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9th December 2005, 02:28 PM

1



Admin
Administrator

About:
Join Date: Aug 2004
Location: Cyberspace
Posts: 1,693
Join Date: Aug 2004
Marketplace reputation 0% (0)
Thanks: 9
Thanked 15 Times in 14 Posts

Foot orthoses and skiing

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**Dr Kevin Kirby
Craig Payne**

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If you're a skier, podiatrists say you should think of your feet as your steering wheel. "External forces of gravity, inertia and centrifugal force all act on a skier in motion," said Dr. Ben Pearl, a member of the American Podiatric Medical Association and a part-time ski instructor. "A skier needs a good sense of balance, particularly in the feet. You must be able to feel the contact between the bottom of your whole foot and the boot."

And that's where many people fall short. Most skiers' feet are not perfectly suited to ski boots and need some adjustments in their boots or a proper orthotic to be able to stand and move efficiently.

While most people think of orthotics as a way of making the feet more comfortable, Pearl says a ski orthotic can help balance the whole body.

For instance, an orthotic can be molded so it repositions an inward-turning ankle outward, preventing soreness on the side portion of the knee.

"If your foot is slipping around in your boot, you can't transfer as much force to the boot and reach the edge of the ski as quickly," Pearl said.



Any tips to share?

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Quote

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9th December 2005, 02:55 PM

2



DrPod
Senior Member

About:
Join Date: Sep 2004
Location: USA
Posts: 60
Join Date: Sep 2004
Marketplace reputation 0% (0)
Thanks: 5
Thanked 0 Times in 0 Posts

Quote:

Any tips to share?

Cast them somewhat pronated due to the flexed knee stance in skiing.

Quote

12th December 2005, 10:24 AM

3

CEM
Senior Member

About:
Join Date: Jan 2005
Location: oxford UK
Posts: 43
Join Date: Jan 2005
Marketplace reputation 0% (0)
Thanks: 0
Thanked 0 Times in 0 Posts

What on earth is the point of casting them in a pronated position!!! the most common problem i see is people in this position with badly made ski shop orthoses (sorry footbeds in most cases) with pain from the medial ankle and the lateral forefoot hitting the shell of the boot. in 17 years of working with skiers of all levels from novice to world cup racers casting in a neutral position with an orthoses designed for skiers has always worked for me

Quote

12th December 2005, 01:04 PM

4

Tim VS 
Member

About:
Join Date: Nov 2004
Posts: 23
Join Date: Nov 2004
Marketplace reputation 0% (0)
Thanks: 0
Thanked 0 Times in 0 Posts



Speaking as a novice skier and a beginner to biomechanics, would you want to *encourage* pronation in a ski orthotic, due to the need for 'edging' on the medial border of the foot?

Quote

12th December 2005, 01:37 PM

5

CEM 
Senior Member

About:
Join Date: Jan 2005
Location: oxford UK
Posts: 43
Join Date: Jan 2005
Marketplace reputation 0% (0)
Thanks: 0
Thanked 0 Times in 0 Posts



I would want to hold the foot as near to neutral as possible in as snug a boot as feasible, the foot & lower leg needs to move as one with the boot to transfer pressure to the ski, if the foot is pronated on the orthotic then there will be a tendency for movement to happen between the neutral position and the pronated position as pressure is transferred from ski to ski. to compensate the skier will clamp the boot tight to stop this movement and cause circulation problems. this normally results in them returning to the shop or the practice with boot problems!

Quote

12th December 2005, 04:46 PM

6

Craig Payne 
Moderator
Professor of Life, The Universe and Everything

About:
Join Date: Aug 2004

Location: Melbourne, Australia
Posts: 1,583
Join Date: Aug 2004
Marketplace reputation 0% (0)
Thanks: 5
Thanked 43 Times in 29 Posts



This is from the notes I used to give students as part of the Sports Medicine part of our course (I no teach it anymore):

Quote:

Orthoses need to be shallow and narrow with a low bulk grind so they can be accommodated within the boots. Any additions/modifications to the foot orthoses must have provision for the first ray to adequately exert a medial plantar force to help with setting the ski edge. Due to the slightly flexed knee stance in skiing which will have a natural pronatory effect on foot, consider casting the foot for orthoses in a slightly pronated position. In some cases (eg tibial varum), wedges or cants between the boot and ski have been used

Craig Payne
Department of Podiatry
La Trobe University
Melbourne, Australia
<http://www.latrobe.edu.au/podiatry>

God put me on this earth to accomplish a certain number of things - right now I am so far behind, I will never die.

The views expressed above are those of the author and not that of La Trobe University

This is where I am, where are you?

Quote

12th December 2005, 08:58 PM

7

About:
Join Date: Sep 2005



PF 3
Senior Member

Posts: 41
Join Date: Sep 2005
Marketplace reputation 0% (0)
Thanks: 0
Thanked 0 Times in 0 Posts



I can't really see the need to cast in a slightly pronated position. Short of a medial flange up to the medial malleoli, the foot will pronate over the top of the orthotic when enough force is pushed through it (when the skier transfers their weight forward, initiating the next turn)

Or simply build an orthose with a bit of flex.

My experience has been that you can get away with a very controlling device, more so than you would with a device for normal gait. The devices for my ski boots are about 4 cm at the highest point on the medial side (size 12 foot). I personally prefer using 260 EVA. Have also found for that you can use FF varus posts quite nicely (due to the fact the foot remains in Midstance)

Not that carve ski's are new now, but turning on edge is infinitely easier than it was 10 years ago, meaning you can really lean the ski's over. Correct foot position in the boot allows more control, as well as speeding up reaction times to initiate a turn in the other direction.

Tom

Quote



13th December 2005, 02:14 AM

8



CEM
Senior Member

About:
Join Date: Jan 2005
Location: oxford UK
Posts: 43
Join Date: Jan 2005
Marketplace reputation 0% (0)
Thanks: 0
Thanked 0 Times in 0 Posts



One of the interesting and often annoying things about most ski boots is that the shaft (cuff) of the boot is set at an angle, not the forward lean angle but a lateral angle of (depending on the make and model) approx 1-2.5 degrees inverted the average on a mens boot being 1.5degrees.

combine this with a pronated orthotic and you get some really interesting results 😊😊

The point about FF varus posts has always caused an argument, however as PF3 says the foot remains in midstance. and any time i used a lab built orthoses the best successes have been with full forefoot correction and a narrow grind, never the less i still see clients with some massively over sized orthotics from their doctor to put into ski boots, as a plea to these doctors please either learn to understand the biomechanics and fit of a ski boot or refer your patients to someone who does.

Quote



13th December 2005, 02:17 AM

9



CEM
Senior Member

About:
Join Date: Jan 2005
Location: oxford UK
Posts: 43
Join Date: Jan 2005
Marketplace reputation 0% (0)
Thanks: 0
Thanked 0 Times in 0 Posts



Just to add to the above, i think it was Kevin Kirby that said "skiing is one of the only sports were everyone could benefit from an orthotic"

I am sure he would agree that it needs to be suitable for the patient and well made!

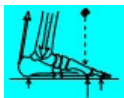
Quote



13th December 2005, 10:15 PM

10

About:
Join Date: Nov 2004



Kevin Kirby
 Podiatry Arena Veteran
 Most Valuable Poster (MVP)



Posts: 2,010
 Join Date: Nov 2004
 Marketplace reputation 0% (0)
 Thanks: 2
 Thanked 61 Times in 44 Posts

Quote:

Originally Posted by **CEM**

What on earth is the point of casting them in a pronated position!!! the most common problem i see is people in this position with badly made ski shop orthoses (sorry footbeds in most cases) with pain from the medial ankle and the lateral forefoot hitting the shell of the boot. in 17 years of working with skiers of all levels from novice to world cup racers casting in a neutral position with an orthoses designed for skiers has always worked for me

Alpine (downhill) skiing is a very interesting sport when it comes to the function of the foot. One of the first lectures I did during my Biomechanics Fellowship at CCPM was on the Biomechanics of Downhill Skiing. Along with some of my skier students, we also did some preliminary research on ski biomechanics during my Biomechanics Fellowship. One of my students, who had been a ski boot fitter before podiatry school, and I did a paper on ski boot fitting many years ago. Unfortunately, to my knowledge, this paper from 19 years ago is still the only paper published in the podiatric literature on ski boot fitting (Santoro JP, Kirby KA: Boot fitting problems in the skier. JAPMA, 76: 572-576, 1986).

Basically, in order to be an effective alpine skier, the individual must be able to generate force between the medial edge of the downhill ski and the snow surface. The force that the snow exerts on the ski, or **snow reaction force (SRF)** will bend the ski, which, along with the frontal plane angle of the ski relative to the snow surface, will help generate the forces necessary to allow the skier to make a turn.

When making a ski turn, the skier must lean into toward the center of the turn's radius in order to keep their center of mass (CoM) in line with the SRF vector. If they don't, then they will become unstable and fall. Because of this lean, the skier's legs will naturally have an angulation with the snow surface in order to counteract the effects of the centripetal force from the turn. See the attached lecture slide from 20+ years ago when we used this antiquated technology called 35 mm Kodachrome for our lectures. 😊

The best "natural" alpine skiers tend to have rigid forefoot valgus type feet or, another way of saying this, is that their foot have increased medial column dorsiflexion stiffness. One of the worst types of feet for alpine skiing are those that have "overflexible" medial columns where the medial forefoot will simply dorsiflex with increasing plantar force acting on it (i.e. low medial column dorsiflexion stiffness). Most of these feet will have difficulty initiating and maintaining a ski turn since, in order to generate sufficient SRF on the medial edge of the ski, they must internally rotate and adduct their knee excessively to try to get their medial forefoot to generate enough force on the boot bottom. Firm medial forefoot force transmitted to the boot, binding and then to the medial edge of the ski is necessary to initiate and hold an edge during a alpine ski turn.

Foot orthoses nearly always can be made to make the skier more efficient since the foot orthosis can be used to optimize the foot-boot sole interface to allow more efficient weight transfer between the medial foot to the ski. I will use polypropylene orthoses, generally about 3/16" thick, with full length Spenco topcover, flat rearfoot posts, casted in STJ neutral, and often times with a forefoot varus extension to get the medial forefoot to be able to bear good weight onto the boot bottom.

The shell of the boot (i.e. boot cuff) may, in some alpine ski boots, be able to be adjusted in the frontal plane relative to the boot bottom. This type of boot design is highly desirable in patients with tibial varum. Another alternative is to add a "cant" between the binding and ski in patients with tibial varum. However, many ski shops don't like doing this because it may alter the release mechanism of the binding which may increase the liability of the ski shop if an injury occurs with the canted binding.

There's much more to talk about, but that's all for now.

Attached Images

Alpine skiing2.jpg (50.9 KB, 452 views)

Sincerely,

Kevin

 Kevin A. Kirby, DPM
 Adjunct Associate Professor
 Department of Applied Biomechanics
 California School of Podiatric Medicine at Samuel Merritt College

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Private Practice:
 107 Scripps Drive, Suite 200
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 My location

Voice: (916) 925-8111 Fax: (916) 925-8136

Quote

14th December 2005, 01:55 AM

11



CEM
Senior Member

About:
Join Date: Jan 2005
Location: oxford UK
Posts: 43
Join Date: Jan 2005
Marketplace reputation 0% (0)
Thanks: 0
Thanked 0 Times in 0 Posts



As always Kevin makes a good point and makes it very well,

we could open up the discussion further with an in depth look at the frontal plane biomechanics of the floor board of the boot. How many people actually bother to check if the internal base of the boot is level????

many boots (read most) do not have level base boards the variation of these is truely amazing, many older boots tried the 'pronate the foot model' eg. the dynafit 3F comp had an everted base board of around 2 degrees, the idea was to pronate the foot and lock it in a maximumly pronated position with the clips done up. in contrast most modern boots have a base board which is either level or inverted by between 0.5 and 2.5 degrees, the average being 1.5degrees. Add to this the fact that if you have small feet, the ramp angle (sagital plane ange of the base board) will be greater than a larger size in the same model! this normally results in the skier being too far forward in the boot, so to compensate they drop the hips back and end up on the tails of the ski.

The use of under binding cants has declined in europe in recent years, this may be down to the liability issues, or the fact that there was a tendancy to make people ski like cardboard cutouts!! Unless you want to destroy the knees of your clients it makes sense to fill the gaps, by this i mean if the skier stands bow legged with weight on the outer edges of the ski, do not try to make them stand straight, just accept that this is where there body wants to be and offer a cant under the inner edge of the ski to allow them to ski on a flat ski!

Personally i still use the odd under binding cant but many more in boot cant plates between the liner and the shell.

Why? 🤔🤔 the under binding cant alters the biomechanics of the lower leg in the boot in relationship to the knee, where as the in-boot wedges alter the relationship between the foot and ankle, but not only this, this system allows us to perform very fine tuning for skiers of all levels using muscle testing methods. If you use too much cant the body becomes weak and the system collapses, get the right amount and the body remains very strong. One of the most important things to remember is after you have assessed the correct angle of cant you must remember to deduct (or add) the amount or cant already built into the base of the boot.

Anyone interested in these wedges should see www.footfoundation.com the system has been used very successfully for many sports including golf & cycling. I hope this makes sense and that i have not opened up too many cans of worms



Quote

15th December 2005, 04:04 PM

12



PF 3
Senior Member

About:
Join Date: Sep 2005
Posts: 41
Join Date: Sep 2005
Marketplace reputation 0% (0)
Thanks: 0
Thanked 0 Times in 0 Posts



I have not had an experience with Cants. I guess it something only full time skiers/racers would use (Not too many of them in Oz)

From what i can tell, Cants seem to be appropriate only where there is a large tibial varus?

PGCarter did or is still involved in the ski boot business (pretty certain thats how he got into podiatry). I know he would have a lot of good stuff to say on this topic.

Haven't dealt with too many snow boarders yet. Are orthoses as important as they are for skiing?

Quote

16th December 2005, 12:36 AM

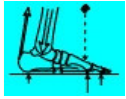
13



Kevin Kirby
Podiatry Arena Veteran

About:
Join Date: Nov 2004

Posts: 2,010



Most Valuable Poster (MVP)

Join Date: Nov 2004
 Marketplace reputation 0% (0)
 Thanks: 2
 Thanked 61 Times in 44 Posts



Quote:

Originally Posted by **PF 3**

I have not had an experience with Cants. I guess it something only full time skiers/racers would use (Not too many of them in Oz)

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Haven't dealt with too many snow boarders yet. Are orthoses as important as they are for skiing?

The most common way to "cant" ski boots now is to grind the ski boot bottoms so that for tibial varum, for example, the lateral aspect of the ski boot sole is ground thinner. In this way, the skier won't need to internally rotate and adduct their knees to get their skis flat on the ground (i.e. snow) which generally greatly improves their ability to initiate and hold a ski turn.

I have treated a few professional snowboarders (one very famous) with orthoses but I am not convinced that snowboarders need them as much as alpine skiers need them for performance. Foot orthoses will definitely help some snowboarders with comfort, reducing foot cramping and improving carving. However, for alpine skiing, foot orthoses are a necessity for some skiers to even function on the slopes and make drastic improvements in performance for many skiers. I believe this has to do with alpine skiing requiring frontal plane movement of the feet and lower extremities for turning whereas with snowboarding it is sagittal plane movements of the feet and lower extremities that is more important for making turns.

Attached Images

Snowboarding.jpg (82.4 KB, 429 views)

Sincerely,

Kevin

Kevin A. Kirby, DPM
 Adjunct Associate Professor
 Department of Applied Biomechanics
 California School of Podiatric Medicine at Samuel Merritt College

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Private Practice:
 107 Scripps Drive, Suite 200
 Sacramento, CA 95825 USA
[My location](#)

Voice: (916) 925-8111 Fax: (916) 925-8136

Quote



16th December 2005, 01:55 AM

#14

CEM
 Senior Member

About:
 Join Date: Jan 2005
 Location: oxford UK
 Posts: 43
 Join Date: Jan 2005
 Marketplace reputation 0% (0)
 Thanks: 0
 Thanked 0 Times in 0 Posts



Quote:

Originally Posted by **PF 3**

I have not had an experience with Cants. I guess it something only full time skiers/racers would use (Not too many of them in Oz)

From what i can tell, Cants seem to be appropriate only where there is a large tibial varus?

There are several points to answer, firstly where racers and full time skiers will gain the main advantages with using cants, there are many recreational skiers who are stuck on 'that plateau' you know the one can't improve feels like you are going backwards. often the equipment is the problem, if your boots do not work in harmony with your body then how casn you possibly perform the way you want to, at this point the skier normally blames themselves (the blame game) rather than their equipment. a minor change in foot position in the boot can make a massive difference to performance and comfort.

With modern skis we spend more time on both skis rather than having all the weight on the inside ski, with this two footed stance it is important that the skier can release the inner edge and simply roll onto the outer edge, this requires the foot to be in perfect balance.

Try standing on one foot and roll from the inside to the outside feeling the big toe then the little toe, which is easier? try the same thing standing on an orthotic, then by using strips of something (duct tape 2layers =about 0.5 degrees) build this up under the medial edge of the orthotic and repeat the test, look at the way the foot reacts, feel how much and when the anterior tib fires!! place blocks under the heel or under the toes flex the ankle and feel the differences if you are in tune with your body you will notice differences with even the slightest adjustment. try to get to a position where it is just as easy for you to feel the medial edge as it is to feel the lateral edge (these are the edges of your skis) try this stood upright and flexed forward, again get to a position where you feel everything equally

On Kevins point about grinding boot soles, this is somthing which seems to be on the way out, ocasionally i see racers with this done, but there are fewer and fewer places even offering this service, possibly due to liability issues (the upper edge of the boot on the side ground down needs to be built up to allow correct binding interface, there is a risk of this build up fracturing off, a bit like the old acrylic posts!!) the other factor is it is irreversible, once ground the boots are ground, this is all very well when you can call your sponsor and ask for a new pair of boots but as a recreational skier is unrealistic (i have also seen people whos cant prescription has changed over a period of time)

There are many skis shops and instructors who would say any of these procedures are a waste of time or not nescessary..... 🙄🙄 with the price of a ski holiday these days (and the limited amount of time that we actually get to the slopes) i consider taking an hour or two and a little cash having your equipment set up correctly for you is well worth the effort.

as for snowboarer I agree with Kevin fully, one of the main advantages is that snowboarders tend to over tighten their boots and crush the foot into a pronated state, the orthotic offers a means of filling the gaps which helps reduce this.

PS nice photo Kevin, makes me want to get my skis on right now!!

Last edited by CEM : 16th December 2005 at 02:01 AM. Reason: addition

Quote

17th December 2005, 03:28 PM

#15

Freeman 
Senior Member

About:
Join Date: Aug 2005
Location: Halifax, Nova Scotia, Canada
Posts: 68
Join Date: Aug 2005
Marketplace reputation 0% (0)
Thanks: 0
Thanked 0 Times in 0 Posts

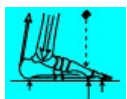


I attended a workshop put on by Terry Makos, a skiboot-fitter/pedorthist who had a practice for many years in Canmore Alberta. He is now in the Okangan Valley of BC, where he can also grow red wine grapes and ski. He typically throws away the skier's bootliner, uses his own and makes orthotics from scratch for the skiers he has treated. He has done many fittings for Canada's downhill ski team. Terry made a comment about not casting the skiers in subtalar neutral but rather, slightly pronated. I believe his rationale had to do with " being slightly pronated was better than slightly supinated...you were more likely to have your foot clatter, lose your edge and have it become airborne with a supinated foot. I do not ski and see a few skiers in Nova Scotia. Does this make sense to anyone (who skis)?
Freeman

Quote

17th December 2005, 04:52 PM

#16



Kevin Kirby 
Podiatry Arena Veteran
Most Valuable Poster (MVP)

About:
Join Date: Nov 2004

Posts: 2,010
Join Date: Nov 2004
Marketplace reputation 0% (0)
Thanks: 2
Thanked 61 Times in 44 Posts



Quote:

Originally Posted by **Freeman**

I attended a workshop put on by Terry Makos, a skiboot-fitter/pedorthist who had a practice for many years in Canmore Alberta. He is now in the Okangan Valley of BC, where he can also grow red wine grapes and ski. He typically throws away the skier's bootliner, uses his own and makes orthotics from scratch for the skiers he has treated. He has done many fittings for Canada's downhill ski team. Terry made a comment about not casting the skiers in subtalar neutral but rather, slightly pronated. I believe his rationale had to do with " being slightly pronated was better than slightly supinated...you were more likely to have your foot clatter, lose your edge and have it become airborne with a supinated foot. I do not ski and see a few skiers in Nova Scotia. Does this make sense to anyone (who skis)?

Freeman

If one had a choice of casting the foot for orthoses in the slightly supinated position, neutral or slightly pronated position, then I would pick in order of preference, (1) neutral, (2) slightly pronated and (3) slightly supinated position. Of course, it also depends on how one determines STJ neutral position. 😊

As we all know, however, the rotational position of the STJ during negative casting is only one determinant of how the orthosis will work. Much more critical are the material the orthosis is made out of, whether it has forefoot extensions, how stiff the orthosis is and how it fits in the boot.

Sincerely,

Kevin

Kevin A. Kirby, DPM
Adjunct Associate Professor
Department of Applied Biomechanics
California School of Podiatric Medicine at Samuel Merritt College

e-mail: kevinakirby@comcast.net

Private Practice:
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Sacramento, CA 95825 USA
[My location](#)

Voice: (916) 925-8111 Fax: (916) 925-8136

Quote

17th December 2005, 05:15 PM

17

CEM 
Senior Member

About:
Join Date: Jan 2005
Location: oxford UK
Posts: 43
Join Date: Jan 2005
Marketplace reputation 0% (0)
Thanks: 0
Thanked 0 Times in 0 Posts

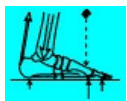
I think Kevin sums this up very well **yet again** :)

It all depends on how the orthotic is made, what it is made from and most importantly how it actually fits the boot

Quote

18th December 2005, 12:16 AM

18



Kevin Kirby 
Podiatry Arena Veteran
Most Valuable Poster (MVP)

About:
Join Date: Nov 2004

Posts: 2,010
Join Date: Nov 2004
Marketplace reputation 0% (0)
Thanks: 2
Thanked 61 Times in 44 Posts



When it comes down to making an orthosis for a patient to help them improve in a sport, my experience has been that alpine skiing is the sport that is the easiest to make improvements in performance with the use of custom foot orthoses. It's really just a matter of understanding the basics of ski biomechanics, the basics of the equipment involved

(i.e. skis, bindings, and boots) and how certain anatomical and functional variations in the feet and lower extremities of individuals can make it difficult for them to initiate and hold an edge during ski turns and be comfortable in a ski boot for a day of skiing.

The approach for alpine skiing is really no different than the approach you would use in making orthoses for snowboarding, running, racketsports, cycling, basketball or walking, for that matter. To make effective foot orthoses for any activity, one first needs to understand the specific biomechanics of the activity, then understand the basic equipment requirements and finally comprehend how variations in anatomy and function may affect performance and comfort in that specific sport or activity.

Gaining this knowledge is really not all that difficult, as long as one has the desire and enthusiasm required to master the subject.

Sincerely,

Kevin

 Kevin A. Kirby, DPM
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 Department of Applied Biomechanics
 California School of Podiatric Medicine at Samuel Merritt College

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Quote

18th December 2005, 06:57 AM

19

Freeman 
 Senior Member

About:
 Join Date: Aug 2005
 Location: Halifax, Nova Scotia, Canada
 Posts: 68
 Join Date: Aug 2005
 Marketplace reputation 0% (0)
 Thanks: 0
 Thanked 0 Times in 0 Posts

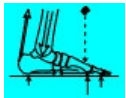


Hi Kevin,
 I have had fairly good results with the skiers I do see. One difference between skiing and other sports is the gait "sequence". ... Are they not always in midstance (if I may call it that?)
 Like you, I have sought first neutral, or a bit pronated, and never supinated.
 Freeman

Quote

18th December 2005, 10:47 AM

20



Kevin Kirby 
 Podiatry Arena Veteran
 Most Valuable Poster (MVP)

About:
 Join Date: Nov 2004

 Posts: 2,010
 Join Date: Nov 2004
 Marketplace reputation 0% (0)
 Thanks: 2
 Thanked 61 Times in 44 Posts



Quote:

Originally Posted by **Freeman**
*Hi Kevin,
 I have had fairly good results with the skiers I do see. One difference between skiing and other sports is the gait "sequence". ... Are they not always in midstance (if I may call it that?)
 Like you, I have sought first neutral, or a bit pronated, and never supinated.
 Freeman*

Accomplishing a turn in alpine skiing involves a complex set of coordinated movements of the upper extremities, head,

torso, pelvis and lower extremities that allow the skier to make turns at different radii on the ski slope. To say the foot is in "midstance" would not be the term I would use since this term is more appropriate for walking and running. However, the foot and ankle are certainly in an attitude that is simulated by that of late midstance phase of walking gait. Maybe we could say that the foot is nearly always in a dorsiflexed position at the ankle with the foot plantigrade relative to the ski bottom.

Sincerely,

Kevin

 Kevin A. Kirby, DPM
 Adjunct Associate Professor
 Department of Applied Biomechanics
 California School of Podiatric Medicine at Samuel Merritt College

e-mail: kevinakirby@comcast.net

Private Practice:
 107 Scripps Drive, Suite 200
 Sacramento, CA 95825 USA
[My location](#)

Voice: (916) 925-8111 Fax: (916) 925-8136

Quote

22nd December 2005, 05:58 AM

#21

 **pgcarter**
 Podiatry Arena Veteran

About:
 Join Date: Oct 2004

 Location: Bairnsdale
 Posts: 283
 Join Date: Oct 2004
 Marketplace reputation 0% (0)
 Thanks: 0
 Thanked 1 Time in 1 Post



Hi Kevin and others,

I have been away for a couple of weeks getting some excessive Aussie summer in Queensland and so have missed this chat about stuff close to my heart and working background.

I would agree with most of what CEM and Kevin have said....don't try to change fundamental anatomical relationships using equipment in order to ski....it'll end in tears. Have also done same sort of stuff with cycling, roller blading and skating. As CEM quite nicely said "fill the gaps"...get someone set up in a stable position so they can use the joint ranges they have as well as possible on and off a flat ski in order to use the edges as smoothly and efficiently as possible.

My background is Alpine, Telemark and cross country/nordic....have used all sorts of materials, used to have a couple of ski shops, since qualifying in podiatry I prefer to use shell devices like polypro 4mm ish.

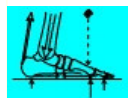
Too rigid often results in skier tolerance problems, some flex a good thing. As far as casting goes....I prefer neutral casting to start with, but in the end it is a combination of shape, rigidity, boot, foot and job required.....blah blah blah forever. If any one wants a specific question addressed happy to give my 2 cents.

Regards Phill Carter

Quote

22nd December 2005, 10:56 AM

#22



Kevin Kirby
 Podiatry Arena Veteran
 Most Valuable Poster (MVP)

About:
 Join Date: Nov 2004

 Posts: 2,010
 Join Date: Nov 2004
 Marketplace reputation 0% (0)
 Thanks: 2
 Thanked 61 Times in 44 Posts



Phill:

A few questions:

1. Would you agree with my statement that the performance gains seen with foot orthoses in alpine skiing are

generally much more than that seen with foot orthoses in snowboarding?

2. I have never had a patient come back to me and say that their snowboarding foot orthoses have made them perform much better, but they often do report significantly improved comfort and endurance. Is there anything specific you will do to a snowboarding orthosis that you don't do in an alpine ski orthosis in order to try and improve performance?

I appreciate your experience in these matters.

Sincerely,

Kevin

 Kevin A. Kirby, DPM
 Adjunct Associate Professor
 Department of Applied Biomechanics
 California School of Podiatric Medicine at Samuel Merritt College

e-mail: kevinakirby@comcast.net

Private Practice:
 107 Scripps Drive, Suite 200
 Sacramento, CA 95825 USA
[My location](#)

Voice: (916) 925-8111 Fax: (916) 925-8136

Quote

23rd December 2005, 01:16 AM

#23

 **pgcarter**
 Podiatry Arena Veteran

About:
 Join Date: Oct 2004

 Location: Bairnsdale
 Posts: 283
 Join Date: Oct 2004
 Marketplace reputation 0% (0)
 Thanks: 0
 Thanked 1 Time in 1 Post

Hi Kevin,
 Merry Christmas, happy Hannukah etc.

1. Yes...agree totally
 2. Differences between snow board boots ie hard or soft etc will effect alterations in results...when using a pretty spongy bulky boot that fits like a bucket I would use a fairly bulky device in order to try and fill up the voids and get stabilized with out the need for major buckle tension over the instep and mid foot. I have often thought it is this need for rigidity whilst in the middle of a sea of "sponge cake" that makes for difficult solutions.

In an Alpine boot I have tended to be far quicker to say "wrong boots, get a new pair that are right for you if you want the right result". The snow board boot market and design generations are relatively immature compared to Alpine boots, so we can expect to see significant development and change from year to year, as is happening....at a rate that is probably quicker than the rate of change in Alpine boots, which have been around for much longer.

Generally improvements in comfort and endurance are greater than performance as you say...but then I'm a little prejudiced...I think the whole snow board thing is really too low tech to be challenging except by jumping off things...which they do pretty quickly....minimal finesse in snow board edge control in recreational boarders forehand, backhand, forehand, backhand, there is nothing else to do with them really except jump off things and try not to hurt yourself.


Regards Phill Carter

Quote

24th December 2005, 05:20 AM

#24

 **pgcarter**
 Podiatry Arena Veteran

About:
 Join Date: Oct 2004

 Location: Bairnsdale
 Posts: 283
 Join Date: Oct 2004
 Marketplace reputation 0% (0)
 Thanks: 0
 Thanked 1 Time in 1 Post



Having thought about this a little more I think you could say that in SOFT snow board boot it is not reasonable to expect precise solutions to problems because there is so much slop in the system, and the control actions of forehand and back hand turns are so grossly opposed to each other, the deciding issue is really how it feels to the individual and that will vary so much

In a rigid shell boot like Alpine or roller blade or plastic climbing or telemark boots or hard snowboard boots precise changes made to foot, cuff, shell shape by grinding or moulding or under foot devices are going to result in far more predictable results, to the extent that a good boot fitter knows more about what is happening than the person wearing the boot (except for very experienced skiers). In this situation the advice over rides what the customer is saying...our shop used to say "buy what we tell you to and it comes with a guarrantee or buy it elsewhere" This can come across a little arrogant but if we were going to offer money back even after, use we only wanted to back our own judgement not the customers....never had to refund much.

Obviously it is difficult to make these blanket statements when every case really is different and each case needs its own solution.

Regards Phill

Quote

27th December 2005, 01:12 PM

#25

CEM
Senior Member

About:
Join Date: Jan 2005
Location: oxford UK
Posts: 43
Join Date: Jan 2005
Marketplace reputation 0% (0)
Thanks: 0
Thanked 0 Times in 0 Posts



Hi Phill,

happy christmas,

I agree 100% with your thoughts (did you work in the same shop that i had been running for the past 9 years)

most skiers , snowboarders etc have no idea how a boot should feel, this can be true even for very high level skiers!!! I recently did a fitting session with some members of the Scottish alpine squad, one girl age 17 who was on the squad could not feel the difference between her orthotic being under her foot and the orthotic being inverted or everted by 3degrees each way

thats a total of 6 degrees and she could not tell me which one felt better or worse..... this really worries me


prior to moving on for the store we had the same policy on fitting..we tell you or buy it somewhere else...most bought and very few had problems

Quote

27th December 2005, 03:23 PM

#26

pgcarter
Podiatry Arena Veteran

About:
Join Date: Oct 2004

Location: Bairnsdale
Posts: 283
Join Date: Oct 2004
Marketplace reputation 0% (0)
Thanks: 0
Thanked 1 Time in 1 Post



Hi CEM,

I had two shops here in Melbourne, lots of fun over nearly 20 yrs. One thing I have felt was that good skiers do usually have good proprioceptive foot awareness. Maybe this girl is balls out low tech speed....Downhill rather than GS or Slalom?....maybe she won't cut it in the end...or her foot awareness will improve?

The forward and backward rocking in the sagittal plane of alternate turns on a board probably wiil not foster the same foot angulation awareness in the frontal plane as skiing does.

We have used cork Superfeet, Sidas of various materials and our own blanks made from thermoplastics out of the aircraft fabrication industry, but these days I tend to use polypro as I said. Don't spend much time in the shop anymore, just turn up on request to look at the ones the can't figure out. I'm having fun doing other stuff now.

Regards Phill

Quote

28th December 2005, 01:57 AM

#27

CEM
Senior Member

About:
Join Date: Jan 2005
Location: oxford UK
Posts: 43
Join Date: Jan 2005
Marketplace reputation 0% (0)
Thanks: 0
Thanked 0 Times in 0 Posts



Phill.

i get the feeling that she won't make it, but who knows. most of the work i do is either with the superfeet Kork product (works well for most people)

or with either home made blanks or mutalated sidas made semi weightbearing rather than the traditional way.

what are your thoughts on the superfeet range, it would eb good to talk with someone familiar with the product, i have found many podiatrists shun it and a few (who understand their thinking) praise it as a great system, as i said i love it and have been working with this system for the past 10 years or so (I was the first custom centre in the UK)

regards

Colin

Quote

28th December 2005, 02:25 AM

#28

pgcarter
Podiatry Arena Veteran

About:
Join Date: Oct 2004

Location: Bairnsdale
Posts: 283
Join Date: Oct 2004
Marketplace reputation 0% (0)
Thanks: 0
Thanked 1 Time in 1 Post



Hi Colin,

Superfeet first came to Aus about '84 I think. I started using the vacuum cast cork blanks in 86 and used them alot till 90-91. We also used their other over the counter footbeds too. Sven Coomer was the designer I think, an Australian I did meet back about '88 or so from memory.

Superfeet has a chequered history out here in terms of reliable supply etc and for years there seemed to be some sort of legal dispute about their products.

I always liked the cork product but we found that the original vacuum casting method we were taught by a guy called Geoff Gray (American) used unweighted vecuum bagging and then full boddy weight onto each foot separately to create toe crestring imprints, was not that universally successful.

We changed this to partial weight bearing on the rear foot and no toe crestring at at all. We also found that the technique required a pretty high degree of skill and practice to get consistently good results.Labour intensive and our market was reluctant to meet a fair price for this.

We had good results over many years with Kidex thermoplastic or Sidas polydorane...which I have since discovered is basically Smith and Nephew Easy Cast...widely used by Occupational Therapists.

Can't give you any feedback on recent Superfeet product but I know it's out there. Not all that different I don't think.

The Birky cork blanks are a little rigid for some feet to tolerate in a closely fitted boot....grounds to make a slightly pronated shape maybe, I often had to grind out the plantar forefoot of cork devices made elsewhere because they were left too full under the mid forefoot and the result was cramping. But I prefer to use a shell like polypro to reach all the way up to the foot but allow a little flex in function. This I think gives more precise and immediate edging and also better tolerance over time.

Regards Phill

Quote

1st January 2006, 04:57 PM

#29

About:
Join Date: Aug 2005

totalpod 

Member

Posts: 4
 Join Date: Aug 2005
 Marketplace reputation 0% (0)
 Thanks: 0
 Thanked 0 Times in 0 Posts



Hi Phill-

I'm just learning how to xc ski and still, granted have a lot more movement and inadequate balance at this point. However, I have consistent 1st mtpj pain within the joint every time I ski now (hallux valgus and bunion deformity, as well; not painful prior to demanding so much forefoot push-off). I have a low arch (not flat) and a hypermobile 1st ray. My standard neutral position copoly orthotics fit into the ski boots I've been renting but do not have any sort of 1st ray cutout nor any other FF modifications. Suggestions for orthotic modifications or completely scrapping and starting anew would be so appreciated.

Happy New Year

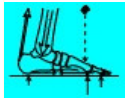
Tanya Barton, DPM

Quote



1st January 2006, 11:56 PM

30



Kevin Kirby 
 Podiatry Arena Veteran
 Most Valuable Poster (MVP)

About:
 Join Date: Nov 2004

 Posts: 2,010
 Join Date: Nov 2004
 Marketplace reputation 0% (0)
 Thanks: 2
 Thanked 61 Times in 44 Posts



Quote:

Originally Posted by **totalpod**
Hi Phill-

I'm just learning how to xc ski and still, granted have a lot more movement and inadequate balance at this point. However, I have consistent 1st mtpj pain within the joint every time I ski now (hallux valgus and bunion deformity, as well; not painful prior to demanding so much forefoot push-off). I have a low arch (not flat) and a hypermobile 1st ray. My standard neutral position copoly orthotics fit into the ski boots I've been renting but do not have any sort of 1st ray cutout nor any other FF modifications. Suggestions for orthotic modifications or completely scrapping and starting anew would be so appreciated.

Happy New Year

Tanya Barton, DPM

Copolymer orthoses are often too flexible to be able to resist the arch flattening forces from a flexible flatfoot. Try packing the medial arch of your orthosis with a non-compressible material such as korex or EVA to increase the stiffness of the orthosis. Then add a topcover and a 2-5 forefoot extension so that the ground reaction force is reduced plantar to the first metatarsal head which should prevent the first MPJ from being "jammed" by the decreased dorsiflexion stiffness in your first ray (not a hypermobile first ray, please). <http://www.podiatry-arena.com/podiat...read.php?t=797>

Sincerely,

Kevin

 Kevin A. Kirby, DPM
 Adjunct Associate Professor
 Department of Applied Biomechanics
 California School of Podiatric Medicine at Samuel Merritt College

e-mail: kevinakirby@comcast.net

Private Practice:
 107 Scripps Drive, Suite 200
 Sacramento, CA 95825 USA
[My location](#)

Voice: (916) 925-8111 Fax: (916) 925-8136

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Hard orthosis crushing soft soles	Jbwheele	Biomechanics, Sports and Foot orthoses	2	15th July 2005 01:19 AM

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2nd January 2006, 01:46 AM

#31

pgcarter
Podiatry Arena Veteran

About:
Join Date: Oct 2004

Location: Bairnsdale
Posts: 283
Join Date: Oct 2004
Marketplace reputation 0% (0)
Thanks: 0
Thanked 1 Time in 1 Post

Hi Tanya,
XC skiing is fairly hard on the medial column, so much slop in the lighter boot binding combinations (and often no metal edge on the ski) that you are forced to constantly exaggerate the edging control motions. The force on your 1st MPJ can appear to be greater than warranted based on the level of success achieved with the skis, particularly when a beginner. Not a rare problem unfortunately.

What works for you will depend on what you can tolerate in the end. I would try to load up the mid foot more than you might for gait, you need to get force onto the ski's medial edge without having to do so much of it with the 1st MPJ, watch out for proximal medial fascial slip pressure.

The nature of the snow you are on mostly will also effect the answer, ice verses hard pack vs fluff etc and skating or diagonal stride will also be an issue.

One thing that should help: as you do more miles and begin to stand up a little straighter (usually) and relax more the forces should decrease. The lateral fore foot wedge in 300 density EVA may help blended forwards from a full mid foot/ cuboid area. and depending on your foot maybe canting under the binding as a trial if necessary...don't like this much though.

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Dr Kevin Kirby
Craig Payne

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I'll think on it a bit more.
Regards Phill

Quote



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19th March 2006, 07:56 PM

#32



Admin
Administrator

About:
Join Date: Aug 2004
Location: Cyberspace
Posts: 1,693
Join Date: Aug 2004
Marketplace reputation 0% (0)
Thanks: 9
Thanked 15 Times in 14 Posts

I just came across this PDF file on the Paris Orthotics site:
[Prescription Writing Tips for Orthoses for Alpine Skiers](#)

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Quote

23rd January 2008, 04:37 PM

#33



NewsBot
The Admin that posts the news.

About:
Join Date: Jan 2006
Location: The Zoo, where all good monkeys should be
Posts: 2,937
Join Date: Jan 2006
Marketplace reputation 0% (0)
Thanks: 2
Thanked 37 Times in 35 Posts

Re: Foot orthoses and skiing

The latest communique from [ProLab](#) offers this advice:
Custom Orthoses for Downhill Skiers

Quote:

Custom functional orthoses reduce fatigue and improve performance during skiing by allowing distribution of full plantar foot contact to the boots and skis. The orthoses are designed to improve the leverage of the peroneus longus tendon, which gives the skier better control of the inside edge of the ski. Here are our recommendations for custom orthoses for skiers:

§ Plantarflex the first ray in the negative cast to ensure that the contour of the orthotic encourages peroneus longus efficiency

§ Use minimum cast fill to ensure full contact of the orthotic arch with the foot

§ Add a reverse Morton's extension to the device to improve control of the peroneus longus

§ A graphite shell with a vinyl topcover to the sulcus is an appropriate choice since downhill ski boots now have a fairly low volume design

§ No rearfoot post is required since the foot is maintained in the stance phase by the rigid boot throughout the activity

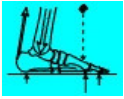
It is essential that you send the boot liners with your prescription in order for the orthoses to be fit to the boot. Our lab will provide this fitting at no extra charge when the boot liners are sent at the time of the order.

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Quote

23rd January 2008, 10:21 PM

#34



Kevin Kirby
Podiatry Arena Veteran
Most Valuable Poster (MVP)

About:
Join Date: Nov 2004

Posts: 2,010
Join Date: Nov 2004
Marketplace reputation 0% (0)
Thanks: 2
Thanked 61 Times in 44 Posts

Re: Foot orthoses and skiing

Quote:

Originally Posted by **NewsBot** ↑
The latest communique from ProLab offers this advice:
Custom Orthoses for Downhill Skiers

Sorry, can't agree with all of these orthosis recommendations for alpine skiing orthoses. A flat rearfoot post should be used to decrease the flexion movement of the orthosis inside the boot. In addition, I wouldn't recommend using a reverse Morton's extension routinely. One may often need to use a varus forefoot extension to improve medial edge pressure in Alpine skiing orthoses in patients with an inverted forefoot deformity.

Sincerely,

Kevin

Kevin A. Kirby, DPM
Adjunct Associate Professor
Department of Applied Biomechanics
California School of Podiatric Medicine at Samuel Merritt College

e-mail: kevinakirby@comcast.net

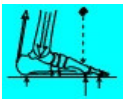
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Voice: (916) 925-8111 Fax: (916) 925-8136

Quote

23rd January 2008, 10:22 PM

#35



Kevin Kirby
Podiatry Arena Veteran
Most Valuable Poster (MVP)

About:
Join Date: Nov 2004

Posts: 2,010
Join Date: Nov 2004
Marketplace reputation 0% (0)
Thanks: 2
Thanked 61 Times in 44 Posts

Re: Foot orthoses and skiing

Quote:

Originally Posted by **NewsBot** ↑
The latest communique from ProLab offers this advice:
Custom Orthoses for Downhill Skiers

Sorry, can't agree with all of the above orthosis recommendations for alpine skiing orthoses:

Here are my recommendations:

1. A flat rearfoot post should be used to decrease the flexion movement of the orthosis inside the boot.
2. I wouldn't recommend using a reverse Morton's extension routinely on alpine skiing orthoses. One may often need to use a varus forefoot extension to improve medial edge pressure in alpine skiing orthoses in patients with an inverted forefoot deformity.

Sincerely,

Kevin

Kevin A. Kirby, DPM
 Adjunct Associate Professor
 Department of Applied Biomechanics
 California School of Podiatric Medicine at Samuel Merritt College

e-mail: kevinakirby@comcast.net

Private Practice:
 107 Scripps Drive, Suite 200
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