So Dr. Chuck Dumke has been a professor for nearly 20 years in which time he has published several research studies on running his main interest in metabolism, lead him towards the study of running economy. He's been competing and running events for over 30 years. He's done over 300 running triathlon duathlon and adventure races including winning several national and international competitions. And although he doesn't claim to be a talented runner, which I would argue against him on that one, he does take pride in 30 years of consistent running without injury. And then Dr. Matt Bundle is our other guest and his primary area of scientific expertise is the physiology and movement mechanics of high speed running. He has worked with Olympic athletes, high performance coaches and members of the USA Track and Field Association in the US Olympic Committee and prior to his work as an undergraduate, he was captain of the Harvard Cross Country Team an the Harvard track team. So in other words, we've got two guys who not only study it from a scientific perspective but have the street cred as runners themselves. And so that's a tough blend to pull off. But a gentleman, we're, we're grateful that you're on the podcast today. (Thanks. Thanks )All right, so first question, and chuck, we'll throw this one at you. How well does running translate to wildland firefighting?

Chuck Dumke: Well, you know, to, to be clear right away, although I've, I run and I do running competitions. I've never been a wild land firefighter but with that little addendum and we do do research in wild land firefighters. And in fact I just got out of the field where we studied some wild land firefighters during their critical training period, a hot shot crew that up for their two weeks or critical training. And you know, I think everybody as you introduced, understands wild land firefighters run. It's simply the most convenient modality in which to increase intensity beyond hiking and even hiking with a pack. So I think everybody cause kind of understanding that you know you're going to run as wildland firefighter maybe not once the season starts, but in preparation for the season and there's lots of different ways and I think a lot of our other podcasts emphasized, you know, the importance of fitness, right?

Chuck Dumke: It keeps you from overheating, it keeps you from fatiguing quicker. You know, all of the, the fitness component to wildland firefighting can't be overemphasized. And there's tons of ways of getting fitness and whether you consider it appropriate or not, running is the most convenient way to get fitness crews are not going to have 20 rowing machines or 20 bike machines or any other modality where you can do some level of fitness beyond the walking speed. So although a wild land firefighter isn't going to be running except in dangerous situation on the ingress hike on an egress hike, they're going to be hiking to achieve fitness for that job. Running can be a clearly critical component.

Matt Bundle: Yeah, I would totally agree for convenience, both on time and equipment that you might have a need to have if you were running in a, even in a small group, it's difficult to imagine situations where you would have a lot, a lot of the same equipment to be able to share across a group and then just for its effectiveness. I mean, you can elicit some very high metabolic rates when you run and you can get a terrific workout in a short period of time.

Chuck Dumke: I'll add that. You know, there's really good evidence that you're going to have an easier time doing your job if you can do your job at a lower percentage of your maximum fitness. So, you know, I think people are probably already, you know, know what I'm alluding to, which is their maximal aerobic capacity or their  $\dot{V}O_{2\max}$ . Now, wild land firefighters don't do their job at their maximum aerobic capacity or their  $\dot{V}O_{2\max}$ . But if they can actually do their job at a lower percentage of their  $\dot{V}O_{2\max}$ , right, they'll have an easier time doing their job. We hope in the kind of the, the, the research suggests that most people do it at about 50% of their maximum aerobic capacity. But if you can increase your maximal aerobic capacity right then in doing your job at say 45% or 40% or better yet, target the people who are doing their job at 60% and move the needle down to 50% by increasing their maximum aerobic capacity, then they're going to be able to do their job better and be safer. And the best to increase their maximum aerobic capacity is to exercise at a higher intensity. And that's as we've referred to most conveniently done with running.

Charlie Palmer: Yeah. And we know what the job looks like because we've studied it. Uh, others have studied it and written about it. And so we know typically the activities that

a firefighters is going to be engaged in. And then again, maybe back to the original question, knowing what the job entails, how good of a job does running do to help you prepare for those specific job duties? And it sounds like from what you guys say, a pretty good job.

Matt Bundle: Yeah, I would agree with that. I mean if you, let's say you were to compare running to maybe some of the other modes of exercise that people might engage in, things like cycling or skate skiing. Maybe if it's the winter time. Swimming is, is potentially an option too. So you have these other types of activity where you can get a very solid workout. But one of the things that you are missing in those specific activities would be the load bearing aspect. And so the nice thing about running with respect to a wild land fire is that it provides you with a little bit of specificity, a little bit of hardening so that you are able to engage in hikes. You are able to engage in loaded carriage blocks or you might be able to sustain intensities for long periods of time without having musculoskeletal types of soreness.

Charlie Palmer: Okay. Does a wild land firefighter need to be a runner?

Chuck Dumke: Yeah. Good question. So you know, as you alluded to and all the experience I've, I've seen crews will run together. I think people even understand there are crews that do more running than others. You know, running type crews and, but very few do no running. Matt referred to a number of off season modalities that a lot of people do and indeed I know of several ultra running wild land firefighters, you know, their off season is spent training and doing races, you know, and certainly they're very fit. You know, one could argue whether that makes him a better wild land firefighter or not, right? Because certainly there's a lot more to the job than that. But the point is a wild land firefighter doesn't need to be a competitive runner, but they need to probably be able to run. Because I think if anything, they need to be able to show up with their crews and not have running be a novel exercise.

Chuck Dumke: They have to anticipate they're going to run some, you know, we're not going to turn everybody into a 35 minute 10k-er and I, that shouldn't be the goal. But it is certainly, again, an important piece in that initial training. Now whether they choose to get the majority of their fitness training from mountain biking per se, that's great in the off season. But to come in having not run for eight months or six months in the off season sets themselves up for, you know, muscle related injuries, soft tissue injuries, tendonitis, plantar fasciitis, you know, bursitis. Although those sort of things that might happen in that initial return back to deployment or employment.

Charlie Palmer: Because they just weren't ready because they hadn't been doing any running. Yeah. So if you're going to run, which it sounds like both of you are again recommending that as as part of your prep, what's the best way to do it?

Matt Bundle: Well, to address Chuck's point about wild land firefighters don't have to be competitive runners, but they have to be ready to run when they report for duty

in the beginning of the season. So you know, we, we can, we can take a little bit of information from the way competitive runners train and then moderate that a little bit to the specific demand. So, you know, I, I think I would view the kind of running that somebody who was committed to having that be a part of their PT, you know, maybe they're going to run three or four times a week, maybe they're going to run five miles total. Weekly mileage would be about 20. You can contrast that to what we know about competitive runners, which are running, let's say 60 to a hundred miles, sometimes more than a hundred miles if they're a marathon runner. So that's some really, really different criteria and considerations that would go into like designing programs for those two types of individuals. But for the person who's going to be at about 20 miles a week, which that's some, you know, really that's, it's a consistent amount of running. If you're going to, you're running most days of the week five miles, which that's a pretty good chunk for, for most of us. (Sounds like a lot to me.) Yeah, right. I mean it, it's four days is more than I do right now too. So, so I think that that element needs, you know, first we should recognize what we're talking about. How far, you know, where do we think most people are going to be going and then we can get into issues associated with maybe shoes or how do you start and some of those types of aspects that, uh, I think would, you know, maybe provide some useful applied guidance.

Chuck Dumke:

Yeah. I would emphasize what Matt said. And you know, you can't give a prescription without knowing, you know, obviously individual differences and individual characteristics. You know, somebody might be doing plenty of other sort of modes of exercise and in which case running is just a supplement. You know, I think even less than 20 miles a week might be enough for somebody who's getting fitness from another modality, like your bike rider or your mountain bike rider or your swimmer or something like that. But to keep it from being a complete, totally novel exercise, right? 15 or 20 miles a week would be good in the, you know, say two or three months preceding, uh, returning back to crews. And that's hopefully, again, eh, in, in words of supporting supplementing their other fitness training, be it in the weight room or some of the other modes that we talked about.

Chuck Dumke:

You know, I know that if somebody is going to be like Matt referred to a competitive runner, increasing that mileage is the means by which they become better. And there's whole schools of thought and we can, you know, the coaching ideas behind that is a whole different, probably a podcast topic, but a lot of runner, runner types will tell you I didn't get good until I like got over 60 miles a week. And that's kind of a, I'm not gonna say Plateau, nor am I trying to suggest that wildland firefighters need to run that much. But to put into perspective that, you know, they, they need to be able to run. They don't need to be a competitive runner. Now, we haven't mentioned this or brought this up yet, but I think in your intro you referred to, there are some running specific benchmarks. You know the BLM fitness test, you know, you score points with that, you know, smoke jumpers have a cutoff for being able to do a one and a half mile run. And so you know, if you are trying to improve your performance in

those measures, then certainly increasing your mileage in your run training is going to be a big part of that.

Charlie Palmer: Gotcha. So let's just say hypothetically, I'm going run 15 miles a week, so that's three times a week, five miles of Pop. Do I just run the same loop? Do I mix up loops? Do I change tempo? Do I run at the same speed? Do I incorporate a hill? Do I incorporate a downhill or I mean there's just so many questions to get consumed with, or do I just ignore them and just go run or maybe not even a fair question?

Matt Bundle: Well, I think there's a lot of parts to that, but I would say that, you know, if we're talking about somebody who it's going to be 20 miles or less, they're going to be running three or four days a week. Then I would say if first maybe think to address may be pace, well what should you start off with a as a pace? Well that's going to be highly specific to the person. Let's say you haven't been engaging in as much physical training as you should and you're, you know, the, the thought of going for a five mile run, it's like, I know I'm not going to get it done. I'm not going to be able to finish without walking or whatever. Well, in that case then we'll five miles isn't, it shouldn't be the target. Let's maybe shoot for 10 minutes or 15 minutes.

Matt Bundle: How long can you go with without stopping? And then we can add from that. You know, a good rule of thumb that we've talked about for adding volume is about 10% more a week than what you've done in the current week. So if you, you know, manage to go, let's say 15 minutes, then you can add a minute and a half or a minute, 50 in the next week and you'll be going 17 minutes and then you'll be at 20 minutes. And then, you know, low and behold you'll be at the five mile level that we'd been talking about. And that's a good way. Start adding things in. If you wanted to do something like you're combating monotony of like always going on the same loop, which I don't happen to suffer from. That was my, like preferred mode was always do the same loop, always, always the same.

Chuck Dumke: I feel better when I pass this oak tree.

Matt Bundle: Yeah. I better be at 1830 when I get to this tree. Otherwise I'm really dogging it. Um, but, but yet, so, um, you know, let's say you want to, uh, combat the monotony or you want to maybe pick up on some of the points that chuck has made with respect to making yourself work ready and you know, a little bit maybe about the kind of courses that the crew is going to run on once the crew is constituted. And so you want to focus, okay, well I know that our typical loop has a real hard hill. I want to make sure that I'm ready for that. So I'm either going to do loops that have hills in them or I'm going to maybe have a week where one of the days of the week I'm not going to worry about distance. And I might add in something like a hill workout where instead of running consistently for the full five miles, if we're gonna use that as the total distance, I've run for a mile as a warmup. I do some hills in the middle and then I do another mile to get back home or wherever I parked my car.

Chuck Dumke: So I can't, I can't help but make a shameless plug. A lot of what we're talking about here are the principles of training, which are all over our website, the black performance.net. You know, this idea that it's all about a stimulus and keeping the stimulus, and I don't mean to overuse the word novel. You know, when somebody is coming back into running, running three times a week, three miles each time is enough of a stimulus, right? That they need to adapt to. Once they've adapted to that and that becomes no longer a stimulus on their adaptation, they need to modify that. And that's where, you know, adding the hills or adding a little bit of intensity or doing a new route to doing that route a little bit faster, become the new stimulus to advance your fitness. If you keep doing the same thing over and over and expecting a new result and continued advancement fitness, you're not going to get it right. That's the definition of insanity. Doing the same thing over and over and expecting a different result. So you do need to insert something to continue to adapt to.

Charlie Palmer: Gotcha. So there's different beliefs then out there in terms of footwear. Let's go down that there's the minimalist camp who thinks that you know, we should run barefoot or if not barefoot, then minimally protected. And then of course there's the shoe companies who are strongly advocating that we need the next \$200 pair of carbon inserted, insert the brand, whatever, running shoe in order to be safe and healthy and run faster and do all of these things. And then of course all sorts of ground between those two points of what are your two thoughts on that?

Chuck Dumke: So in order to let you know kind of where I'm coming from, I am a minimal issue person in that I don't think shoes mean anything. I shop on the sales rack and I get the cheapest wear shoes. But usually I wear shoes, right? But I wear the cheapest shoes and I, you know, find the cheapest available version I can like pro keds or what? Yeah. What are those? You want my secrets? I do. Um, no. So the minimalist shoe movement came out of some work by Arlene Datas and Lieberman who talked about how, you know, the evolution of man came in a persistence hunting sort of manner and we're built to you know, be able to dissipate heat and be able to run for long distances. And it's a fantastic theory and it kind of fits a lot of our, you know, anthropological sort of understanding.

Chuck Dumke: But you know, whether our overstuffed, you know, McDonald's fed selves should be running is an argument that I'm not sure always fits. Anecdotally, granted I'm a scientist and I'm here, I am giving you anecdotes. I know people who have gotten injured attempting to run barefoot and I also know people who have overcome injuries having run barefoot. You know, the minimal issue is meant to mimic the sort of foot landing of barefoot without having to worry about glass and, or hard rocks or, or things like that. Now, one thing I will sort of kind of admit to is, you know, the, the heel to toe drop, there was a lot of criticisms of some of the early shoe manufacturers of creating this huge cushion heal, right? That basically forced everybody into a heel running.

Chuck Dumke: You know, a lot of people will run and land on their heels when they're running slow, but then you know, move up and run towards him mid or forefoot while

running faster. You ask anybody to run barefoot and they're gonna be landing midfoot or forefoot. So what you're trying to do is take the shock out of your joints by engaging more soft tissue and spreading it across more joints, April, knee and hip. So whether that is better, however is still kind of difficult to discern based on the evidence we have from research studies. Research, as you might imagine, is really hard to do on injuries, right? You can't really try to injure somebody in a research study. And so then you're left with four foot running adapted and heel striking adapted people and comparing them cross-sectionally and that gets it's own criticism. So I feel like I'm talking in circles a little bit here, but the point being is a lot of people are fine running the way they are and if you're going to experiment with a different running style that needs to be very carefully undertaken, meaning you should not just go barefoot, run a 10 mile run because you might end up in the hospital.

Matt Bundle: Hmm. Yeah. I think there's a few things that I might add. One is if you think about how many times your foot hits the ground when you go for a run at the speeds that most people use as about 1500 times per mile. And then if you think about how hard you're hitting the ground with every step, it's somewhere between one and a half to two times your body's weight on average over that footfall where the the foot's interaction with the ground. So it's a lot, even at 20 miles, that adds up to be a lot of contact phases, which the loading and unloading of materials is how things break. I mean that's how bridges fall down. Wings fall off of airplanes, cracks develop in bone. So with that in mind, you need to then sort of think about the Chuck's advice of making a change.

Matt Bundle: Are you going to make a big change? Well, how much mileage are you going to take on with these new minimalist shoes? Are you going to experience quite a bit of muscular soreness? Because as chuck mentioned, the anticipated benefit of running with the minimal issues is, is that it's going to reduce the initial impact forces that happen in the milliseconds right after contact. So if you're a heel striker, your bone is colliding with the ground and your leg is pretty straight and there's a in the force rises up rapidly. Whereas if you're running on the ball of your foot, then a lot of that flexion that prevents that real rapid rise happens at the ankle and the knee and the hip as as chuck just mentioned. So you get more cushion. The anatomy of our leg operates to give you more cushion as opposed to the heel strike.

Matt Bundle: The consequence of that is you need the muscle to be active to, to take up that cushioning which can cause some soreness and that can, you know, maybe get in the way of the consistency that you might like to achieve in order to be able to reach the fitness benefits of the program, which might very well be the only reason you're out there running in the first place. So I think those are things to consider if you're a habitual runner and you want to try something because maybe you've come across a reputable source that might suggest, oh it's, it's good for let's say a, it's good for plantar fasciitis and, and you want to introduce a little bit of barefoot type running. Well, the, maybe there's an opportunity for you to do, you could be in a million shoe or if you know the area doesn't have any sharp objects like glass hidden in the grass or other things, then maybe you

could do that after your, your run or you shorten the run and then do some run through is on a soccer field or something like that. All of that's options. And you would start to get some of the benefits that could accrue in the small muscles of the lower leg and the foot. So that would be an option. But my personal suggestion would be shoes where of,

Chuck Dumke: you know, Matt referred to, uh, doing, you know, striders in the grass. You know, the minimal shoe movement is actually a little bit passe at this point. You know that you don't see many people in Vibram FiveFingers anymore. A but in truth coaches have been using barefoot striders since the 1960s, I mean, even before then. So it's not all that new. But you mentioned something in the intro to this topic about, you know, carbon inserts, right? The Nike Vapor flies are a new style of shoe that have been worn in a number of recent records that have been set. And to my knowledge, there's still very little research on these particular type of shoes. But the idea being that it is stiffens up the shoe and the forces that are being created get transferred directly towards speed. And the reason I bring that up is because it goes against the logic of a minimalist shoe where you're absorbing and taking in all of the forces with soft tissue.

Chuck Dumke: So very few at, I know there has been historical versions of elite runners running barefoot. Nobody runs barefoot, right? In a, in elite competitions. So the shoe market is very quick to respond to consumer wants. First it was, you know, Vibram five fingers and then it's nominal drop in the heel to toe with lots of cushion. Now we have a bunch of over cushion shoes, right? And people are using them in, you know, nursing and other people who stand on their feet all day and and obviously running and now in racing flats to actually insert a carbon insert to transfer forces. At very high speeds.

Matt Bundle: Yeah, the vapor fly shoes are a bit measured to be 4% effective at reducing the amount of energy you use to cover each mile. And you know for most people that's not a, it doesn't really make too much difference, but when you're trying to run under two hours for 26 miles, you know every half a percent is worth keeping track of. And so that's why they have taken off at the elite levels that chuck has mentioned for world record type performance attempts. And I mean part of it was just logistics. They previously hadn't been available to the public, but now our inexpensive running shoe that as chuck said, it acts like a spring. You store and release energy in the carbon fiber blade that is contained within the shoe itself. That's, that's what people think how it works. Some of that is proprietary.

Chuck Dumke: By the way. There's no percent increase in performance with chicken nuggets, buck 49 or not.

Charlie Palmer: It's placebo for me.

Chuck Dumke: Star athletes are not eating 1.49 chicken nuggets.

Matt Bundle: Maybe there's a dose response. He needs more.

Charlie Palmer: At a buck 49 I can afford it. Yeah. I know both of you feel strongly about some elements of downhill running and so I think it's fair that we have you clarify kind of your positions on that because that can be part of the overall running picture as well.

Matt Bundle: So I think it's worth maybe talking about what happens, what is the difference between running downhill versus on the level or or even uphill running so you spend more time in the air because your foot is going to land at a lower level than it came off the ground at. So that longer aerial phase in the faster speeds that you accumulate as you come back to the earth, really stretch your muscles and it's the action of stretching the muscle repeatedly that causes muscle soreness a few days later. You can be pulling different parts of the muscle apart.

Matt Bundle: You can create breakage. There can be, in severe cases, you can rupture the walls of cells and all of that contributes to soreness. That's felt afterwards, during the actual rundown. You probably don't feel too bad at all. It was great. Yeah. Of going faster, setting records. Um, but it just, this action of the longer aerial times really does add up in, especially if it's a long downhill, you know, that's 500 feet of vertical change or something like that, which could easily be the case for what, uh, the wild land fire community experiences. There's the potential to really do some damage to the musculature on those kinds of downhill runs.

Charlie Palmer: Yeah, I mean, those people that are familiar with Missoula will know that we have the big m up on the hill and it's an extremely popular hiking trail. And it always baffles me when I'm doing it to just see these people come flying by downhill. And most oftentimes don't look like perhaps the person who should come flying by a downhill. Um,

Chuck Dumke: Everyone's a rock star running downhill.

Charlie Palmer: And so, Chuck, what do you have to, to kind of add to Matt's comments?

Chuck Dumke: Yeah. Um, there's something we call an exercise physiology called the repeated bout effect. So essentially it's supported by, are the things we've already mentioned. You don't want downhill running to be a novel bout of exercise. You don't want it to be the first time you do it when you show up to your crew and you know they're gonna run downhill because you will get sore from that east center component. Matt referred to. So a couple of things, and we talked about this a little bit before, the podcast is to not encourage competitive downhill running to try to beat people when you're running downhill, just promotes more soreness, promotes tripping on a rock, promotes injury. Okay. And so again, in preparation for when returning back to your crew, having inserted some downhill running so that it's not the first time that it happens in your critical training, two weeks is an important training tool.

Chuck Dumke: I spent seven years going out to the western states. 100 for those of you who don't know, it's a a hundred mile running race suit through the Sierra Nevada with a net elevation loss. So it's essentially a hundred miles downhill, although obviously there's a bunch of uphill in between. But the point is is that it results in a lot of muscle soreness and what we know about soreness and even the extreme example of that, which is rhabdomyolysis, and you can listen to one of our earlier podcasts on that particular topic, right is that downhill component? Right. Can contribute to that, but it's in the people that it's going to be most novel in that puts themselves at the risks of creating the most damage and the most soreness and the most potentially big asterik big air quotes, rhabdomyolysis.

Charlie Palmer: So it sounds like then do some, yes. Just be careful about it. Don't have timed competitions to see who can do it the fastest and be smart.

Matt Bundle: Yeah, I would add, you probably don't want to be running downhill with the load either. That is also likely to produce this same kind of soreness. So I would say totally agree that it's, it's important to have downhill running as part of your hardening to be ready to join the crew, but it doesn't need to be at flat out speeds in once you're in the crew or if you happen to be somebody who makes these kinds of decisions. My recommendation would be not timed events for downhill running or a competition or any kind of ranking that's going to result from how fast people can run downhill. Because the main effect that you're going to get is the soreness that we talked about as well as potential strains and sprains from miss footing and falls.

Matt Bundle: And then the other part of it, it doesn't indicate fitness, you know, running downhill and like chuck mentioned, were all rock stars and and so that aspect from a competition side and our assessment of, of people's readiness, I don't think it does what you want it to do and it does put them at risk of injury, which you know can last from. If we're talking on the muscle side, maybe only a few days of impact. But if somebody blows out their knee or twists and ankle and or you know, has a sprain that requires surgery or breaks a bone, you know, they could be out for nearly the whole season, which happens often.

Chuck Dumke: Yeah. We know of an instance this spring actually.

Charlie Palmer: Yeah. And, and just so we're clear and I think it makes sense obviously, but just so we're clear, adding that weight and then the downhill component as well, just what does that do?

Matt Bundle: It Jacks up the amount of force that your legs hit the ground with. And so that would be the same whether you're running on level or downhill. It's additional impact is once you have this greater Ariel phase and you're in the air for longer and you're kind of reaching for the ground that's going to be down there and you've got this added weight, 45 pound pack tests, yes. To that you're training with or saw or whatever it might be that you're carrying and, and it's you, it's

just going to be that much bigger of a hit that your leg takes each time it contacts the ground.

Charlie Palmer: All right. So to wrap it up, uh, let's, let's, let's summarize what we have.

Chuck Dumke: Yeah. So for the people who skip to the end of the podcast or play us at two times speed or, right. And he's like, this is, so, yeah. Wild line, firefighters don't really need to be runners per se, but running is a convenient modality to increase fitness and basically allow them to do their job easier and they need to be accustomed to running because everybody does it. So when they report back to their crew, it needs to have been part of their program in preparation for return to critical chaining and their job.

Charlie Palmer: And obviously there are a lot of firefighters who are runners. They just, they're runners. You look at them, you, you see him, you try and run with them. They're runners.

Chuck Dumke: Yeah. And you know, the BLM fitness test requires an eight minute, 1.5 mile run for a hundred points that which is the top score. And if you're running that fast, you are a runner.

Matt Bundle: Yeah, yeah. That, that's right. If you're consistently running at speeds under six minutes per mile, you're in the same range as competitive runners and most of the advice that we've given here today has been for people who might either be new to it, maybe they're reluctant runners or they're runners that are going to maybe have more modest goals as opposed to maybe getting a hundred points on the BLM challenge. I would totally agree that there's very few other activities that will give you the fitness boost, give you the musculoskeletal hardening that you want for the time period before you join your crews. And then even once the season starts, you're doing maybe a critical training or project work or, or there's a dedicated day for PT, then it's likely that running is gonna feature as part of that because of the lack of equipment needed for everybody to do it.

Matt Bundle: But one of the pieces of equipment that maybe we haven't talked about that should be is shoes. I mean we talked about design and so on, but you know how long you keep them around is also somewhat important that the foam and the structure that goes into the bottom of the shoes, they degrade whether they're being used or not. And the typical rule of thumb that people in their running community uses about 500 miles for a pair of shoes. So you know, if you're using up a 20 miles a week, that's gonna last you a good chunk of time. If you happen to be, let's say one of the ultra marathoners that chuck has referred to, let's say in the western states, 100 you might n you know, chew through a pair of shoes in less than a month. So it's important not to stretch it for, for too long because then you lose some of the benefits that accrue with the cushioning.

Charlie Palmer: Yeah, and that's a good point. And, and then trying to crunch those numbers in my head, even if you're at that 20 miles a week figure, that means those shoes

are only lasting about 25 weeks now. But that's half a year. Half a year, but still just, I just, I know a lot of people who event same pair of running shoes for a long time, a heck of a lot longer than half of a year. So even if you're not, again, 20 miles a week as is a fair amount, but if you are running 20 miles a week, even then that pair of shoes is not going to last you but a half a year.

Matt Bundle:

That's right. So I think the thing to recognize is that they deteriorate maybe before or you would expect based on the wear of the upper. And so, you know, back when, and I'm sure chuck and relay back when I was a competitive runner, I had closets full of shoes that looked pretty close to new because they had reached their time period and that I just had retired them And then their lawn mowing shoes. Yeah, lawn mowers or you know, your brother comes along and grabs like five pairs or you know, whatever. Um, but uh, you know, it's, it's something f that people may be that are new to running. Maybe don't consider, oh, you know, I can keep, I don't run that much. I can, I can keep these shoes going forever. They don't look that bad. Just try and keep a rough count of like, when did you buy him? How much running do you do? Really? And are they good or not? Because the people who run a lot will tell you that they can in their legs start to feel the difference when the shoes are wearing out. And that's especially true if you happen to live in a place where it's difficult to run on softer terrain like grass or trails. If you have to do more of your, um, mileage on concrete, then you know, you should really think about that advice.

Charlie Palmer:

All Right, gentlemen, we appreciate your insights, appreciate your experiences and understanding of this topic and sharing it with our listeners. And so for those of you out there, we appreciate you tuning in and we'll catch you next time on the line

Charlie Palmer:

You've been listening to on the line. The podcast for today's wild land firefighter our audio engineer is Mike Matthews, production assistant Joey Moore. And I'm your host, Charlie Palmer. Thanks for listening and we hope to connect with you again in the future on the line.