

HED: Episode 7: Zach Caldwell and the Art of Fleet Management (auto transcript)

The following summary and transcript were prepared by a machine. They have not been independently checked by a human. I would recommend using it to get a rough sense of what the episode discusses, and/or you can use the time stamps to zero in on a specific part of the not-short episode that is of interest to you.

In practice, I would say that the summary part of this is actually quite useful, and the full 25,000-word transcript somewhat less so, but YMMV.

Summary

- **Building an optimal ski fleet with expert zach Caldwell. [0:05](#)**
 - zach Caldwell, CEO of Caldwell Sports, shares expertise on ski fleet building and waxing.
- **Skiing family history and accomplishments. [2:13](#)**
 - John worked in sport governance before coaching high-level athletes and starting a grinding business.
 - The Caldwell family has a rich history in skiing, with multiple Olympians and coaches.
- **Skiing, family, and skiing equipment with a focus on matching people with the right skis. [6:22](#)**
 - Coolest people in skiing are least involved, per speakers.
 - Speaker 1 describes how they met zach, a ski expert, who tested and matched them with their first good skis, treating them like a World Cup skier despite their limited experience.
 - Speaker 1 highlights zach's dedication to matching people with the right skis, showing how seriously he takes his work and how much they appreciate his efforts.
- **Optimal ski quiver size and composition for various age groups. [10:50](#)**
 - Caldwell recommends a range of skis for different categories, from 14-year-olds to serious master skiers, emphasizing the importance of a good pair of rock skis for both skate and classic skiing.
 - Caldwell administers a group in Steamboat that provides trail conditions reports and emphasizes the importance of having a good pair of rock skis for early-season skiing, especially for those with big ambitions and goals.
 - Speaker 1 recommends investing in quality skis, skates, and classic skis for young skiers to develop their skills and be part of a peer group.

- Speaker 2 emphasizes the importance of using good equipment for young skiers to avoid fear of damaging their good skis and to learn how to use their tools properly.
- **Ski grinding and maintenance for racers. [15:38](#)**
 - Speaker 1 discusses the importance of grinding skis to keep them in good condition, while Speaker 2 agrees that skis have a lifespan and should be replaced regularly to maintain performance.
 - Speaker 1 recommends annual grinding for moderately serious skiers to extend the life of the skis and ensure optimal performance.
 - Speaker 2 notes that most 14-year-olds do not grind their skis, as they may not have a future in the sport or may be doing it for after-school care or family activities.
 - Speaker 2 identifies 14 as the age range where kids start to outgrow junior skis and benefit from adult-level skis.
 - Speaker 2 recommends grinding junior skis for kids around 100 pounds to optimize performance and elasticity.
- **Ski equipment for high school athletes. [23:24](#)**
 - Speaker 1 compares the cost of Nordic skis to the cost of wheels for triathletes, finding the latter to be much higher.
 - Speaker 1 advises high school athletes on how to choose the right skis and grind for their needs, highlighting the importance of finding the right equipment for their level of performance.
 - Speaker 2 emphasizes importance of quality over quantity in acquiring multiple pairs of skis for high school athletes.
- **Ski performance differences with expert insights. [27:17](#)**
 - Parents invest in best skis for kids despite limited resources, seeking unbiased information on quantifiable differences.
 - Speaker 2 identifies 0.3% threshold for feeling a noticeable difference in ski performance.
- **Skiing performance differences between skis with small wax variations. [30:28](#)**
 - Speaker 1 shares their experience of noticing a difference in speed between two pairs of skis, with the faster pair feeling up to 1% faster.
 - Speaker 2 estimates that a 0.3% difference in speed in a speed trap translates to a 1% difference in active speed around a course, and suggests that this difference can be significant for racers.
 - Speaker 2 explains that in the junior Open Men's field in New England, a 0.33% difference in ski performance can result in a 1-3 place difference in the top 20.

- Speaker 1 agrees that the field depth is important, but notes that as you move up the ranks, the difference between skis becomes more significant, with potential gains of 3-4 places in the top 20 for World Cup athletes.
- **Skis for high school skiers, detectable differences, and performance factors.** [35:17](#)
 - Speaker 2 highlights the significance of the 1% difference in time between skis, especially for high school athletes with limited financial means.
 - Speaker 1 agrees, emphasizing the importance of confidence and decision-making when choosing skis, rather than stressing over minor differences.
 - Skier's first pair of skis should be considered when adding a second pair, as detectable differences in wax may impact performance.
- **Ski quality and performance.** [39:24](#)
 - Speaker 2 emphasizes the importance of material quality and size, not just flex, when choosing skis.
 - Speaker 2 suggests that shorter skis may be more suitable for heavier skiers to maintain material stiffness and prevent flexing.
 - Speaker 2 emphasizes the importance of good base quality and grind patterns in skis, but notes that these are less crucial than camber and base quality for high-level athletes.
 - Speaker 2 highlights the significance of investing in good bases for skis, as it's like changing the oil in a car to maintain performance and longevity.
- **Building a ski fleet for junior athletes.** [43:34](#)
 - Speaker 2 emphasizes the importance of quality over quantity when it comes to skis, suggesting it's better for a child to have one good pair of skis and two poor pairs than multiple poor pairs of skis.
 - The speakers discuss the idea of building a fleet of skis for a junior skier, taking into account factors such as the skier's growth and performance trajectory, budget, and succession plan.
 - Speaker 1 discusses the optimal number of skis for high school skiers, suggesting 3-7 pairs depending on resource limitations and the ability to test and identify the right material.
 - Speaker 2 emphasizes the importance of making clear choices from a distance and having a high batting average with a smaller fleet of skis, rather than relying on a larger number of skis that may not be well-suited for each athlete.
- **Optimizing college ski fleets for athletes.** [49:11](#)
 - Expert recommends customizing ski fleet for high school and college pre-elite athletes based on individual needs and conditions.

- Collegiate athletes are not on a growth trajectory, but programs vary in prioritizing skiing.
- Speaker 2 discusses college skiers' equipment choices and future career aspirations.
- **College skiing and resource limitations. [55:00](#)**
 - Speaker 1 discusses college athletes' aspirations for higher-level competitions, while Speaker 2 focuses on resource limitations in collegiate racing.
 - Speaker 2 discusses the challenges of testing skis for college skiers, including limited resources and the need for personal accountability.
 - Speaker 2 highlights the skill of young skier Luke, who is collaborating with them on ski testing and has a discerning eye for different brands.
 - Speaker 2 highlights the importance of testing skills in cross-country skiing, particularly the ability to gauge active speed and communicate effectively with coaches and waxers.
 - The speaker emphasizes the value of collaboration and communication in high-level programs and systems, where athletes with strong testing skills and the ability to provide constructive feedback are highly valued.
- **The number of skis an elite skier should have. [1:02:40](#)**
 - Elite skier seeks advice on number of skis to own, revealing a desire for mystique and intellectual flexibility.
 - Speaker 2 mentions that top athletes in skiing don't race on a large number of skis, but rather a small number that they trust and have experience with.
 - Speaker 2 suggests that many high numbers of skis are there to try to displace proven winners, but they're not being pulled out at the last minute like a secret weapon.
 - Speaker 2 recounts a humorous story of searching for the perfect skis during a World Championship race, ultimately finding success with an old pair of skis that had previously been discarded.
 - The experience highlights the importance of trusting one's instincts and being open to trying new solutions, even if they may seem unconventional or out of reach.
- **Ski gear for recreational and serious racers. [1:09:49](#)**
 - Speaker 1: Some customers buy top-level race gear for a great skiing experience, not necessarily racing.
 - Speaker 2: Some master blasters are intense, sending data live to Strava and training peaks, looking for optimal performance.
 - Self-supported athletes need simplified decision-making processes to make clean choices.

- Speaker 2 emphasizes the importance of personal experience and trust in choosing skis for a race, rather than relying on trial and error or testing in non-representative conditions.
- The speaker highlights the benefits of having a small number of skis that are well-waxed and suited to specific temperature ranges, allowing athletes to make informed decisions and perform at their best.
- **Evaluating and optimizing skis for improved performance. [1:16:53](#)**
 - Speaker wants to upgrade to waves in the Berkey in the next 2 years and is looking for a multi-year plan to optimize their skiing performance.
 - Speaker is committed to finding time for training despite work and family responsibilities, and is seeking advice on how to build the necessary fleet and knowledge to achieve their goals.
 - Speaker 2 evaluates skis by looking at cameras and notes, often finding tension under load that can affect performance.
 - Speaker 2 prioritizes quality over age, believing that a good pair of skis can be complemented or reginded to improve performance.
 - Speaker 2 emphasizes the importance of quality over quantity in building a skate ski fleet, suggesting that a small number of high-quality skis can provide a better experience than a large number of lower-quality skis.
 - Speaker 2 believes that it's important to establish a starting point with quality skis and then add quality skis over time, rather than buying a large number of skis and trying to grind them all to the same profile.
 - Speaker 2 suggests that the high limit for a master skier in a skate fleet is probably around 5-6 pairs, and that it's better to sell a smaller number of skis each year and replace them with new material, rather than trying to sell a large number of skis and maintaining them over time.
- **Skiing technology and performance. [1:24:42](#)**
 - Speaker 1: Good pair of skis trumps multiple shitty pairs 100%, with incremental growth making a big difference over time.
 - Speaker 1: Know your fleet of skis, with 2-3 pairs you know well being better than 5-6 pairs you don't understand.
 - Speaker 1: Time limitation is a major factor in ski waxing, especially for busy adults with jobs.
 - Speaker 2: Background testing can be a useful alternative to on-course testing, even with resource limitations.
- **Ski testing and preferences with a professional skier. [1:29:08](#)**
 - Speaker 2 suggests testing skis by swapping pairs during ski sessions, even if it's not a formal test, to build knowledge and preferences over time.

- Speaker 1 agrees with this approach and shares an anecdote about a skier who helped them with ski testing, highlighting the benefits of learning in a pressure-free situation.
- Speaker 1 shares a humorous story about Bob Gray, a former Olympic skier, who stormed into the wax truck after a race, fired up and ready to tell a wild tale.
- Speaker 2 confirms the story is about Bob Gray and provides background information on his reputation as a colorful character in the skiing world.
- **Skiing legend Bob Gray's competitive spirit and legacy.** [1:32:58](#)
 - Bob Gray, a farmer from Vermont, is a legendary skier who mentored Bill Koch and remains competitive at age 80.
 - Speaker 1 describes meeting a grizzled veteran skier, Bob, who's been racing for 50 years and has a nemesis.
 - Speaker 2 shares a story about Bob's training methods in the past, and how he inspired Speaker 2's friend to pursue a career in medicine.
- **Managing diabetes in elite athletes.** [1:37:11](#)
 - Speaker 2 recounts a memorable encounter with a running legend, inspiring Speaker 1.
 - Chris Freeman and his mentor developed a plan to manage his type 1 diabetes while continuing to compete in elite-level skiing.
- **Diabetes management in endurance sports.** [1:41:03](#)
 - Chris's insulin sensitivity increased as he trained, requiring less supplemental insulin for his system.
 - As Chris pushed himself to higher intensities, his body dumped a lot of sugar, requiring more insulin to immobilize it and prevent a severe sugar crash.
 - In 2003, Bird was diagnosed with type 1 diabetes and had to adjust his training regime to manage his insulin levels during intense exercise.
 - Bird's results improved after working with a coach to develop a tailored training plan, but he experienced a setback in 2006 and had to rebuild his program.
- **Athletes managing blood sugar fluctuations in endurance sports.** [1:47:12](#)
 - Chris and Zach have overcome blood sugar fluctuations while competing in endurance sports by working with coaches and scientists to develop strategies for managing their condition.
 - The current state of US skiing in the World Cup is strong, with Jessie and Rosie leading the way in the women's field and Johnny placing 13th in an individual star distance race, indicating depth and competitiveness with other nations.
- **US Ski Team's Women's Program.** [1:50:02](#)

- Speaker expresses concerns about the state of US skiing, particularly the women's team, and the lack of clear successors to current top athletes.
- Keegan Whelan's success in skiing led to a critical mass of talented athletes in the US program, building momentum over time.
- Speaker 2 expresses concern for young female athletes under pressure in distance skiing.
- **Gender equity in US Ski Team support.** [1:56:03](#)
 - US Ski Team's limited resources led to unequal support for male and female athletes, with sprinters receiving more attention and resources than distance skiers.
 - Speaker 2 suggests that men's sports may receive more resources and support in the future due to recent successes.
- **Ski team development and resource allocation.** [1:59:44](#)
 - Speaker 2 expresses concern about the long-term development trajectory of athletes, citing Rosie as an example of why it's important to invest in athletes despite initial lack of success.
 - Speaker 1 agrees that it's a philosophical question, but notes that it can become a self-fulfilling prophecy if athletes are dismissed prematurely.
 - Speaker 2 acknowledges the improvement of the US ski team's organization and service, citing consistent performance and opportunities for domestic athletes to race.
 - Speaker 2 expresses concern about the team's future success, citing the risk of evaporating like in the past.
 - In the 80s, a small group of athletes from a specific geographic area dominated World Cup skiing. Now, a nationwide system of programs feeds athletes into the World Cup, with more resources and enthusiasm behind skiing domestically.
- **US skiing industry trends and growth.** [2:07:05](#)
 - Speaker 2 observes growth pressure in the high-end ski gear business, attributing it to increased sophistication and uncertainty in the market due to climate change and decreasing ski areas in the lower 48 states.
 - Speaker 2 believes the overflow from this stress is being experienced by their business, indicating a potential decline in the overall state of skiing in the US.
 - John expresses enthusiasm for skiing and investing in local snowmaking efforts, indicating a growing trend of skiers prioritizing quality over quantity.
 - John's ski shop experiences a 20% decline in sales, reflecting a broader industry trend of decreased participation in skiing due to limited access to quality snow.

- Speaker 2 notes the decline of local racing events and the shift towards high-end, exclusive races that are less accessible to the masses.
- Speaker 2 highlights the resilience of long-distance skiing races, such as the Vasaloppet and the American Birkebeiner, which continue to attract dedicated participants despite challenges in the sport.
- **Making skiing more enjoyable and efficient through technique and gear.** [2:14:27](#)
 - Speaker 2 advises skiers to approach the sport as physically demanding and find ways to make proficiency more attainable and easier.
 - Speaker 2 emphasizes the importance of making skiing more approachable and fun by managing the physical demands of the sport.
 - Speaker argues that focusing on motion rather than static balance is key to successful skiing.
 - Speaker 2 argues that using skin skis for classic skiing is not a viable option for achieving high-level technique and speed due to limitations in the technology.
 - The speaker emphasizes the importance of acknowledging the limitations of skin skis and focusing on developing a robust wax program to achieve optimal performance.
- **Skiing and audio equipment with a guest.** [2:21:02](#)
 - Speaker 1 invites listeners to send in their questions on various ski-related topics, including waxing, grinds, and more.
 - Speaker 2 suggests opening up the Q&A session to include any crazy or random ski questions, while Speaker 1 prefers to stick to the original topics.
 - Speaker 1 thanks a generous donor and audio engineer Nathan Shuttleworth for providing better recording equipment and technical expertise.
 - Speaker 1 also thanks other team members, including principal Gavin Kentch, for their hard work and dedication.

Unofficial transcript

Speaker 1 0:05

What time is it? woke me up. Hello, everyone. I am your host fast, big dog. And I'm very excited to announce that I have a very special guest on today's show. Mr. zach Caldwell, the owner, CEO of Caldwell sport. This current series of podcast is centered around getting started. And Zach is one of the most respected voices in the US on skis. Grinds wax, overall ski tech. So today we're gonna be discussing how to get started building the optimal ski fleet, complete with grinds. This episode also marks a very special milestone in that zach will be our first guest to making not one, not two, but three appearances on this show, as this episode is going to be specifically devoted to skis and grinds. And then we're going to have a follow up episode very soon, probably a week or so with Mr. Caldwell that will be focused on everyone's favorite topic, waxing. In fact, it's such an important topic that we wanted to give it its own show. And then in yet another Nordic insights. First, we're gonna be collecting questions from you the devoted listener. And we're gonna have Zach back on in a couple of weeks after we've had time to feel a whole bunch of questions to go over all the topics that you guys have sent in that you want to hear covered. So this is kind of exciting because everyone loves talking skis. Everyone loves talking wax, and everyone loves getting questions answered from experts. So we're excited, and very, very appreciative of Mr. Caldwell to come on the show and give us so much of his time. So welcome to the show, zach. Thanks, John, good to see you as well. So I think a sizable percentage of my recent listeners already know who you are, but for the few that don't and to get everyone not only up to speed but also on the same page. Please give us a little background on you. And is the tradition finished with an FBD fun fact something that most people probably don't know about you and would be surprised to hear

Speaker 2 2:13

a background on me I have had two jobs in my life. I worked in building building trades. And I worked in on skis as not exactly true when New England nordic ski Association first formed up back in was it 90s. Still, the regional governing committee of the United States ski Association kind of split off and formed a regional governing body in New England with my old Uncle John, who's now 95 years old, leading the charge and a bunch of others as well. And I got hired as the interim manager and then the first program director for the regional governing body. So my, my beginnings of working in the sport were more sport governance,

and I got to work with a lot of really good athletes and develop some good relationships. So it was a great cohort of athletes coming up to New England at the time, led by guys like Chris Freeman, Andrew Johnson, Justin Freiman, a bunch of those folks, and did a bunch of testing camps and things like that develop some really good relationships that turned into some coaching relationships. So I got to coach some high level athletes like Chris and Noah Hoffman, and Tad Elliott, all of that kind of grew out of my early work with NASA. But in 2001 2002, I left after six years with NASA to start up a grinding business and put a stone grinder in a truck bought a stone grinder from Lars Svensson, who brought it to the 2002 Olympics and in Utah to provide service for Sweden and Germany in both cross country and biathlon. And he left the machine with me, I put it in a truck and I traveled around for a while, and then actually moved it into the shop and because grinding out of a truck is back breaking, and have been doing that since 2002.

Speaker 1 4:21

So it's interesting. You mentioned, John, because I know I know you pretty well and you're pretty modest guy, but you come from a very distinguished ski family with all kinds of accomplishments. So can you give us just a real brief rundown about the Caldwell family tree and its many interconnections and accomplishments in skiing because it's quite extensive.

Speaker 2 4:45

So yeah, the call bluff family tree is a little simpler than it feels from my side because I'm a distinct side branch. My My father was 13 years younger than my uncle, Uncle John. Who was the oldest of four? My father was the youngest. And they Yeah, because of the age difference. They lived pretty different lives. John had four kids. His daughter, Jennifer died some years ago of cancer. Those four kids were all really involved in skiing. John and John Johnny himself was a Olympian in 1952. In Florida combined in the Oslo Olympics, he did a bunch of coaching. Yeah, his history is a matter of public record. You can look it up. He's been around, he's written books. His kids, Tim, Sperry, Peter, Jennifer, all were heavily involved in skiing, and that's where it gets a little interconnected. So Tim was a four time Olympian. Tim's son, Patty, was an Olympian. More recently, obviously, Sperry what has been affiliated with Stratton Mountain School for many years was the coach and then the headmaster and then the coach and then the organizer of the SMS two T two program and is still involved with that

program. Although we've started to hand the reins over quite a lot. Sherry's daughter, Sophie was on the national team for a long time. That's Patti's cousin. She married semi Hamilton, who's now semi called well. That's a joke. Actually. It's the other way around. I think she's actually Sophie Hamilton. But sperrys younger kids are both coaches. Isabelle out in California and Austin at University of Colorado. Austin married into a steamboat family, as you're probably aware. So you know, those connections went pretty deep and also a

Speaker 1 6:45

ski family by the way. So the Yeah, yep. Yep.

Speaker 2 6:50

And the very coolest cousins of all are are the ones least involved with skiing Anya is Jennifer's daughter she skied for UNH and and is just general hell on wheels. She's around and often seen it at races and was a hell of a good skier, but probably made made less of a life in it than the others. And then Peters kids are the are the rest of the whole group of cousins that they're the most interesting ones of all, they're really they're super cool. Alexa and and Tyler and Senda twins. So it's a really cool family, a great generation of Johnny and peppers, grandchildren, who are my removed cousins first cousins once because I'm first cousins with Tam and fairy and

Speaker 1 7:45

so the my, I think probably biggest takeaway from that whole thing is, as is often the case, the coolest people are the ones least involved in skiing. There's always a really high inverse correlation. Absolutely.

Speaker 2 7:56

There's that. The one thing I can say is that Nordic skiers are a great group of people to interact with on a daily basis. They're all good, folks. They are not. There's there's really nothing cool about and

Speaker 1 8:11

I think that's probably again, extremely accurate statements. You I like the way you're coming out of the gate spitting big truths, because I think that's excellent background and it's again, it's it's a fascinating story. I saw a video about that years ago and Gavin Kentch, who is a like a internet savant will probably be able to find it someplace on the, the labyrinth of the internet, but it's a pretty cool story, just how involved, your family has been over the years at such a high level. And just the support and everything that you guys have done is really remarkable. Speaking of which, kind of like the last background thing. And we'll start right in. I think this is really important, because you touched on it very, very briefly, but I'd like to explain how we met. Because I think this this speaks a lot to not only your integrity, but also towards your approach about getting people on skis and getting people matched up with the right pair of skis for them, which is what we're talking about today, if we ever get through this introduction, so I just started skiing and I had this hammy down pair of skis that had been through like five or six owners, and I let her pass them on to someone else and I still see them out there the drills which makes me super happy. And my nemesis Josh Mullen, who was living in my house at the time, told me in his weird robot, Schmeling voice FBD if you ever want to be any good, you need to get yourself some real skis. And then, you know, he just walked off. So whatever. Two days later, when I tracked him down again, I'm like, Well, how do I do that? And I still remember his exact quote, he's like, calls that called Well, he's a ski whisperer. He'll get you on good skis. So you were working in Boulder at the time. I called you and you said, yeah, come on down. So I did. And you me and no Hoffman, which is how I met the Hoff. We all drove up to El Dora, and you had a bag of probably 10 to 12 pairs of skis, and you and I went through and tested every single one of those pairs of Excuse. And I mean, zach, I'll never forget it. You treated me like a World Cup skier, even though I'd probably been on snow, shit, maybe five times. And that meant a lot to me. It really did. And I'll never forget this level of effort. It's how I got on Razi. I like to feel the skis right away, and you're like, yep, this, these are great skis for you. These are good big guy skis, you know, these are going to work well for you. And, you know, I didn't feel like you had any other agenda other than wanting to get me on grade skis. And so I never forgot that. And I think kind of in the context of this discussion, that just shows how seriously you take matching up people whiskies. And like I said, you know, I think that's a huge compliment to you and everything you've done. It's probably why we been friends for so many years, because I'll never forget that. So let's dive right in. Because without a doubt, one of the most asked questions in all of skiing, which is, in itself kind of fascinating, because this level is pervasive. From you know, parents down in, you know, the sports club here in Steamboat who have their five year olds

getting on skis for the first time ever, all the way up to you know, when I'm hanging out in the World Cup in the wax cabin. The question you hear all the time, young, old Master Elite, everyone in between how fast they are, regardless is how many pairs of skis Should I have? So let's let's dive right in. I think we can break this down a bunch of different ways. And you and I've talked about this a couple of times. So I think what's going to resonate the most and make the most sense for the listeners is I'd love to hear your recommendation on optimal quiver, size. Composition, so you know, how many pairs of skis associated grinds on those skis, and then break that down for the following categories. So we'll go with you 14, high school, college slash pre elite, elite, recreational master, serious master, whatever that means, and then the purely recreational skier. So I'll, I'll walk you through all of these kind of one at a time. And I'm just gonna throw my caveat in that, because this is the extent of my contribution to the discussion is I'm going to add to this the caveat, I also administer a group here in Steamboat about trail conditions, getting people you know, just in one spot, and just today, I posted a report that I'm like, Hey, skiing, pretty nice. I'd probably stay on the rock skis, though. So I think I'd be interested to hear your thoughts on this as well. But I think sometimes this gets sort of lost in the shuffle the importance of a good pair of rock skis for both skate and classic. Because you know, you do all this work, you've got great race skis. Last thing you want to do, you get out and this happens all the time. Everyone's fired up. To get out there, you know, you're training all summer, got big ambitions, big goals are you just stoked to be back on snow, you go up there. And it's, you know, no matter where you are for office, for us, it's up above past, but there's lots of other places everywhere in the country. Everyone's got their designated early ski venue. And more often than not, you get there. And things get a little dinged up. So I don't think you can underestimate the importance of a good pair of rock skis. So having said that, Mr. Caldwell, I'm gonna turn the floor over to you. And again, some of the categories, I think you 14 might be a pretty quick discussion, but in particular, since you know, we got nationals going on right now, I think a lot of people gonna be interested to hear your recommendations for all the other categories. So let's start with you. fourteens. What's the ideal quiver for you know, at this point, like they started when they're dying, oh, 6789 whatever point they got in there at the point where they're driving the races, you know, their, their body and, you know, they're, they're decent kids. They're, they're liking it, they're having fun, you know, the parents are invested in, you know, the club and all that stuff. What What should they have in the bags.

Speaker 2 13:54

Off they should have a dedicated pair of skates, skis, and dedicated pair of maximal classic skis. And I'm less hung up on the rock ski thing than you are skis are made to be used, use them up, wear them out, we can sell you new ones. In fact, I really need to. But fundamentally, what I don't like is to see kids training on crappy equipment because they're afraid to screw up their good equipment. And believe me, I'm from the East, we get a lot of truly rock conditions. And there's a difference between rock skis that you know, you're going to ski on rocks, and skis that you are going to take out when conditions might not be totally perfect, but you know, because you don't want to screw up your race skis, but they're kind of crap. I would so much rather in marginal conditions where you can avoid most of the hazards, take the risk of a few small scratches, to be skiing on good material. Those are your tools. You need to know how to use them and particularly at a young age. What I see over and over again, is that the development of young kids and we're talking as young as you know, seven, eight years old, right up through that you 14 age category is really dependent on good material, we see it not just in the aptitude or the capability of kind of moving on skis like learning to skate, keeping up with the group being part of a being part of a peer group that's banging around the trails and hitting the corners hard and terrorizing the old folks. You know, that's, that's, that's an important thing. And if you don't have the equipment to be part of that group, you're not part of the group. And I've seen it over and over again that a little bit of investment in some quality material at a young age pays off but you don't need a fleet, you need a pair of skates, skis and a pair classic skis.

Speaker 1 15:34

Well, this is again, we're we're two minutes into the meat of the discussion. And you've already dropped some, I think, very valuable wisdom and got a cheap shot. And so you're too for to your your, your loving life here already. So

Speaker 2 15:46

my cheap shots are lined up by the side here, I'm gonna get.

Speaker 1 15:50

We'll just see how it goes. So let's, let's talk about that a little bit more, in all seriousness, because I do think that is something that there is I don't want to say

misunderstanding surrounding and I get it, you know, I originally had this written out as race skis, training skis. So how I roll I have the beater rock skis, when I know it's just going to be complete crap, and you're gonna be hitting something. Now I'm fortunate enough to be at the podium sponsored by Rozendaal. And they're great people, they sent me skis. So I feel a little funny recommend making recommendations as a guy who gets skis for free. But having said that, I you know, I love my skis and I take good care of them. And like you said, you need to learn the tool. So I'll have race skis, that I really will pamper. I agree with you, I want to get on race skis, I go out and train on them when the conditions are good. I also have the luxury having training skis. But you're of the opinion if as long as it's not total crap, you're you're comfortable with the kids going out there and banging on the race skis.

Speaker 2 16:50

Yeah, all right. Yeah, scratches, don't slow skis down that much. And grinding should be done on a regular basis to keep the skis up to speed anyway, just to refresh the bases. You don't need to be cosmetically perfect. But you know, skis are made to be used. Look, we're all facing shorter winters with less snow everywhere in the country is suffering for snow right now. And I think it's going to become a reality that for everyone, not just us, Easterners who have been doing it for a long time that you know, excuse have a lifespan and they're made to be used. And they also tend to get better and better. This year, skis are better than the ones being made three or four years ago. So if you've lovingly saved those skis from three or four years ago, you skied on him in 12 races, but never trained on them. They're still just as slow as all the other skis from three or four years ago, even if they're impeccable shape, and you probably need new skis if you want to be at the front of the pack anyway. It's an ongoing investment. We can't pretend you're buying skis for life. So

Speaker 1 17:48

I'm gonna throw it in there, great zach Caldwell quote, which is, you know my style, it's more of a backhanded compliment. When you when you said skis and children are way more durable than people ever realize. So there's a nice complement for you. And all the angry parents can I'll send out your email at the end at the end of this podcast, and they can call you about that. So all right. This is let's this is this is good, because we want to sort of concurrently talk about grinds as well. So let's let's talk about that, since you already mentioned it. Talk

about let's just say you're within that category. So we're we're you fourteens you've got a good pair of classic race. Yeah, skate race, skate, rock, classic race, classic rock. You know, whatever you're you 12 You got a couple more years, how often do you want to do you recommend that those athletes grind those skis.

Speaker 2 18:50

So we see in general skis that are heavily used, raced on a lot, tend to have a little better than a full season of good performance on the base with you know, regular care and updates. People who are really taking care of the skis racing on them infrequently because they have a big fleet and they're spreading the load out obviously you can get more than a season. We very regularly see skis tail off in their performance during a second season after grinding to make sure that you're getting the best out of them and to extend the life of the ski grinding annually as a simple program that just ensures that you're exposing fresh base material and getting the best of the material on an annual basis it's definitely makes less work for us we have to remove less material when we're grinding and by us I mean it doesn't need to be me it's any any grinder is going to tell you the same thing that a isqi just less seen less abuse is going to be quicker to grind. You take less material away you resurface it quickly and you end up with a lot more ski leftover than something where you got to climb into half the base. Remove the groove in order to find a cure.

Speaker 1 20:01

All right. So you're, you think, a yearly grind? It's good idea for someone who's moderately serious. You've worked for salutely and the company. I mean,

Speaker 2 20:18

you 14 is at you 14, you're pretty serious if you're getting your skis grounded all, you know aftermarket, right, so so let's just face it, you're where you're talking to me, I run a grinder. So, you know, I carry a big hammer, and I'm looking for I gotcha. Every everyone needs their skis grin. No, but But fundamentally, most you 14 Kids don't grind your skis at all. Nor do they care. Right, fine. You know, the numbers involved in skiing at that point are hopefully really, really big. A lot of them. You know, a lot of them don't have a future in this sport they're doing it is after school care or family, whatever. It's great. It's awesome. But it's, you know,

the kids who have really latched on to racing. At that point, I would say that you 14 age category is where it really does start to become appropriate to think of the skis as too, right.

Speaker 1 21:10

And that's, that's why I broke it down that way. Because that's been my experience coaching as well, that's sort of the inflection point where people start to figure out, hey, you know, kids pretty good at this, they're starting to get into it. And plus, when you think about if you're talking about \$100 investment, that is going to help, you know, contribute to a successful year. I mean, shit, that's one night and a condo, A J ns. So, and let's, it's

Speaker 2 21:34

also it's also the age range, where kids almost always hit that inflection point between Junior skis and adult skis. So so when we look at junior skis, a lot of companies make really good Junior skis, but they're not as good as their adult skis, the junior skis are often less dynamic, they're cheaper materials. And the cameras aren't as refined. And they tend to be made in ways that try to optimize and broaden the weight range that's applicable, a lot of the cameras are sort of set up that way. So at about 100 pounds, it becomes pretty compelling to start looking at adult material, for the simple reason that kids at that size, if they're moving well, and on dynamic skis, the strength and elasticity built into top level, adult re skis is sufficient to provide a real benefit. So those kids, those you fourteens, who are serious, maybe they're 80 pounds, and I'm going to talk to them and just be like, Yeah, you're fine on Junior skis, and we can grind them if you want, but you're a frickin waterbug, it almost doesn't matter. At your maths like there's, there's just not that much more to be get gotten out of it, you know, little light kids, they almost don't need a second camera and a classic ski of a wax pocket, they can just, you know, shut the wax along the snow and look, little kids, you just you just black, put a bunch of wax on the scale, and they're fine and get the extra you know, but you reach that inflection point where you want to wax pocket on the classic skis and you want some elastic, dynamic response in the skate skis and you want to be you want the technique to be evolving around those characteristics as well. And at about the time that the investment goes from, you know, three to \$400 for a junior ski to six to \$800 for an brightsky that's when we tend to piggy back to grinding.

Speaker 1 23:23

Well, this is great. Like I said, you know, that's that's the hard

Speaker 2 23:27

conversation where you look the parent in the eye and you're like, I'm gonna give you some discounts for your junior but you're gonna need them because the sport just is about to get very much more expensive. I hope you brought your credit again,

Speaker 1 23:37

that's also very relative statement. I'm gonna I'm going to harken back to another discussion that you and I had back in the day. And we were you know, making, making comparisons. Let's not say making fun. We're making comparisons between Nordic skiers and road triathletes and we've all had the experience. I used to rent at a shop back in college and guys would show up, you know, mid pack at best looking to improve the average bike speed from 15 to 16 miles an hour with three sets of aero wheels, wondering what which one they should put on. So it is funny when you see Nordic skiers going ah, I wonder if I should buy another pair of 800 ollar skis after four years of use and you know your contemporary for lack of a better word has four sets of \$3,000 wheels sitting in the garage so everything is relative and you're

Speaker 2 24:25

in Colorado I'm here in the east where the Yankees are you know you've got you got people you know driving \$80,000 cars who are on 12 year old skis and think there's no reason to upgrade and that it's outrageous that they cost so much freaking monkeys All right, so

Speaker 1 24:41

let's jump category to high school. You know, topic near and dear to my heart with the winter sports club, a bunch of other teams, you know that I've had a

chance to work with or train with a little bit. You know, these kits are fast. Holy shit, are they fast? It's incredibly impressive how fast they're all going you You're right there as well. And I saw you post something some one of the kids you work with now look god damn fast out striding, what do you recommend for that fleet? What are they? What do they need? And let's don't forget to throw in the grind. And I know that's a tricky question, but give us talk, fleet and talk grind High School. Okay.

Speaker 2 25:22

So we got to, we got to pause a second here, I need to, I need to ask you how much time I can take with us and I can try to consolidate it. But we need to ask. As soon as we start talking about more than one pair of skis. For a discipline skate skis, more than one pair of ski skis, for example, we absolutely must address the question of quality versus quantity. And why you're trying to acquire more skis. And to do that, a lot of what we need to try to address is like, what are we? What are we even looking for in a difference? What's the benefit? What's the potential benefit to having two pairs of skis? Well, one benefit is that if you're a growing young athlete, the heavier your ski bag is, the more strength training you get as you haul it around to races. But that's a pretty incidental benefit. And it's not actually going to make you any faster, we really need to try to identify what kind of performance benefit is going to be available with multiple pairs of skis, and you got to hold that up against what that means on the results sheet. In order to make an informed decision. Most high school athletes are going to be fine on a single pair of skate and classic. But they're not qualifying for junior nationals. Yep, you know, pretty much every region in the country, the kids who are going to Junior National Championships are on multiplayer fleets. And that doesn't. It's not because they're on multiplayer fleets that they're going, it's because their investment in the sport, their training over 12 months, their investment in a program and their peers and their investment in equipment has all reached a level that supports them athletically and also demands equipment to be competitive. In a more in a tightening field, do we have time to actually explore some of the some of the estimate estimated differences that are available? Or should we just focus on on the fly? You

Speaker 1 27:17

know what, I think we do have time because, you know, I don't think anyone wants to sit here for six hours. But this is a topic that I hear, I hear it comes up so

often in so many different contexts. So I think we should dive in just because you, you have such remarkable insight into this. And again, I can tell you, you know, the winter sports club where I'm involved, albeit at a very low level, you know, those parents either come to me or I'm present for discussions with where they're trying to get it sorted out. And they legitimately want nothing but the best for the kids. So some of them don't have a lot of resources, they're not going to buy five pairs of skis if they only need three, and they would rather not buy three if they only need one. But the kids are fast kids and the parents are, you know, doing everything they can help them achieve their goals. So if they hear from relatively unbiased, independent resource, all the guy who sells skis, that there are, you know, quantifiable intrinsic differences in a three ski fleet. I think there are a lot of parents that are going to make that investment. So you know, maybe that let's not go crazy. But let's dive into this a little bit. Because I think it's valuable information that people don't often get access to some of the resources I have, like guys like yourself and people in the World Cup who see fast skis every day.

Speaker 2 28:43

Okay, so we're going to try to jam through some some estimated numbers here. And we're going to try to relate them to real world experience. And this model that we're going to create is going to actually inform us as we continue to discuss college elite master racers as well. So so this background that I think as we start talking multiplayer is going to be really useful. The first thing we got to do is start to break it down into a an understandable granularity, we need to be talking in terms of detectable differences, right, what's what's a what's a meaningful difference. And the base level of meaningful difference that I've come up with over many years of doing this is a difference that you can feel when you put one ski on one foot and another ski on the other foot and go out and scooch around a little bit. Whether you're talking skate or classic, it's a difference in performance kick and glide on the classic ski or speed stability on the skate ski. Let's just focus on the speed thing for a second. If we relate that threshold for feeling a difference, the difference that you're pretty confident you feel tends to gravitate to something around 0.3% on a speed trap. Okay, so I send you shave your My tester, you're going out you're going to test these six pairs of socks These are six individual skis with different waxes on them. And you're going to tell me what you like. And you're going to come back and you'll say, hey, these two are the fastest, but I can't really tell them apart. But they're pretty different from these. And I can definitely tell a difference between these well, where you're definitely telling a difference. You're where your confidence emerges and says, yeah, there's a

difference. That tends to be about 0.3%. And it doesn't seem to depend on how experienced you are. I'm pretty beginner skiers can feel that just as well as

Speaker 1 30:28

stop. I'm gonna stop right there. Just for one second. Yeah. I love that comment.

Unknown Speaker 30:32

I absolutely love it.

Speaker 1 30:34

And, you know, I work with Evan pengelley, all the time, at Razi, who just got a big promotion, by the way, and he and I, because, you know, everyone was, I think, a pretty good racer, but has amazing ski, Phil, I love testing excuse with Evan. And there is this incredible mist Alex Harvey, it is a matter of fact, had a great quote, I forget where I was talking to him about this one time, he's like, the tech doesn't even let me test skis. Because he said, whatever is that whatever skis on my left foot, always feel the fastest. So you know, it is it's remarkable to me that I know some phenomenal skiers who have terrible, terrible ski field. They're great and everything else. I love the way you just broke it down. Because there's this immediate there's this stereotype or bias or assumption, whatever you want to call it, that fast skiers have good ski fields. And so skiers don't, that's absolutely not true. So I love the fact I just had to throw that in there. Because that that rings true with my experience as well. That's why I always, nevermind, go ahead.

Speaker 2 31:29

Okay, so here's what happens on the racecourse, you take that detectable difference between two pairs of skis like yes, these are different 0.3% in the speed trap, well, that 0.3% Actually compounds when you start skiing on it. And I don't know the magic behind this. But what I think is that use, you take your speed from one stride into the next and you initiate the next drive from a higher speed, you carry your speed across the flat, you start the uphill instead of Sure. Two strides later, it's

Speaker 1 31:58

like carrying more speed down hills carrying more speed down the hill, it's the same same philosophy. Sure. So that

Speaker 2 32:02

0.3% of passive speed in the speed trap, I estimate is roughly 1%, in active speed around a loop around the course. My wife, Amy tells me that that is a very poor estimate. And it's much higher than that. So I'm going to go ahead and say that I believe that 1% estimate for that in measured speed on the clock active speed, based on a detectable difference between two pairs of skis is conservative, maybe it's a bigger difference than that. So we're going to, we're going to work with what I feel is really defensible. So we got to ask ourselves, what does that actually mean to a racer? What does it mean to you have a 1% difference on the clock? Most racers kind of look at this percent back thing, because points are related to it, you know, and fist points and individual start distance race, there's eight points per percent. So you know, people kind of know, but if you break it down, I actually ran some numbers on this to be prepared. In New England, among the junior Open Men's field in the eastern cups. There's an average of about 0.33% for each place in the top 20. So you take the field spread in the top 20. And they're spread out by about 0.33% On average, which indicates that if you're skiing in the top 20 in that field, that 1% differences were three places. Okay, in the women's it's only

Speaker 1 33:31

one stop right there, because that's an important point. I want to make sure people got this. So they were talking about the difference between a very well pair prepare a set of skis and an average pair of skis like, I'm out testing. No,

Speaker 2 33:46

no, no, no, we're just talking about the difference. Let's say they're identical, with different wax on them and you can feel the difference. John Shaffer goes out schism, A and B and says, yep, this one's faster. I'm proposing that that's three places in that junior open Mansfield in New England, if you're a junior open

woman in New England, it might be one or two places, if you're a US 16 It's only one or two places maybe in the US 16 girls only one place, but if your World Cup athlete, it's probably more like five places. So it's really contextual, depending on who you're racing. If this field depth is not that high, the difference between you know to similar but different skis is not that important. So as we move up the ranks if we look at you 14, the fields spread is pretty big. So that you know the reason to have multiple pairs of skis with small differences between them. Probably not that high as you move up into high school. Yeah, the field depth is a little better. But yeah, still, you might be gaining a place to have a dedicated warm skate ski, but me maybe not too, but you work into college. Now you're talking three, four places in the top 20 To have a warm pair of skates keys instead of a universal pair, or maybe a third pair, you know what I'm saying? As you move on to the World Cup, you can't succeed without the right smile. And

Speaker 1 35:17

what's interesting about this, just extract Sorry to cut you off with there, but just extrapolating this out, because you mentioned the implications for other categories. Even a somewhat competitive master at the Berkeley, when you start talking about when you're out there for 2345 hours, now, all of a sudden, that that 1%, you're talking about a extremely significant difference in time, considerable

Speaker 2 35:40

amount of time, and and in a field that dense. That's huge. Absolutely. That's that. That's a that's a big difference. Yeah, for sure. Now, again, we're talking about basically, the difference that you would be confident in, when you go out another topic of conversation for every single skier who's ever going to carry more than one pair of skis is how do you avoid the brain damage of trying to choose between the skis on race day, and what you have to believe in your heart is that if you can't tell the difference, it doesn't matter. Don't stress, you're looking for a detectable difference. And that detectable difference is going to yield a meaningful difference on snow. And you just have to, you have to know that and get get on with your day. Because there's more important stuff to do than to test, you got to you got to test with confidence. And decision, you've got to be very, very clear. I

Speaker 1 36:32

love that statement as well, because I'm sure your experience is the same. I've seen more people, even on the World Cup level put themselves through the emotional cheese grater, as to which pair of skews they want and you know standing there, it's like if they really are that close, all you're doing is stressing yourself and screwing up your warmup and adding a level of anxiety, just grab a pair of skis and go. So this is awesome. So let's circle back to where we started with this. So high school, it sounds like a competitive high school kid is going to benefit from let's just stick with skate. And we'll talk about if you can extrapolate directly I know Classics is a little bit of a different beast. So high school kid, fast kid, you know, they had the financial means whatever that may be, they can make it work. What do you what do you what's your sort of target fleet in terms of skate and classic?

Speaker 2 37:22

Okay, there's one more thing I want to throw out here. Because it becomes it becomes important. And what we got to bear in mind that what we're talking about is a detectable difference in very similar skis. So it might be a difference in a wax preparation might be the difference in grinding might be the cambers between two different skis. But when we look at all the factors that combine to provide ski performance, we've got to consider the skis themselves, that is material geometry, and camber. That's the physical object that has material makeup that determines its potential elastic response to material stiffness, it's got a geometry or a thickness profile, and it's got camber or a preload shape, you know, the the starting shape of the scheme, then we've got bases. So you got different base materials, different grinds, and different hand structures. And we've got wax, we got additional material we put on to lubricate the skis. So regardless of which is the most important, you've got to keep in mind that these factors are all additive, they all combined. That detectable difference that we discussed, is proposed to be maybe the difference between two waxes to suitable waxes on the same day. Okay. Now, when we're starting to talk about high school kids adding pairs of skis, the very first question we need to ask is, okay, so you want a second pair of skis, let's take a look at your first pair. Because frankly, if that detectable difference between two waxes is already a place or two. We need to make sure that the skis that carry the wax can carry it. And we absolutely have to consider the factors that really, really matter in terms of ski performance. So this might surprise some people here because I don't think it's what everyone thinks. If we go through those factors, and we look at what really matters. Material

quality speed Max versus carbon light, if you spend more money on your skis, are you going to get faster skis, and the answer is not necessarily stepped down. Skis can be very fast. That's that's not a disqualifier to have an RCS levels. plenty fast RCS skis. In fact, plenty World Cup skiers were on RCS skis until they stopped making them because they didn't have room for the old edging machine in the factory anymore. That was two years ago. They were still using literally RCS construction and cores for a special production on the World Cup. Okay, so step down, that we're not worried about the idea of fit, having just the right flex for your ski. Again, this is really a heavily sold idea, this is what I do, right? This might well not really I like to say I don't. But it's a very heavily marketed idea that the ski has to quote unquote, right fit, got to have the right flex, semi important. It's more important in material terms than in numeric terms, every ski can have a measured flex value. I'm not that concerned with a measure of flex value, I am concerned that you're on the right size material so that the thickness profile or the material stiffness of the ski is right shape, You're a big guy, if you were to propose to me that you wanted to ski on a shorter skate ski. So it's more nimble, I'm going to be really concerned that the thinner material simply isn't going to put up with your mass plus your force. And therefore you have to be on the longer ski. So a lot of times I'm trying to convince people like hey, can we not add a second pair of one at once for your 140 pound high school boy and instead get get this kid on one pair of the right size skis, the right length, so we have the right material under foot, then we have the Canberra quality. Okay, this is when we're looking at the starting shape of the ski. And if I go to a ski factory, I'm not picking different material, all the material is the same. The bases are determined by what they put on. And I'm going to grind them anyway. And what I'm actually traveling to select our specific cameras, because that's what we're reviewing. That's the difference. That's what makes one pair of, you know, Rozendaal s twos different from another pair of Rozendaal s twos. It's the camera. That's extremely and that takes a little bit of expertise. This is this is my marketing pitches, why should bicycles for me because I'm very deliberate about Canvas. But it's true. That's that's a really big part of the whole thing. Finding good skills, in terms of the camber is really important. Base quality, extremely important. Okay, so the the starting point where it makes sense to invest Huskies is where they put the worldcup bases on, okay, you know that RC S key still has Fisher's 28 base, then you've got a good base, you've got an erasable base. But if you step down to a material that's got a cheap base on it, you forget about it, it's not a good investment, even though it's much cheaper, you should spend enough money to get good basis, any ski shop can help you identify which skis have the top quality basis, we're talking about a higher density polyethylene and just better, better, more expensive material on the base. And that is important. But this also

becomes important when we talk about the grinding thing, grinding the skis annually, at the point that you've invested in something good enough to have that base material is basically just like keeping it going. It's like changing the oil in your car, you know, you spent all the money on the engine, let's not blow it up. Finally, the grind pattern. Okay, you keep wanting me to talk about grind patterns. And I'm going to tell you that yeah, it's important, but not as important as the camber and the and the base quality, there are days when it's super important. But by and large, there are a lot of good universal grinds out there. And you can, you can do pretty well on a lot of them so that it needs to be a good grind. But that's maybe a little less peak importance than the others. So if we go back now, when we talk about that high school kid, we're at that threshold where, hey, that kid is in a competitive enough field, and is athletic and good. And we want to see some results from that kid and we're willing to spend some money. The first question is, is the quality of the starting point good enough to complement? Or do we need to back up and be like, hey, you know what, let's not add a warm pair of skis, to a really junky looking pair of skis that you've been using for everything, just so we have three points. Let's instead look at what your resources are, what's in the budget, and what's in the plan. And this is the final part of building a fleet. Anytime we start talking with a junior athlete, whether it's, you know, right out of you 14 Or a little older. The conversation is what does this look like next year? What's the growth trajectory for the skier? How long is the lifespan of this size ski in the fleet for the skier? How do we expect the skier's performance on the ski to change as they continue to grow and get stronger? And how when is this going to be replaced? What's it going to be replaced with? And what's what's the plan? What's the succession plan inside the fleet? Very often, we're trying to help a junior skier arrive at age 17/18 where they're a UA teen athlete now instead of a US 16 with a two to three pair solution on this gait side that has been built over a couple of years. It's not just bought off the rack for sure pairs. It's been built up but with foresight and intention.

Unknown Speaker 44:59

It makes complete sense That's,

Speaker 2 45:00

that makes sense instead of just how many pairs do you need, it's like, Okay, let's start with quality. First, make sure you get something big nailed down. And then you know what the next key is going to be. You've already planned on how that's

going to be complemented. And you're going to now change the grind on the first pair to make it a little more dedicated cold. And you're going to add a warm ski next year.

Speaker 1 45:20

Absolutely. So my, I'm taking feverish notes here. Sounds like that. One of the big takeaways is you're better off, you'd rather see a kid on one pair of grade skis and two pairs of shit skis.

Speaker 2 45:35

Absolutely. And should skis include your dad's old hand me downs from when he was a racer? And they were awesome. Yep.

Speaker 1 45:42

So you're the kid. Even though your dad thinks that they're the rescue? Yeah. And they maybe maybe they were back in 1989, or whatever. So you've got,

Speaker 2 45:50

or the or the skis that you've got at the ski skate sale that like some superstar athletes sold because they stopped but they, you know, have some race markings on him or something. And there, I see a lot of really, really valiant efforts to make really good use of very old repurposed race skis, that should be training skis, or rocks.

Speaker 1 46:13

Oh, see, there you go. Rock skis back in the mix. I knew at some other point for me. Okay, so You're that kid, you got the one good pair of skis. I love the plan. I'm sure the parents love the succession plan, building the fleet up, you know, peaking when the kid obviously is getting ready to you know, kind of at that inflection point and whether or not they move on to the next level with their racing. So it sounds like the everything lined up perfectly, the maximum number

of skaters that you'd expect that you think is optimal, will be three, right. And I guess that's gonna be more

Speaker 2 46:47

more than that. Even if three you risk overloading a support staff, we got to we got to face resource limitations and think about how the skis are getting prepared, when decisions are getting made, how they're getting made, who's making them, and how race day choices are going to be made. So most teams that are traveling, so you keep your kids part of high school team. If they're ironing on base layers, that's usually not happening at the race, they're not operating out of a World Cup truck, they don't even have a room, they're unloading a van and hitting the snow. And maybe they're they're pulling out a bench and doing some top coats, if they're super sophisticated, right? At that level, there's not that much option to test skis on the day at the venue and get it really dialed. And there's not, you know, you're not going to be chasing it that hard. So what we need is the ability to make really clear choices from a little ways out. Sure. And as we start to get really granular, let's say you, you know, that high school kid has seven pairs of skis because the parents have money to spend. Pardon me, finding the right pair, and that seven pairs becomes a nightmare. Sure. And in the end, those decisions become emotional decisions and get coupled with a lot of frustration. So I tried to limit it actually. And this is maybe a little counterintuitive, because obviously there is potential in a bigger fleet of skis. But you got to be able to realize the potential with a really high batting average, and make really good decisions at a very low cost for a multiple pair fleet to make sense. So with the junior skiers that we end up working with, it's typically we're focused mostly on the idea of a universal cold and a universal warm ski. And then, depending on the, the brand they're working with, and the models that are available, maybe there's a special ski, maybe a zero ski, depending on where they are maybe a clear base skate ski for really wet conditions. But but you know, as a third ski because they've got a universal warm ski. So it's that also, though, is always going to depend on their ability to test and identify that material. So if they're in a program that can't support them testing, I would rather not sell them the skis, right. Because the coaches won't. Right. Right. And the coaches drive more business than parents. But it

Speaker 1 49:11

sounds like for people who have been keeping score at home following long asking good questions or have accumulated this knowledge over time. And you know, in a somewhat competitive program, certainly, every high school kid could benefit from a good pair of a universal warm universal cold, both skate and classic, right.

Speaker 2 49:32

There's a benefit to having both. Yeah, so what we're talking about is a dedicated camera, potentially a dedicated base material, depending on the brand, and certainly a more specific grind finish on the ski. That's going to yield I would say, predictably, in particular as you move away from the mid range conditions, the peak of the bell curve, you know, those like mid 20s Universal conditions, as you get quite Old are quite warm, the kids that have the cold skis and the warm skis. Yeah, I mean, in a in a high school field that might be three or four places. In the top one, this is

Speaker 1 50:12

incredibly helpful, I'm sure what everyone wants to hear, unless you got something else on that, let's sort of build on that and jump up to the college pre elite, you know, so maybe you're skiing superstores, you're skiing, skiing the college circuit. At this point, you know, at least in a perfect world, you're starting to take some ownership of your fleet. I know all the tops, steamboat kids have pretty good ski field. So they certainly can be an active participant, in fact, to Josh and Brian and Norris, to their credit, they encourage them to really help develop some independent ski field. So at least in theory, they should be able to play a very active role in this whole process. Do you recommend any you know, at this point, you're probably on it on a ski deal, too. So the economics of it become a little bit more workable? What do you start to? What do you think about in terms of optimizing the college pre elite ski fleet?

Speaker 2 51:06

Well, so one major factor from my point of view that differentiates collegiate athletes from junior athletes is that the vast majority of collegiate athletes are not still on a growth trajectory. So they're not, they're not going to outgrow material. So we can be, we can have the expectation for stability for several years. And

then we need to look at the program they're in, if we take, say, for example, Williams College, it's a very well established program with a really good team here in the east. It's a really, it's a ballbuster of a school, it's very intense academics, the kids are going there, because they got into Williams, and they have ambition. And not necessarily for the ski team. A lot of those kids are trying to ski on high school skis, because although they're working really hard, and they're very good athletes, the culture and the team doesn't seem to prioritize it quite as much.

Unknown Speaker 52:07

If you know they're there. They're focused on on a big range of stuff at a very high level.

Speaker 2 52:19

I think a lot of the Western schools, you got kids who were attending college for skiing, and that happened some in the East as well. But you know, a little less, maybe UVM has got some of those kids. So we see really big differences between the programs. And I think there's some really big disparities in what I see watching, say, an Eastern collegiate race, between the programs, when we look at just the quality of the schemes that are being run. Some programs emphasize it a lot more. Others don't. But you, you might be surprised by how much really bad material there is being raised in collegiate racing. It's typically not showing up wait up at the top of the results list. But, but it's out there. So what's the right thing in college? And what's the wrong thing? Well, I'm not going to argue with those kids who don't want to spend their parents money on another pair of skis, because like, it's their last year, and they know they're done. Their senior. They've raced three years on this pair of skis, they know it's not optimal, but they're done this, like, six weekends, and they're out. Does it? Should they be spending that money? I mean, by and large, for the most part, every Master's racer, every junior every view 16 view 14, we're always talking about the expectation that they're going to be in the sport for a while College is the one place where we see a lot of people and their ski career for the time being. Yeah, I've done that. Unless they're unless they're moving on to, to pro racing. And those kids pretty pretty quickly self identify. So you were talking about athletes who are, you know, on a deal? Well, almost all college kids have access to some discounting or some level of direct sales, but but not all of them are getting skis that cheap. There's still a lot of money involved. And there's a there's a big

variety, a much bigger variety in college than you're going to find, say on the east coast for a given region. Eastern Eastern collegiate circuit you see, you see pretty wild differences in instruction. So do you wanna talk about what what what they should be doing? And I guess what I'm going to ask you is are these collegiate skiers who are going to go you know, join a BSF pro team or a craftsbury green team or something after college are these college skiers who are going to be done with them? That's

Speaker 1 55:00

a great question. That's a great distinction as well. And thanks for being Yeah, sort of, I think in, in intrinsic in my question is the assumption that these are kids with aspirations to a higher level, you know, maybe they're, they're just going to make the super tour. You know, maybe they, you know, Sylvan Elvis is a perfect example, you know, good college kid, but he and I were talking one time and he's like, I would never even thought about the national team, my first couple years of school, but, uh, you know, he kind of got there. A lot of like, you know, for the, for the high end kids, that's kind of an easy question. You know, look, younger guys are gonna, you know, they've been identified as top pound against another one. You know, those guys, that's, that's a little bit of a different situation, because they're already going, you know, a lot of those guys have World Cups starts already. So I guess I'm sort of, I was framing the question around like, the talented college kid who thinks maybe they'll give it a go for a year or two. You know, the Matty Briggs is you know that, you know, the kid that I'm talking about? Yeah, got a good school for sure. Oh, good enough school, whether, you know, they're getting some recognition. And, you know, they're sitting around having a few beers with the boys going, huh? You know, maybe I can go somewhere with this.

Speaker 2 56:08

Okay, so now we got to look at the collegiate racing and how it works, because once again, we got to face resource limitation if we're going to answer that question correctly. Resource limitation primarily boils down to personnel. At this point, you have a pretty contained field, but each school is going to be able to start six athletes in a carnival right. And in some open carnivals, that can be considerably more. Typically there are two coaches and maybe an assistant coach. If we look at a World Cup, where each nation is starting, you know, where the US has five or six athletes, you've got to fully staffed truck with each tech

maybe responsible for one or two athletes on the day, pre screening skis, as well as the ball breaking work of testing all the underlayers topcoats hand structures, everything that was you, but at very least they're able to take you know, 3458 pairs out of this out of the truck, pre screen them before testing with the athlete to reduce it down to a couple candidates before a final test to select a race key. That's a heavily assisted process. college coaches can not do that for 12 starters on a day, totally impossible, completely implausible in fact, that they're even going to race morning, test paraffins and put pair race paraffin on enough skis for athletes to test, those decisions need to be made quite a lot earlier. So as we start talking about multiple pair fleets for college skiers, we're going to harken back to the point that you made as you're introducing this age category, which is the skill of the athlete in being an asset to this process at this point in time. Because as the skiers develop, we're talking about skiers with a potential future in the sport. We're talking about young adults who have reached physical maturity. And they're having to be personally accountable for a lot of their own success on the service side of things because of a limitation of resources. They don't have World Cup staff support. So once again, a World Cup fleet maybe would be awesome. Can they make sense of five or six pairs? Some of them can. Some of them have the skill to do that. You know, I've been doing some testing with this young guy Lucrezia, who's going to go to UVM super talented, Junior skier from Wilmington, not too far from here, it goes to mount Anthony Unionise. Can

Speaker 1 58:51

you put your post to US National Training striding out on roll excuse?

Speaker 2 58:55

No, that was probably David. That's right. That's what ours got that good? No, but Luke, Luke, Luke. Luke is not a kid I coach. He's just a kid that I'm collaborating with on some ski stuff. And he's testing some different brands. He chose not to pursue a brand relationship this year. And he's looking at everything he just wants to learn about the skis. Very, very skilled and discerning tester. So one day at a crash very early season ice. I spread literally like 12 pairs of skis from three different brands out for him to just cruise around on a test. It wasn't a race day for him. He had gotten this entry and so he wasn't in this sprint, but he was out there able to test a bunch of skis. And as he's testing skis, I'm testing him. Because if I'm going to help him try to make decisions build a bag for each

weekend over the course of the season, decide what skis to take out to US Nationals. Part of what I've got to do is is choke down the the fuel supply there if you can't swallow, you want to see where he is. He can't, he can't gotta gotta gotta check his ability to screen the skis and quickly make stations and then This is a kid who's you know, he's committed to UVM. And he's a kid who could carry six pairs of skates keys to any college carnival, he will already have them zeroed with appropriate wax, they'll have them straight brushed ready to go. And the first thing that's going to happen is he's going to, you know, screen those keys make a decision and have, you know, he'll be on time with a decision without breaking, breaking his brain over it. And yeah, he's he's really facile through that whole process. unassisted, doesn't doesn't need hand holding, that's relatively rare. There are plenty of other kids that just need to have the one pair solution by the time they get to the race. And those kids don't have a lot of reason to carry more than two. Like, honestly, your college kid, you probably need more than one to be competitive. But maybe two is enough. If you're not going to take ownership of the process of zeroing them out, getting them ready to go screening them on the snow, communicating your needs to the coaches along with the skis in a timely fashion so that they can be prepped for the race. It really depends on the athlete at that point in time. And it's a really fascinating and very fun part of working with those athletes to try to help develop those skills and the understanding of what they're looking for ski testing is interesting. Most skiers have the instinct to test for passive speed, you know slipperiness, the low speed, you know, slippery feeling, but the kids that end up being really good assets to themselves are very good at gauging active speed, speed, that you know the speed and their center of mass at racing, that gets get the skis up to speed and figured out what they move fast on. And that's, that's a really big skill. And it's a fun thing to help people develop and that clearly, you know, older Junior, you know, you, you're 20, you're a teen to a degree and you 20 athletes and collegiate athletes are at a point in their career where as the more they develop those skills, if they've got a future in the sport, the more of an asset, they're going to be to themselves, their team, and their waxers. Watching at a World Cup level is 100% collaboration, it just is the athlete has a big part in the success of that whole thing. And athletes with good testing skill, who can communicate really well are super important. And programs and systems that facilitate that communication, take negative feedback, as constructive and are able to make changes quickly and arrive at a solution really become very, very valuable assets. In high level,

Speaker 1 1:02:40

this seems like a perfect segue to the next category, the of the elite skier. And you know, at first blush, the listener might be thinking all right, you know, is there a leet skier out there that, you know, needs your advice as to how many pairs of skis they would have? And to that? I would say, yes, there are definitely elite skiers who, you know, I'm sort of in the luxurious position. Like, if I get stuck, I can call Norris or you and be like, Dude, what the hell is going on? These skis feel weird, and you know, you call me an idiot? And then it turns out, I'm right. You know, and I hold that over your head for the rest of your life. But I don't have a problem calling saying, you know, hey, I don't understand this. I don't, I can't necessarily feel a difference. I don't I don't really know which one to try. What do you think type thing. And I think you start to lose that sort of that intellectual flexibility, when there's the expectation that you're an expert. And going back to what we talked about earlier, that a lot of people that may have the motor, they've got the skills, they've got the head for it. They just might not have great ski fields. So I think that there are probably some elite skiers out there. Listen to the podcast going Yeah, I wonder how many pairs Zach thinks I should have. But here's the other part about why I think this is a valuable question. I'm really interested to hear your answer. I think the average high school college and master skier because there's we'd like to hear this answer because there's an enormous amount of kind of mystique around you know, the Yohannes claypot or the pattern nog tog 50 ski fleet like oh my god, if I had that, what would that be? That's a logo right? Well, you know that just just like I said, kind of like that black box Mystique like if I had that my world would change. So you don't have to you know, you don't have to go crazy about this. Give me No no, no,

Speaker 2 1:04:27

let me give you let me give you a specific example from the last time I was in the US team wax truck which was known as last season working in the truck, which was known as last season. And I Jason Clark, who is Jessie Diggins, coach and service had a bunch of Jessie's she's she's one of the girls on the team. One of the I'm sorry, on the US team. She's, she's she's, she's shown promise I think she could be

Unknown Speaker 1:04:57

pretty good that pans out

Speaker 2 1:05:00

Yeah, Jason, Jason had about six pairs of skis on the wall rack behind his bench that he was prepping. And there were the, you know, the ski storage in there is in this big container that hangs off the back of the truck. And they're, like a couple, a couple rows dedicated to their lot of skis in that truck for Jesse. So I, you know, I looked at the skis, and I looked at the skis on the rack, and I asked Jason, I was like, so. So how does it break out here? And he goes, you see these skis? Yeah, these six players are watching everything else, everything else we're just looking for, for something to put in this pile. Those might not have been his exact words. But fundamentally, what it boils down to is that the top athletes aren't racing on 70 pairs of skis, they're racing on four or five, six, maybe it's a small number of skis that they know this comes back to knowing your tools, excuse me, they know the skis they know are going to fall off the cliff as the conditions change. Skiing does not happen in a laboratory, you can't do a test ahead of the race for the conditions during the race, it's always changing. So you got to trust the material, you got to not just do the work, but you got to be able to trust the material. That means you have to have done the work during changing conditions in the past, you have to have lived through the ups and downs of the material and know what to expect from it. And you got to have the confidence of saying, Oh, I know this key can hang in in the wet as this moisture comes up. This thing is going to be awesome. Because you've been out there on it. Yeah. Okay. So most of those really, really high numbers are there to try to displace Proven Winners, right. But they're not getting pulled out like minutes before race like, Ah, I have just the solution. It's pair 682, which we haven't raced on in three years. I mean, it's a toll total sideline. Can I tell a funny story, I want to know his very best world championship races, wrote, like, international races at all, was 2013 World Champs and I was helping him test skis, and valdichiana. And it was a super goofy day for the 15k Skate race. It was kind of plastic. Snow plastic deformation is one of the snows conventional balls, right. So it was one of those days where the the it was wet mix of old and new and the middle of the track was like a hump of glazed crap. And the outsides were like, broken slush. Really squirrely hard to stand on. And we had all the skis out, it was afternoon start. So there's just way too much time we just use all the time. Right? So we're, we're testing all these skis. And we we literally put every ski on the snow that we had. And we had kind of boiled it down to one of the warmest keys with the warmest grind and one of the coldest keys with the coldest grind. And neither of them really felt good. But like it was like, well, we have to make some decisions. And this is what we've got. And finally I was just like, I don't know, this feels wrong. And this was monsoons had gone to the redline construction, they had changed construction and skis had been awesome. They had been like working really well

for him. He had had some great results on them. And but it just wasn't happening. Like we weren't getting this, this feeling that that we had a solution. We were looking for that detectable difference. And it wasn't showing up, everything felt the same. And I finally I went back to the van and found the old pair of skis that he had used in the 2011. World Champs in Oslo in the 50k. That was really good. But it was the old construction. And we had just sort of given up on it. And I Randy gives us working in the wax room and I said Randy, can you just scrape one of these and throw it out to us and he came out, you know, two minutes later and slid it across the snow. And I put it on my foot just one of them. And immediately was like, oh, that's obvious. I just started laughing. And Noah got out and he started laughing at the best race of his year. And it was it was funny. It was one of those days when like if you found that it was make or break like leg off was 30th. Yeah, you know, and there was just there were people who were regular top 10 skiers in the forums. And just because they didn't find it. And that was the one time when it was like, Yeah, we're going to the container. We're going we're going back to the van. There was no truck at that point in time. But we literally were scraping the bottom and looking for the last pair of skis that you know it was on its way out. Or maybe it could might as well been a new pair that had never been tested. But it was just so obvious once we found it. That doesn't happen. That's not normal. That's not how it goes. Right? That's not the way it works is like we test all these skis and we find them what happens is that you know the skis that work and you trust them and you go back to them over and over again. And you give new material a chance to beat that stuff.

Speaker 1 1:09:48

Right. All right, let's let's jump to a topic near and dear to my heart. These are my people zach, you know them you love them the Master Blaster. They're out there they'll dry Be crazy, but at the same time, they're, like I said, they're my people, they got hearts of gold, you know, they got to the sport late, they've been hanging around for a while what, you know, whatever situation they're in, or we're in, I should say. So we've got two categories here, the recreational master, so that, you know, they're racing, they're out there, they're getting after I'd maybe they do a couple of races a year, you know, maybe they picked for the Berkey, or their stoke for the Berkey, or, you know, everyone's got their own kind of mix of things there. But, you know, this is one of 100 things that they've got going on their life. And then there's the super blaster, you know, this is the person that they're on a program, you know, they're, they're training 12 months a year, you know, we're close to it, that, you know, they have goals, you know, they get up there, they're out, you know, they're banging out laps worth at night with a headlamp, you

know, they're into it. And, you know, I'm one of those people. So I don't mean this in a disparaging way, a little self deprecating, perhaps, but, you know, for each of those categories, and quite frankly, it's probably the bulk of your customers, or at least a significant percentage. What are you recommending it for fleets for the recreational racer, and then the, you know, the person who's more into it?

Speaker 2 1:11:12

Okay, so let's, this is going to kind of boil down in a slightly different way from how you've laid, laid it out. Let's differentiate them not as recreational and super blaster, but really more in terms of their willingness and aptitude to pursue. The equipment side,

Speaker 1 1:11:32

that's fair. Yeah. I mean, delivered fundamental, we're saying the same. Okay. So

Speaker 2 1:11:37

there, there, there are some there are some people that aren't necessarily super focused on racing, but they, they want really good equipment, and they're analytic, and they're willing to test it. And they update frequently. And so some of the people that buy the most skis aren't racing at all. Oh, wow. They're they're not racers. Really. They're, they're recreational skiers buying top level race gear, because they want a great experience skiing. And those people often have the best feedback for me. I mean, they're really good. On the other hand, some of the, the master blasters they're really like the super intense the guys on you know, they're, they're, like, their wrist devices are sending data live to Strava. And training peaks at the same time. And like, hey, my

Speaker 1 1:12:26

response did that this morning tread lightly their body. All right. No,

Speaker 2 1:12:32

you know, yes, I do. People who are guys who are really, really serious, I see

Unknown Speaker 1:12:36

one in the mirror every morning. He's a great dude, too. By the way.

Speaker 2 1:12:40

These, these are often these gears that are least equipped to make clean choices, because they overcomplicate things. And they they achieve paralysis by trying to make decisions. And these are the people who we need to really try to boil down and simplify the decision making process. So a lot of the a lot of what I do when I'm working with Masters athletes, because masters athletes are almost uniquely self supported. At no other category. And here, are we talking about someone who doesn't have a coach helping them out? That's why we broke it, like a service tech. That's why right. So we're talking about self supported athletes. The starting point question is, how are you going to approach this? Well, can you bite off on race day? What does your race day look like? How like, How early do you need to like, wake up and get breakfast to be at the start? In order to like, what does race morning look like? How when are you going to make the decision between these pairs of skis? Is this a purely hypothetical, are you are you going to call me to ask which pair of skis to race on, because if that's what is going to be, then then we're going to design a very simple, robust program with really clear choices. If you're looking for advantages, you're accountable for testing and finding those advantages. And I can only give you tools a lot of times, a lot of times a cold ski can win on a warm day unexpectedly. But you don't find that unless you test. Right? And I'm not going to recommend it to you from 1500 miles away over the phone. You got to be there to test it right to find the right answer. So this really boils down to personalities and a willingness to take on ski screening and testing to plan your opportunities to get the skis on the snow in representative conditions at the venue prior to making a final decision doing your final prep and having everything ready to go. It's a difficult thing. But by and large because you don't have the ability to test waxes to test endless quantities of skis to test rise to test hand structures. You need simple and robust solutions that work really well. In that system. There's a lot of room For athletes who say, have as many as four or five pairs of skis, that they know that they trust that they've set up in temperature ranges, and they've pre waxed in those temperature ranges. So say it's, say it's the Berkey. And they've got, you know, they've got a really cold pair of skis, they've got a normal cold pair of skis, and they've got a sort of a

unique cold, bordering on warm, and they're at the Birkebeiner. And they know it's going to be minus 12. Overnight, zero degrees at start time. But the snowpack is not hyper refrigerated, because it hasn't been that way for a month. And by late morning, it's going to be 22 Fahrenheit, and they're in wave one. So the whole elite wave will have churned things up ahead of them. And they're making the decision between really good first half skis and really good second half skis, but but they understand the decision, they understand their skis, they've got appropriate wax for the grind, and the camber on each pair. And they're making an informed decision based on stuff that's been set up categorically according to a plan. In that case, that's a great asset for that skier to have. If, if they're equipped to make that decision, another skier with the same three pairs of skis, that doesn't have the confidence, maybe has to warm pairs as well, is going to show up on Thursday, put all five pairs on the snow and non representative conditions try to figure out what's happening not no panic, not have them waxed for the conditions intended, and ended up at the last minute, grabbing the cold pair that was waxed medium, because they just weren't thinking clearly because they were so stressed. And it's going to be a disaster. Well,

Speaker 1 1:16:53

so this is, this is what I both simultaneously love and hate about talking with you. Because I always get unexpected answers. And that is usually good, although often not. So let's build on this because I think in reality, you know, obviously, we're trying to simplify this and put people in one of two buckets. And, you know, as someone who's out there a lot, you know, been to, I can't tell you how many masters worlds all over all over the world, and biathlon cross country and everything else. I think there's sort of a continuum in there. And we've talked about getting to know your fleet and the importance of that, mate, maybe the correct way of approaching this because what my hope here is that people can listen to this podcast and walk away and be like, You know what, I need to buy another pair of skis, or I don't, I have to I have enough. It's been a while since I've upgraded. You know, and I don't feel like we've done that quite yet. You know, not that to say this information hasn't been useful. I think it has, and we're sort of building a foundation. So let's build on this a little bit. So if, what's the process that you recommend? So let's just say you're focused on the Berkey, you know, you're you've gotten life happening around you go, you know, you're an attorney, you're a carpenter, your veterinarian, you're doing what you're doing, you're working full time you got a family got kids, but you're finding the time, you know, no one has as much time as they want. But you're getting out there, you're making the commitment. You know, physically, you know, you're following up,

you've got a training group, or you're out there on your own, but you have some structured training, and you're, you know, you're checking the big boxes, you know, yarn all night drinking, you know, you're you're, you're on top of your nutrition, you're, you're, you're where you need to be for most of the stuff. Tell me the plan that you think and it can be a multi year plan? How do you optimize? What's this 2024 Let's just say, I want to be a you know, I want to move up to waves in the Berkey in the next two years, tell me how I build the fleet, how I build the knowledge, where do I need to what what are the tools that I need to take me to those goals? From a ski perspective?

Speaker 2 1:19:05

So first, we need to Yeah, so here's here's the process, we start with an evaluation, we start with a starting point, we look at what you've got and how you're working. So this is a conversation and hopefully a converse is really nice when it can be in person but often it involves shipping skis. I line them up on the wall, I review them I look at the cameras, and I look at at the notes and if the notes aren't in front of me typed out, then we get on the phone and we have a discussion and we we compare notes and this often is a little bit of a party trick because I'll be like oh well this pair you know got a lot of positive camber in the for body so there's tension under under load which you know, typically going to run better and older snow more transformed snow that can absorb energy. I would think it would be a little frustrating if it's you know, fresh fallen cold, but I look at like, Oh yeah, totally. That totally happened. I'm like that's, that's expected. That's why I said it? No, it's It's amazing how much you can see in the cameras and in the skis. And it's not infallible, I'm wrong often enough to remind myself that I don't know everything right, you know, but I look at a lot of skis and they're pretty readable, you can usually figure out what someone's experience is going to be. And once you've done that, someone usually is going to hear it when you're like, hey, look, this pair here, I don't think it's worth grinding. I don't I don't believe unless you tell me if I'm wrong. But I don't think this thing's ever gonna blow your socks off. And there's nothing I can do using your money to turn it into something better. So let's move it along. Let's set it aside. Call it a training, excuse, maybe sell it at the, you know, to the excuse back, whatever, whatever. Let's set it aside. So the first, the first thing is we want to we want to look at quality first, it's just like that high school equation. Can we establish starting point of quality and that begins with a master skier very often with confidence. If someone comes to me with a six year old pairs of skis, and says this thing wins every test and I you know, I'm always the fastest guy around on this ski. I'm not going to screw with that. I don't want any part of that situation. But I'm also going

to say, Hey, we should regrind it, make sure the base is good, because that doesn't slow us down. You know, that's, it's not a superstition that made this fast. It's the material. It's good. So I'll believe you this is a good pair of skis. Now let's complement it. Or if someone's like, yeah, I don't know, they're, they're fine, then, you know, I might say, hey, let's just start from scratch. A lot of times people come to me with a chaotic blend of different skis from different brands with totally different concepts and profiles, and they want to specialize all this stuff. But it's 10 years old. And it's just like, it's a little bit of a come to Jesus, you know, now now we got to talk about, you know, why? Why do you want to spend \$600 grinding skis that are still going to be 10 year old re skis that weren't very good when they were made? They weren't even great. years ago? For sure. Can we just put all of these aside and do one pair of new skis that's going to really set you up? Well, the other thing I often see as people that like, I just want a great pair of skis, and I'm like, okay, great. What brand are you interested in? What kind of skis Do you like? Oh, I don't know, you tell me. Well, I mean, this very, very frequently, different brands have a really different feel this relates, you know, when we first got together, you told that story in the introduction about laying out a bunch of skis and figuring out like, what material speaks to you, I have plenty of people, this happens multiple times a year where someone will buy, you know, Fischer ski, and a moto ski, and, and grind them exactly the same. And it's just a starting point, like this is step one, and building a fleet is to figure out what kind of skier you are what what materials should you be on what makes you happy. And then from there, we can branch out. So that's, that's, you know, establishing a starting point, make sure that it's quality. And then we're talking about how you are going to support yourself in the process of decision making as we add additional skis. At that point, I'm going to say the high limit for a master skier in a skate fleet is probably Yeah, it's in the five or six neighborhood pairs. Yep. I think someone who has built that built, that fleet deliberately started with quality, added quality, assured quality, can build to that realm. But I'll tell you straight up, my actual goal in that case, is to be on a cycle where a ski has a two to three year lifespan in the fleet, and then is getting replaced by new material. Because if I like I've got a nose for it, if you show up, and I'm like, Oh, I'm gonna get your money every year for the next 10 years. I would much rather not sell you five pairs this year and never see you again. I would much rather sell you two pairs this year. And then a pair every year. And we're going to talk about like, Oh, hey, fishers guy, this new helium ski. Not totally proven, but we should put one on the snow. All right, it's about 20% adoption rate on the World Cup, but it's accelerating. And they're, they're behind it. This is the future with Fisher, I can't promise you that the early adopter experience is great, but you have a great pair of skis, let's see if we can beat it with the latest greatest, a lighter ski. We're

putting that on the snow. And we're gonna put it right up against your three year old established favorite, and hope, hope it can beat it out. And now you're working on that World Cup model where you have Proven Winners. And then you have the new stuff that you're trying to beat it out with. And that's when your investment is keeping you at the front instead of just making the bad yeah,

Speaker 1 1:24:42

I'm loving all of this. So let me try and give some executive summaries here because you know, I'm a corporate guy, and that's how we roll and I think a lot of people like that. So it sounds like the first single most important takeaway across the board. I have this in my notes for every single category is one good pair of skis is always going to trump multiple shitty pairs of skis 100%. And if you have, you know, just like bikes and so many other things, well, the incremental growth has been small, over, you know, that incremental growth. It's like everything else, you know, you're I had a rowing coach he was talking about training was everyday you're putting grains of sand on the pile doesn't look like that much do that for a couple years, I've seen you got a big pile of sand. So well, the incremental change in skis from year to year, sometime there's a new whatever. And you know, that can be a bigger leap. A lot of times the changes might be small, but you know, a couple years of Small changes can make a big difference. So even if you had a good pair of skis, to your point about your dad's World Cup winning skis in the 80s, those are probably still not good skis now. You're great that

Speaker 2 1:25:48

there was a great production of Fisher skis in 2010. Week 1220 10, those yellow ones 192. Yeah, yeah. Fantastic. C's Sylvan had a bunch of a couple pairs, I think that he raised on a lot. And they're really good, those things, were still winning tests eight years later. That's a total exception to the basic rule, which is four or five years old, the new skis are detectably better. So now we're back to that detectable difference. That's 1%. Moving, you know, like detectably, better is significantly better. And it's real, it's a it's an amount of time that can be measured. It's not, it's not imaginary. The skis are getting better on the

Speaker 1 1:26:33

second takeaway I have down here is know your fleet. So if it's one pair two pairs, you're better off with two or three pairs that you know really well. And you know, when they run them with five or six pairs, that you don't really understand the differences between your group

Speaker 2 1:26:50

that? Absolutely, yeah, 100. Okay.

Speaker 1 1:26:53

And then the next level beyond that is, to some degree, it starts to boil down to how much time you're willing to invest on the tech side. So again, you've got that pie chart, you can only Slice the Pie, so many ways. If your time and energy, if you have to decide between training, and time at the wax bench, or you've got a long you know, you live someplace where it's a long drive to the venue, you can't get there two hours earlier in the morning, because you're rolling in from Southern Vermont, driving up to Central Maine. Your better a simpler solution is oftentimes better than a more complicated one.

Speaker 2 1:27:38

Yeah, but let me add a note to that. Because I think you're exactly right. That time limitation is a massive one. And for busy adults with jobs, it's a really, really massive one. But we got to break it down into two things. One is time limitation on race day or at the race venue, if so, maybe you can arrive the day before, but you still very limited on time, in terms of your ability to test at the race. But that ability can be largely not large, not not totally replaced. But But massively augmented with background testing. Did you know on the World Cup, there's a pretty strict limitation on the number of on course accreditations that they can have, you can only have so many service techs per team. So Norway has this limitless budget, you know, massive, massive budget for service. But they can't, they can't put more people on the course because of regulations. What they can do is run a massive background testing project, where there, they pick up skis from manufacturers, and they run them through the grinder and without even waxing them. They'll run them through a speed trap and just try to isolate good skis. I mean, I have arguments with that methodology anyway, but But it's, you know, an example of where resources can be reallocated. There's resource

limitation at the venue. So they have all this availability, and they can place it elsewhere. And make sure that the skis that get to the venue are better. So what does that mean to a master skier who's, you know, man, you can either work on skis or you can work on training. Well, in point of fact, you can do both. What if a master skier were to take two pairs out every time there's no, just make every every single session, a small test. It doesn't have to determine anything, but it's going to accumulate as knowledge like those grains of sand, your knowledge of the skis, your understanding of the differences between them, is going to build contextually over time with repetition. And if you're doing that every time you ski swapping your skis during your session and ski in multiple pairs. It almost doesn't matter the testing methodology, you will develop a sensitivity to the different skis, you'll develop preferences, you'll develop understanding, and you're still training. So it's not a it's not an either or it's a question of having the mental bandwidth to be able to do. It's

Speaker 1 1:29:57

a great point and I'm smiling here because you David Norris was living in my house last year. And Norris told me the exact same thing. He's like, Dude, you got a great fleet, he helped me with some testing you, you helped me with my fleet a couple years ago, which was awesome. So you know, I've had a lot of noodles helped me out a bunch to us. I've had a lot of good skiers helped me out. And Norris said, this exact same thing that you did. He's like, Dude, you should be in, I think he got this from Florida. And he's like, You should be ski testing every day. So literally, I'd say once it was, you know, we had a better snow year last year. So this year has been a little trickier. But once the conditions were established last year, I was essentially swapping out a couple times, it's, you know, you're doing some big three hour loop, you can't stop halfway through or whatever. But every time it was prudent, which was almost every session, I did exactly that. And it's great advice sack as usual, because it makes a huge and the other thing that's nice, too, is, when you're doing that you're learning in a pressure free situation, you're not constrained by your start time. You know, if you want to go back to the car, it's like, Ah, this is a little bit of a pain in the ass. But you know what, I kind of want to see all those other, you know, first skis feel again, I can ski for 15 more minutes like that, that's not a big deal. You know, so you don't have any of those other intrinsic pressures, I gotta find fast skis, that kind of, so you can just your mind is a lot more free. And I think, more able to absorb nuances, because you're not worried about, you know, am I gonna miss my start? So speaking of racing at a high level, unless you have anything else to add, I want to you're a treasure trove of knowledge and resources. And you

mentioned that story. I gotta bring up because I don't want to keep you too much longer here. And when we got all next week to talk as well, but you were tracking for me a Masters World Champs in close to Switzerland, God six or seven years ago, I think. And he was a pretty you had, you know, like a pretty tight group of like athletes. He had hand picked. And I for the life of me, I can't remember the guys name and I apologize for that. But I was coming to the end of the wax truck to get my skis. Like how did Yeah, so I was coming in. And he had just finished and he was an older guy. And I don't know exactly. I think he had been on a bunch of national teams or Olympic team. You know, he, he was one of those guys had been around for a long time. Let's put it that way. And he came storming in and he was fired up. So hopefully this is ringing the bell, you know, I'm talking about Okay, so I'm not gonna do the story justice. I'm just going to, I'm going to turn it over to you. And I want I want you to take it from me because honestly, is much funny, crazy stuff. As I say, this is one of my all time favorite ski stories. So go ahead.

Speaker 2 1:32:44

Well, I might need I need you to deliver the slide because you I think you remember it well. And you've told me this story a couple of times over the years because it really stuck in your craw. I just know it is Bob gray. This is Bob gray you're talking about Okay, now we I gotta give you a little background on BG. He's one of the big three when when American skiing first really started to blossom in the really late 60s, early 70s. It was Bob Gray, who's a farmer up in Newbury, Vermont. Still still racing.

Speaker 1 1:33:13

Of course he is. He is. Yeah.

Speaker 2 1:33:17

Mike Gallagher, who passed a number of years ago now, but was a legend, longtime US Ski Team coach, great storyteller. And another another Eastern guy and then Mike Elliot, that's tad and Evans dad and pages dead. And a total legend from Durango. And and still out there hassling everybody in in the West. But these guys these guys were really, man they they they started the whole story I think for us and right on their heels came the janitor of the cogeneration

Coke, the Lana's my cousin Tim, Dan simonneau. A whole bunch of guys in that cohort came along. And Bob specifically was he grew up in Putney right here where I am couple miles from where I'm sitting right now. His father was a plant manager at the Putney school. And he had an all we might have been working on the farm there. But he was he was an athlete, and Bill Koch was a young student there. And they Bob was really influential mentor for Bill during his development, and they remain great friends. As you know, last time I talked to either one of those guys, they were still connecting to go skiing. Well, so Bob is one of the most competitive sons of bitches. He is a tough guy. And, and he he has been racing internationally since the second guy.

Speaker 1 1:34:53

Well, this makes sense. So I'll kind of connect the story here. So this is I think the first time I was at World Champ And so, you know, I'm fired up, you know, I feel like I'm going pretty good. And looking forward to my race. It was like a 10k Skate or something was really good for me. You know, you're I got all the faith and whirling you got good skis and I'm pretty excited. And all sudden this guy comes storming in and I, I want to say he won, I'm pretty sure that he won. He was definitely on the podium. And he comes storming in the wax cavity and you're like, you know, you're like, get me ready getting someone else, you know, you're herding cats here. And so you kind of look over your shoulder, you know, putting topcoat on me like, Bob how to go. He's like, I want oh, well, I've been racing those bastards for 50 effing years. And I'm like, This guy is the man, UK. So everything is so funny because we're kind of coming at, you know, you've known him for whatever. 30 or 40 years, I had this 32nd snapshot of like this grizzled veteran who'd been racing like, you know, he had been through like, the whole Cold War thing, racing these doped up Russians and it sounded like, you know, he had never quite gotten the gold or he had some nemesis. He'd been racing this guy for 40, fricking years, 40 years. And he so I think he put his skis down and went out to get a ring of water and you're like, you turn him in, you're like, Yeah, perhaps fired up. And I was. It was the most like, inspirational thing ever. You know, because people are talking about oh, I've been out grinding. Oh, yeah. How long? I've been training for this for a couple years. This guy had been doing it for 50. And he's exact My recollection is exactly how you describe when I could see him like, tipping over some big you know, riding some tractor that was stuck single handedly. It was like there's big strong like curmudgeonly Vermont guy. I've been raising those bastards for 50 years. It was great. It was one of the best

Speaker 2 1:36:43

stories. You don't have to spend a lot of time around BG to end up inspired. That guy is awesome. Good friend of mine. Chantel Minsky grew up in town here and he's a doctor out in Oregon now. But he was talking to BG once and he told me the story, how he was talking with Bob about training in the old days. And Bob's, you know, spent a summer out in Colorado or something. And Shonda asked him how that was, he was thinking he's in college thinking about going west for training. You know, Bob said, Man, it was, it was amazing. I never once finished a workout wet, cold. Tired. Weather was always perfect. I was such a fucking pansy. I've never been.

Speaker 1 1:37:33

Oh, I can see, so you'd say that? I mean, honestly, exactly. But you know, you just referenced earlier that, you know, I brought it up to you. I'm it's been a while since we've talked about it. And that was shit. 10 years ago, eight years ago, a while ago, I think about that regularly. I mean, it was so inspiring to see this guy, you know, just continuing and people talking about going on grinding. Like I said, this guy's been, you know, racing, some, you know, Igor baryon off or whatever, for 50 frickin years and finally beat him. It was, it was the highlight of the trip for me. Really was? Well,

Speaker 2 1:38:07

I think he's at now or maybe a little older. I'm not sure exactly. But you come out and race them at the craftsbury marathon. I can all call him up. Make sure he's signed up. If you want to. I'm scared. You beat me take a swing at him. But I don't think he will. steady beat

Speaker 1 1:38:21

me. But tell him I say hi. I'm sure he doesn't remember me. But it was like I said it was it left a lasting impression. It really does. I mean, yeah, it's nice winning. It's nice seeing people win World Cups. And you know, we're all psyched to see JC and Ben doing well and all that. But man, I'll tell you what that was, it was it was so inspiring to see that guy. I love that dude. Like I said, I met him for 30 seconds. Let me ask you something else. A couple more things real quick, then

I'll let you go. Because something else that really kind of as much as it pains me to compliment you. Again, going back to that first trip, you probably don't remember, but we're driving down from hell, Dora, you know, for those of you don't know, it's, I don't know, 45 minutes or something down a windy road back to Boulder. And you and I were nerding out about physiology the whole time. And you kind of I was pretty impressed because you started going into pretty intricate mechanisms regarding diabetes and Chris Freeman. So that was right about the time Byrd had been diagnosed with diabetes. And essentially, the bulk of the medical establishment was like, Well, you guys are screwed. Or, Chris, you're screwed. And like any other good stubborn Nordic skier, both of you were like the hell we are and you essentially took it upon yourself you and Byrd sat down and figured out how to manage his diabetes and he continued to ski at the elite level for shared I don't even know what five more years so talk a little bit about like what that whole process was like so for athletes going through it now because it was it was pretty remarkable what you guys were able to accomplish the whole story is pretty remarkable. Well, you

Speaker 2 1:39:56

you're given me way more credit than as do I was I was good. Good friend and mentor for him. We first connected when I was working for New England nordic ski Association running these testing camps and elite Elite and development camps. And Chris didn't didn't have a formal coach or anything, I guess we, we first really started working together when he's about 18 years old, and developed an outline and a plan for a while and it went pretty good. He made the US development team moved out to Utah and was diagnosed with diabetes, I think when he was 19, or 20 years old, living in Utah, and that he was still in a honeymoon period in terms of his insulin sensitivity, but but he's, you know, type one diabetic, so it was on its way out. At about the time that we were talking, he was much further down the road than that. So we had already been through a whole period of he had already been through a whole period of developing solutions for for endurance racing. And one of the crazy things about diabetes and insulin sensitivity in general is that as you exercise your, your insulin sensitivity increases, so you need less supplemental insulin to process the sugar in your system. So he was training, crazy volume, he would go for 100 Kilometer double polls on roller skis. And he'd end up just taking no supplemental, you know, he was on such a low basal dose because his training volume was so high, his long acting insulin dose was very, very low. And he was taking very few bolus doses to manage sugar because he was, you know, training at these, you know, these long distances. But what happens when you increase intensity and

you cross that magic nonexistent anaerobic threshold line is that your body dumps a ton of sugar. And anyone who has gotten sucked into the glucose monitoring that you're asking me about a couple years ago would be familiar with the phenomenon, but really diabetic is very attuned to it. So what happens as you move from, say, threshold level up to more maximal output, the whole equation flips on its head, and you go from needing almost no insulin, to needing massive amounts of insulin, very, very high amounts to immobilize the sugar that your body dumps into the blood. Otherwise, it just basically sends your lactate sky high, if blood sugar is way high. So as lactate, and performance goes way, way, way down, like brutally down. On the other hand, if blood sugar goes low, you do pretty bad sort of intermediate long term endocrine damage to your system. So if there was a big sugar crash in a race that was a season Ender for Chris, and that happened at the 2010 Olympics. So what we're talking about as a timeframe right around that time period of 2009 2010, Chris was skiing very well. But one of the big changes that happened was that he had gotten on to an omni pod and insulin pump that allowed him to use fast acting insulin all the time instead of long acting insulin to manage his basal dose. And what that meant was that he could more accurately and quickly target the insulin demand for his level of output. And so to the extent that I had anything to do with it, it was really just as a sounding board, Chris, Chris is the one that was living it day in and day out, I, you know, I have supervised some workouts where he, you know, he'd started he'd be like, well, I'm going to be going hard, if it's not hard enough that I'm going to end up with too much insulin in my system. And if I pass out on the side of the trail ringspot off of my own, like, yeah, stuff like that. It's like, okay, well, so. But he has, he went through a lot to develop that and continues to, he's racing very competitively in triathlon now. And he's had to reinvent, you know, his whole insulin regime for that sport, it's, it's a wild thing. And there's, there's, there's really not a lot of help out there. But understanding the difference between this aerobic up to threshold level, increased sensitivity decreased demand for insulin and the the hitting the switch on to race like peak output intensities and the massively increased need for insulin is really the key to the whole swing

Speaker 1 1:44:36

so help me out with the timeline here a little bit because I think a lot of people don't know or forgot or whatever so bird got fourth at Worlds twice right and what that was, oh, eight and oh nine Where did the diabetes slot into his you know, because he had some really, really good results. No, no, no, it helped me out with this.

Speaker 2 1:44:59

2000 2003 Okay. World Champs I think so. So 2002 Olympics, he was quite good. And this was in Utah. He's very young. And then the next year in 2003, Val 2pm, he was fourth at World Championships very young. He was already diagnosed he was he was diabetic and had been diagnosed for a couple of years. So, you know, his entire adult life, he's, he's been type one diabetic. But yeah, 2003 was the first one. And then results fell way, way off, change the training plan quite a lot was working on Yeah, it's just systems that weren't working and weren't working specifically with the endocrine system, I think. And in about 2006 2000, no post 2006. We started working, I started coaching again, after since he, when we when he joined the US Ski Team, he was working with us ski team coaches, went awesome for a year and then really kind of came off the rails, he got on an accelerated program because they were going to get medals in 2006. And it went horrendously badly. And then we just sort of piece of back together. And we work together quite closely from 2000 2000, post Olympics 2006 till the end of escape. And that included return Good, good return to form and another fourth place at Worlds in 2009 in leverage,

Unknown Speaker 1:46:31

so that's what I was thinking of when that was the you know, some

Speaker 2 1:46:33

good races through 2010 2011, unfortunately. Go ahead. Did I lose? You know, so the 2010 Olympics was was one where he actually had it. No, I'm here. Can you hear me? Hello? No, I

Unknown Speaker 1:46:51

got you. We had a little bit of latency those 2010 Olympics was okay. Might still not we're good.

Unknown Speaker 1:47:08

Okay. Where should we pick up?

Speaker 1 1:47:12

We can edit that out. So just pick up with 2010 Olympics.

Speaker 2 1:47:19

Okay, so the 2010 Olympics in the pursuit was actually a really tough one because he had dosed for a pretty hard race. And the pace went off really slow. And he ended up with more insulin and a system that he needed. He had a blood sugar low, passed out on the course. Some coach on the sideline or a spectator was able to pass him a bottle of Gatorade. Any any skied any finished the race should, we should have pulled them off the course. But we didn't. He was in very, very good shape. But that was, yeah, that was about Yeah.

Speaker 1 1:47:53

Well, you know, it's an incredible story. And, you know, a real tribute to perseverance of Chris and you, like I said, you know, just talking to science side with both of you guys, but like you said earlier, there is so little information on it. And I mean, shit, as you well know, this, the skiing, this whole equation is complicated enough, you know, trying to figure this out without the added complications of, you know, blood sugar fluctuations. It's, it's a, it's an inspiring story. So anyone out there who's an endurance athlete, you know, struggling with some of this, I highly recommend they get in touch with either Zach or bird because each of these guys has figured out a ton and shown that you can you can do it certainly at a very, very high level. It's it's not easy, but you can do it and like you said, i i Follow Burt on Instagram. And it looks like he's crushing the triathlons as well. So that's it's sick to see him. Still grind. And speaking of us skiing, how would you rate the overall state of us skiing right now in the World Cup?

Speaker 2 1:49:01

What can you say? It's astonishing. I mean, so we've known we've known the women were good. It's awesome to see you know, Jessie and Rosie at the front

of almost every race. Leading the overall World Cup leading toward a ski is just, it's it's a fairy tale, but notwithstanding the fact that that neither of them are left in the tour. You know, we had been in third and the tour and then Gus and forth and the tour after the sprint. We're seeing you know, Johnny 13th place in an individual star distance race. I mean, we're seeing results that are like a fairy tale and they're coming on the guys side as well. There's depth there. So the US is definitely you know, it's not Norway, but it's on par with everyone else it's competitive with with every other nation in the world and and is getting the results. My you know, I'm always concerned for the future. I think there's a ton of momentum. I think there's a great culture, I think some of the incentives that help bring things to where they are, might have been removed from domestic skiing, and I and I don't necessarily see all the pieces of the equation that helped to develop the skiers still in place, and I fear that the incentive to support racers for a long domestic calendar and keep high level support going is eroding because some of the teeth had been taken out of the ends of the season and too much emphasis has been placed on US Nationals for qualification and opportunities. I think I think some decisions have been made. And you know, for the sake of fairness and trying to find the right bubble athletes to take to the right opportunities, rather than look for the bigger incentives. I think. I think the women's team is in a state of flux both. Obviously, Rosie is quite old and still improving Jesse's not young, still improving, I wouldn't be at all surprised to see them continue to be super strong through the next Olympics, but the time is going to come when they're leaving. And you know, Julia looks fantastic. She's She's solid and improving. It's been great to see luckily take a step up this year. I think Novi is really good. She's top 30 Almost all the time. But you got to remember that, like, you know, Jessie was getting podiums at quite a young age. And it's not like there's an obvious heir apparent. And there's a lot of pressure on this younger generation that's coming up to fill some very, very big shoes. And as we look further down the ranks, I think they're really exciting. Young athletes. I mean, Sammy Smith is on the tour right now after dominating the anchorage super tour. And we're just going to have to see can, you know, can can skiing, keep her attention away from soccer, you know, like there's, there's talent out there, and there's culture out there. And yet, we also have to understand that the, the wave that built with that has resulted in, you know, having two skiers at the top of the overall World Cup standings and leading the tour to ski that that wave started to crest with kijken. Like, a long time ago, a decade ago. And, you know, at the same time, it's not like Keegan was alone. Keegan was for a while the US women's team was cancelled. It was done. There was no US women's team like post 2002 or something. And then Keegan was the only female for the US on the World Cup. When I first started doing service trips over there in like, 2008, the

only one and then you had at that time you had list even and Morgan era Pola show up and start winning national titles as juniors. And my uncle John, at the time said, when Jr start winning national titles, then there's a future in the sport. And he was dead, right? You know, those two starting to show up and put the seniors in their place was a good sign. And about, you know, Chris Chris had done more or less the same thing. You know, he won his first national title as a 19 year old. And, and he said, Yeah, that's good, that guy can get international results. But there was no critical mass. I think that, you know, Keegan, Keegan had the support of, of you have some great athletes of Liz and Morgan and others. Okay. That Critical Mass built over time. And there were a lot of athletes who had a lot of success, building the momentum in that program. And it started a long time ago. And I'm just hopeful that it can continue. Feels like this wave is likely to crest and then we'll just have to see at the same time you look on the guy side. And you can see it coming. I mean, back to back, World Junior relay wins. This is distance skiing now not sprinting. Alright. And these are team events that are being won back to back years. There was no question those guys were going to be and now they're starting to show up. You know, we've got, we've got to sprint podiums, and a fourth place from from that cohort now and the season. And, you know, it's looking awesome. And I think I think that the brightspot Rising right now is the guy's program. Well, so it's always gonna be more volatile on the guy side because it's such a tight field. But yeah, I I think the status is great at the moment, and I'm just always concerned and looking for that next wave and, and my gut feeling is that there's a lot of pressure on some pretty young ladies right now. And I'm just, I'm really bummed that the sport hasn't been able to keep You know, some some of the great talent that can be filling in, like Katherine Ogden or a Hayley swarm?

Unknown Speaker 1:55:10

Why do you think that's the case? You know, there's,

Speaker 2 1:55:12

there's some, there's some women I don't know, you know, I'm observed from a bit of a distance I'm not, I'm not traveling with those guys, I'm not part of that world at this point in time managing managing that atmosphere is, is, it's tough. And clearly, the program that they've taken is working, but they're, you know, the burn rates pretty high. There a lot of athletes that, that, you know, don't achieve everything that you feel they might have, and, you know, aren't aren't in a

position to contribute, what they could have to the momentum. And as strong as that momentum is. I'm just concerned with the pressure placed on the quite young crew that's coming up now. So

Speaker 1 1:56:03

that's, that's a really interesting comment. You know, back when you were coaching Bird and the Hoff and Tad, you know, I think there was a sense of perhaps some unfulfilled potential there, do youth, and I'm wondering if do you think at the time, those guys got the support that they deserved from the US Ski Team? And, you know, if not, like, what has changed? Like, why did those guys leave? In some cases with maybe not the best experience? And how has that, you know, process changed, if at all? Or do we just have different athletes? What's your take on how that Hall had went down?

Speaker 2 1:56:46

I mean, they got the support that was available. And you know, at the time, Chris, on his way out, wasn't getting fourth place at World Championships, Keegan was winning medals on the regular, and Jesse was showing up. And that dynamic was quite good. The ladies team was a, you know, contender for medals, and World Cup relays. And Chris was the only guy getting any distance results at all. But the real interest there was in supporting the sprinters. And so, you know, it was, it was easy in a team with limited resources, to say, Oh, the guys, you gotta get to drive yourself from the hotel. Because the staff has to be out there for the women's race. You know, you know, you don't have a dedicated, you know, chauffeur this morning. So, you know, here, no, here's the keys, you do the drive. And and, yeah, we're not really going to retask between the women's race and the men's race, because we don't have the resources. So they're, you know, get the skis were good enough for the women. So yeah, we'll put the same wax on the guys. None of this was, was because the the guys weren't good enough. Or maybe I should say, if the guys were the ones getting the podiums, then probably the women would have had a smaller staff there in the morning, right? Like the resources go where the results are. So it's, it's not? Did they get what they deserved? Well, they got what was available. And I don't think in hindsight that you can fault anyone for that. But could they have? Could they have benefited from more support? Sure. Is the team doing a better job now? 100%? Absolutely. It's a more professional organization. I'm not I'm not inside. But looking at it from where I sit. It's I see better use of industry resources to support athletes. I see.

Yeah, I see. I see more professional organization, supporting more athletes at a higher level than 10 years ago.

Speaker 1 1:58:51

But you know, that's an interesting comment, though, with all this talk about gender equity and parity, and I think rightfully so. Do you think if the situation was reversed now, and the women were not getting the resources that the men are because the men were getting more results? Do you think that would be being handled the same way, both in the court of public opinion, as well as on the boards and everywhere else?

Speaker 2 1:59:19

I don't really care. I mean, it's you will find out right, because I think that I think in the next few years, we're likely to see the guys, the clips, the girls and results at least at least from time to time. I think my gut says that we're going to see really good continued support to the athletes that are able to get the results and I think there's a lot of those right now. You know, part of my part of my concern is with the long term development trajectory and how long it takes to get good Rosie took a long, long time to get good and she did not get the support of a World Cup winner. When she was developing as a member of the ski team, you know, like, that was a tough way to make it to the top. Absolutely. Not many people are determined enough to pull that off. But, you know, if we go back and we look at Becky Scott, for example, at one point back in time, I tallied up the number of top 30 results she had before she started scoring podiums, and it was a very, very small number over a very, very large number of races that she had access to, with full national team support before she, you know, was an Olympic medalist and in winning overall World Cups. It took a long, long time. So, you know, I look at Novi McCabe getting regular top 30 She's on a much better trajectory than Becky Scott was at her age. But But what happens when a when a nation gets greedy? is, you know, does is that good enough? Is that good enough to satisfy the demands and the entity to keep the resources allocated on behalf of an athlete who, you know, could have the potential in five or six years to be winning over a World Cup? Right. And I think it's a very interesting, I don't know the answer. I don't know the answer. And I think I think the I think it's, it gets really easy to dismiss athletes, and do it prematurely when they've had a couple of bad years. And Rosie is a really good example of why that shouldn't be done. But the simple economics of the whole thing, are good reasons that, you know, you stop

investing where the, where the paybacks not coming back to you. I mean, at a certain point in time if the results aren't there, then.

Speaker 1 2:02:00

Right? Well, I mean, it's a very interesting philosophical question, too, because I think to some degree, you're answering your own question because it becomes a self fulfilling prophecy. If you say there aren't results here, we're not going to invest in this team that makes it that much more different, difficult for that team to therefore achieve results. And you know, you're in that that negative downward spiral that's very, very difficult to get out of. And, yeah, but

Speaker 2 2:02:22

let me let me be really clear that I don't, I don't see that happening right now. I see that team doing a great job of supporting a bunch of athletes at a very high level. And like, let's talk about skis. You know, several years ago, Chris Grover would comment on the classic gap on faster skier articles, you know, about how we just weren't quite as good in classic, it was never, not as good and classic. That was, that was bad service. We had the worst classic skis on the World Cup for a long, long time. That's not the case. At this point. Those kids are getting the tools they need to produce results week in week out in challenging conditions. And once the expectation rises, the athletes are better at making do with less than perfect skis. And we see, you know, we see some of the service work replaced with grit, how does Norway look when they don't have the best keys, all of a sudden, they're not that dominant. It's a service sport. It's a technical sport. And, and to not pay attention to the role of that is, is huge. So we're talking about a different organization that is maturing right in front of us, I've got nothing negative to say about the performance of that staff or service team this year, they've been killing it. I mean, to the standard of any other team out there. And it's that has not been the case. Last year, we saw glimpses this year, it's consistency. And it's, it's fantastic. It's a really good thing. So I don't, I don't see I've got no bone to pick with the way things are operating right now. And I give the leadership there a ton of credit for continuing to evolve and improve that organization. I think the national team can't succeed without the support of the organization. And it looks like it's going really well. I really appreciate that domestic athletes are getting opportunities to race on the regular, you know, that, that there's, you know, there's a lot of things that are really functioning very, very well. I'm always aware of how things can go the other direction, and I have, I

have concerns about, you know, about what the coming years look like. And, you know, US US has had a great team in the past and it evaporated. And we were in the wilderness for a long, long time. And I would really like to not see that happen. I think culturally, so much has changed that group of guys in the 80s, late 70s, early 80s That you know, had four guys in the red group. loop. This is

Speaker 1 2:05:00

like galanis took a top 15 on Sony and those guys.

Speaker 2 2:05:05

Yeah. So yeah, like like Dan seminoe Jim Galantis Bill Koch Tim Caldwell Yeah, Stan, there's there's a bunch of them. But the but Glanus simonneau Pokey and Tim, were the were the red group guys, they were the guys that won the World Cup really. That was a good group. That was that was a an amazing crew. And but they came out of a pretty small geographic area. Dan was from Maine, the rest were from Windham County. And you know, so so it was like one program almost, it would be like APU fielding the entire World Cup team, in point of fact now APU is, is, is one of the several funnels that feed the World Cup team, but pull athletes in from a whole bunch of really, really well staff well coached, well funded Junior programs, the funding mechanism might be crowdsourcing, but it's pretty frickin broad and good. There's a lot of resource backing skiing domestically right now, and there's a lot of enthusiasm behind it. And the feeder system is pretty good. And that I, you know, that has grown by necessity over time. But it's not the national team, this developing these athletes, the national team provides the resources at the World Cup for athletes that have developed over 10 to 12 years to succeed. So you got to you gotta go back pretty far in the personal history of each of those successful athletes to look at, at what's happened. And it's, you know, it's, it's a pretty broad footprint, that that, that the current success has, and that's where I take the most confidence. And that's the biggest difference, I think, from what we saw in the 80s, where it was, you know, a very small number of people from a very small area, not not a nationwide series of programs that were feeding athletes into domestic pro programs that were feeding athletes on to a well supported World Cup. Yeah,

Speaker 1 2:07:05

yeah, that's a great point. All right. Listen, I don't want to keep you here forever. But I gotta ask you one more question. And this is kind of changing gears off the World Cup, but sort of ties into what we were just talking about here. Because I think, ultimately, that's really at the core of what we're talking about here. So now we're talking about skiers not on the World Cup. But what would you how would you rate the overall state of the union in skiing in the US right now? Are the numbers trending up, trending down? Flat? You know, are we getting those 567 year old kids that want to get fired up that want to you know, that push each other in training every day, that eventually get to the high school team that get to the college team to get to the BSF, or the SMS team or APU? Because I 100% agree with you. You know, the the US Ski Team is not in the role of developing athletes, at least per se. You know, that happens, you know, 1015 years down the pipeline, a buddy of mine, skier Nora was talking about a lot of the kids there, you know, now want to play soccer, you know, that there's just even a ski crazy country like Norway, their coaches are worried because they see less kids going in the pipeline. You're much closer to this than me, what do you what are you seeing in the US just on a broad brush, both masters, and probably even more importantly, younger kids getting into skiing?

Speaker 2 2:08:28

Well, so it's what's interesting is that as a, from a business perspective, I see a lot of growth pressure in our business, which is specific high end, race gear, even for non racers is still specific high end race gear. That growth, I think, is a reflection of stress in the marketplace. So fewer and fewer local shops are able to service high end gear partly because of the level of sophistication has come up so much. And it takes a higher and higher level of expertise. But also because just the cost of carrying that gear in an uncertain environment is tough. I'm talking about, about climate change, global warming, the fact that the total number of places where there's skiing on the lower 48 right now is pretty low. It's it's a tough environment. And when when a business like mine is seeing massive growth pressure, what I have to assume is that I'm experiencing the overflow from stress induced selection. So let's say John that you are an enthusiastic performance recreational skier who's on decent gear and really likes skiing, but you know, you used to ski in your local area quite a lot. And now you're kind of bummed out because natural snow is not reliable enough. But the local ski club is fundraising for snowmaking and you've got a membership for an hour away where There's good snow and grooming and you're contributing to the local efforts to have snowmaking and you're you're making the decision to invest your time your money in the continuation of Nordic skiing, not just your own continuation, but the

community, you know, the resources, the infrastructure for every one of you, because now that you're invested, you're going to show up to me or Boulder, Nordic or pioneer, or you know, one of those places that sell on top and stuff and can support you at a higher level, you're invested, now you're showing up at my doorstep. So that's what I'm feeling, oh, this is a new customer. This is someone who's, who has really upped their game. But for every one of you how many other people are saying, Ah, there's no juice left in this, there's what you know, it's not worth the squeeze, I'm going to, I'm going to ride my bike ride winner, right? We're losing, you know, the ski skiing is shrinking. Mark my words, there is stress. I run a different business as the local ski shop, we sell touring skis, recreational skis and everything else. And that's, there's nowhere right now. called La sports 20%. Up that's, that's nothing. It's it's, it's, you know, fallen totally by the wayside. So, as we look at things we see in ISE, what I believe we're seeing is an increased investment, which is reflected reflective of the fact that to be in the sport, you need to be invested, you have to drive you need, you need to burn a ton of fossil fuels to both produce this snow, groom the snow and get to the snow. And it's happening in an ever shrinking number of areas. The number of race options is getting consolidated down to a smaller number of venues and a smaller number of races. And the because of that the depth in those fields looks really, really high. But it's not like there's a race in every town in Vermont every weekend, you know, like they there used to be races all over the place. Right, right here, right from where I am, you know, you could race in Marlboro, you could race there all over the place. And we keep trying to build these things back up. But you know, it's a, it's a 4060 proposition that you're going to be able to pull it off with natural. So yeah, we see we see an increase investment at the high end. But it's like, you know, you're squeezing through us ever narrowing aperture. And I think those of us that gauge the success of the sport from, from the top from the from the highest levels of performance and racing and are selling into that market are sitting in a position where we can look around and say, Hey, this sport is super, super healthy. But at a certain point, like you're talking about ski jump, right? It takes a huge resource, an unrealistic resource to have a jumping Hill. And it's a sport that's, you know, like so exclusionary. It's not it's not a sport for the masses, it's a sport for television. It's it's a silly spectacle. And at a certain point, it's not economically feasible, and it doesn't have a future unless people just spend the money to make it happen. And you know, it's, it's a tough model skiing. We want it to be a really populist thing. But even even the immense popularity of long distance races, you know, the Vasaloppet, the Birkebeiner, the American Birkebeiner, those things are going gangbusters. Why do you think that is is because once again, those people like you that are making the choice between like, Well, should I just ditch skiing and bike? Or should I should I

invest? Well screw it, I'm going to be a skier. I'm going to the Birkebeiner had a great customer with a great conversation with a longtime customer today, who lives in Colorado was going to ski a race in Michigan, but they didn't have snow. So he's flying to Washington. The guy's 78 years old, he's flying to Washington to skis, because he's made his choice. He's a skier. All right. This is what I'm talking about. This is not the same thing as Oh, yeah, there's a whole race series right here. And I can go the next town over and racing racing happening organically at a local level all over the place. You see what I'm saying?

Unknown Speaker 2:14:22

Well, so let's finish on it's something a little bit more

Speaker 2 2:14:24

like I don't know if it's good or bad. But racing is health. Yeah. Well,

Speaker 1 2:14:27

so let's finish on something a little bit more upbeat? Because this has been incredibly helpful. I'm sure everyone really appreciates this excellent insight. So kind of in summary, as someone who's been in the game for a long time and seeing a lot what's the biggest piece of advice that you can give to really skier at any level, but in particular, the master skier where, you know, you're trying to manage the job, family, just life in general, and you want to progress your skiing, and, you know, that means a lot of different things to different people. So whether it's, you know, moving up A wave and the Berkey or just being more comfortable on a sketchy downhill, you know, skiing is really, really unique in the fact that it is so much more fun, the better you get at it like you can be a not very fit, not very technically competent bike rider and still going to have a nice time, nice day, you know, you go out, go out, you know, do a pub crawl, you can go out, we know cruising with your buddies at 12 miles an hour or 15 miles an hour, and have just as good of a time shit, you probably have a better time than you know, if you're out there hammering at 25 Skiing however it like when you're more technical, when you're smoother, when you're better. It's you know, it's more fun, it's more efficient, you just enjoy yourself more. And that's hard. Because like you said, it's very demanding. Technically, you know, there's a certain baseline of knowledge that you need for skis wax for all that stuff. So, you know, as someone who

makes a career out of managing that, and providing counsel, the people trying to optimize that, what would you say is the biggest and best piece of advice that you can give just on how people can go out and have more fun skiing.

Speaker 2 2:16:13

approach it from the point of view that it's a very difficult sport physically demanding. And that anything that you can do to make it easier, is going to make it more approachable and more fun. So that doesn't mean that you just aspire to less and therefore don't. What it means is that you have to, you have to find ways to make proficiency, more attainable and easier. Let me give you an example in say scape technique, I see a huge number of people out there, trying to ride a flat ski. This is like the goal, I want to be on a flat ski with really good balance on that ski. What they're out there doing because they're old, they don't have great balance there. They're not, you know, their athleticism has faded. They're basically doing static balance drills, they probably don't have the Foot Ankle core stability, to balance very well at all. And they're predicating the whole approach to the technique on a challenge that they're not physically adept at making, they're just it's not going to work very well. But what happens instead, if that skier says, Well, I'm stable when I'm on edge. And as long as I'm moving from one edge to the other edge, I'm pushing, and I'm going along. And we just make this thing about connecting out of balance movement. With and increasing our proficiency in motion, rather than in static positions. You get rid of a ton of muscle tension, you get you know, you can you can still be Ford, you can still be high, you can be all the good buzzwords, but what you can't be is stack balanced and static. And when you pause for a second and you look at that freeze frame photo of clay vo who or whoever it is on a perfectly flat ski totally stacked. And then you put that put that photo into motion and you ask yourself, was it ever static? Was it ever stationary? Were they ever holding that position? Or were they passing through that position on their way to a more active position? I think a lot of the way people approach the sport is in these freeze frame. still images and okay, we're using technique, but let's look at it in another way. Let's say that you're trying to learn to classic ski and you decide that waxing sounds like a pain in the ass and so you're gonna do it on skin skis. Chris Freeman can't kick a skin ski. You know why? The skin can't hold the impulse of his cat. It folds up. It goes away at it like flips. I took a pair to the World Cup at one point we're like I'm going to take a pair of skinny skis we're going to like get back on this back in the day when when Kochi whiskey and a relay leg on mohair. So you know and and everyone was like trying to climb underneath his skis on the course to see what was working. That it was they were different. Different conditions, different tracks, different technique,

different skins, different skis, the speed demands were not high skins to the extent that they work almost well enough to race 1960s style skiing and conditions. They simply you cannot produce modern race skiing on skins doesn't work. They can. They're terrible. It's not skiing, it's shuffling. It's you know so. So if, if this is the approach you're going to try to get really good at Classic skiing and all you have this skinz keys because you think that's easier, then you need to acknowledge the limitation and say, you know, you're making the motion impossible on yourself. You cannot achieve speed race technique. Unless you're doing the sport, the sport includes wax. So you need, you need good classic skis and you need a simple and robust wax program that can give you kick in challenging conditions. There's, I mean, it's not nothing. It's difficult. It's a technical sport. So, yeah, how do you make it easier? Well, you got to acknowledge what it is you're trying to do, what the hard parts are, and what the easy parts are. And don't chase the pointless parts like the skin skis, which are fine training tool and recreational tool. Don't get me wrong, but they're not going to develop your technique. And don't, you know, don't don't chase impossibilities like perfect balance. You got it, you got to find seek ways to make the sport easier, easier to perform at a higher level.

Speaker 1 2:21:02

I like it. And it also seems like a perfect place to stop. Because number one, we've been on here forever. And number two. This is a perfect segue into next week. So as a reminder, everyone, send in your questions we want to hear from you. So if there is something that zach covered today that you would like to hear more on or raised the question that you had thought of before, we'd love to hear your questions. Regarding ski quiver. I wouldn't spend a whole lot of time talking about grinds, where we certainly did some love to hear your your questions on grinds. If you want to get ahead of the game, you can send in your wax questions, some of them will, you know, we get 500 questions on how many passes you should be making on, you know, putting down, you know, extra green. We'll get in front of that. And we'll address that in the next dedicated episode specifically on waxing. And then again, we're going to do the full q&a in a couple of weeks after we've given everyone sufficient time, so start sending in your questions. What do you think zach? Should we? Should we just limited to ski grind and wax? Or should we open it up? You want to feel every crazy random ski question in the world. What's more fun? What's what's more use? Well,

Speaker 2 2:22:19

you get you get to decide what you get to decide what to ask. So just open it up, then if there's something that seems entertaining, we could pursue it and if it seems not, like worth it, then you can pretend that there's no There you go. And then you just get That's

Speaker 1 2:22:31

That's true, too. All right. I like it. So send in all your questions. You got two weeks we'll be back. Well, whatever we say weeks, but episodes so next episode will be dedicated to waxing. And we really appreciate Mr. Caldwell's attention to detail on that. Let's see. You can send your questions to info at Nordic insights dot news or slide into my DMs on Instagram at fast underscore big dog. And after the appropriate submission period we will reconvene and answer all those questions with Mr. Caldwell. zach, this was awesome. Thanks again for coming on the show. We really appreciate it.

Speaker 2 2:23:15

Only awesome because you're such a nerd. That was like two hours these people are gonna be

Speaker 1 2:23:19

asleep. Oh, I've listened to 45 minutes of your you'll do what do you call nerd files you do? 45 minutes on Instagram. Talking about like one new kick wax formulation. You have one and I listened. But actually,

Unknown Speaker 2:23:35

I'm only scratching this. That's true.

Speaker 1 2:23:38

I do want to give a couple more shout outs real quick. First and foremost, we had a very generous donor who sent me all kinds of fancy recording equipment. This Good Samaritan is a fan of the show and felt we'd be well served to have better audio equipment. So hopefully that's reflective in this podcast. We wanted to save it for important guests like Zach. So this gentleman is an absolute Rockstar wanted to remain anonymous. So thank you. Good Samaritan. Second part about that. And Zach and I were kind of bullshitting about this before we went on the air here is kind of in a very eerily accurate parallel to today's topic about knowing your equipment. All the best recording equipment in the world doesn't do you any good. In fact, it's counterproductive if you don't know how to use it. And so I'm incredibly fortunate to have an amazing audio engineer. His name is Nathan Shuttleworth, of course he's also a skier. So he understands both the technical side as well as the content side which is helpful and he's been amazing. We're you know, zach pointed out what a nerd I am. We're testing this and you know, with the shades up the shades down, closets, great room office, everything to get, you know, to optimize web garden. Nathan has had the patience of a saint. And you know, he's a pro which is good because my Producer Wolfgang and I are basically flying by the seat of our pants here. But we're very fortunate to have smart, generous and qualified people around us. And one more kind of shout out as I was kind of putting this all together, I don't think I've yet thanked my good buddy Gavin Kentch on this. Gavin's the principal, the site and I was telling zach Gavin's work ethic on this is amazing. He's at Nationals right now, you know, and he's like, sleeping in his car. And, you know, he's got burritos that his wife made for him that he warms up, you know, under his armpit as he walks to the venue to interview people, and it's amazing. And again, everyone is doing this on a shoestring. So, Gavin, and Morgan Hartley sending questions and ideas and all kinds of things all the time. So this is going well, thanks to the team around me. And, again, apparently, I have a deeply disturbed cult following with the Alaska winter stars program. So on behalf of that whole squad who sent in some shout outs, I want to say thanks to everyone who's listening, because none of this would happen without you. But for everyone who does listen, who likes the show? This is you know, I mean, Gavin is great. He lets me do whatever the hell I want. But there's a lot of people behind the scenes that are really helping give this traction, get this legs making the whole thing work. So really appreciate all of you for everything you've done. And we'll see you guys out there.