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The Hardcore Approach to Foot Care

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For adventure racers and endurance athletes, blisters are unfortunately part and parcel of sport. Hence, learning how to prevent, treat and deal with the pain from them is critical to an athlete's success.

Although blisters are less common - and generally less critical - in the climbing world, tips for keeping one's primary mode of transport pain free are always useful. And, although pain may be inevitable on long approach hikes or treks in the big mountains, it is always possible to keep your feet functioning well with a little know-how, care and attention.



Manage your Skin

The primary secret lies, as with everything, in your preparation. If you haven't paid attention to your feet before you set off, then it is already too late. The current 'in vogue' words when it comes to foot protection, are 'supple skin' and 'baby soft feet' - particularly important for those amongst you who hop barefoot from boulder to boulder in warm summer evenings and who approach the crags in sandals. Your feet are more than likely over-dry, some of you get fissures on your heels or between your toes and others have calluses on the bottoms of your toes and balls of your feet. (Calluses are simply areas with an abnormal amount of dead, thickened skin caused by recurring pressure and friction.) Whilst these issues aren't a big deal in everyday life, ignore them at your peril before long mountain journeys!

If you are going to get a blister, you can bet your bottom dollar it is going to be underneath a callus and, if so, it then becomes impossible to put into practice any of the nifty treatment tricks outlined here. When you can't actually get to a blister to drain, cauterize and patch it, then it tends to just keep getting bigger and more painful until it bursts or you grind to a halt! Infections also make a beeline for inaccessible blisters and fissures so even if you think you can put up with the pain, it isn't a smart move to ignore either calluses or the blisters that form under them.

In the old days, I used to sit for hours at end trying to toughen my feet by immersing them in surgical spirits. Now, conversely, I spend hours massaging in softening lotions and potions. For the roughest feet out there, you may need to pre-soak them in warm water (some suggest using chamomile tea but I can't say I have tried) before pumicing away all the dead skin and then moisturising!



Manage your Toenails

To add to your stimulating evening moisturising routine, you also need a pretty good toenail care regime - square trimming, inward filing to remove rough edges, and enough nail left on the outside edge of the big toe in particular, to avoid ingrown toenails! NB: Untrimmed toenails are the number one cause of toe blisters and black nails. [Socks](#) that catch on nails that are too long or that have rough edges, put pressure on the nail bed. Nails that are too long are also prone to damage from a toe box that is too short or too low.

Toenails should be trimmed straight across the nail - never rounded at the corner. Leave an extra bit of nail on the outside corner of the big toe to avoid an ingrown toenail. After trimming toenails, use a nail file to smooth the top of the nail down toward the front of the toe and remove any rough edges. If you draw your finger from the skin in front of the toe across the nail and can feel a rough edge, the nail can be filed smoother or trimmed a bit shorter. The pressure from a black toenail can be painful and shouldn't be ignored. Learn how to drain blood from under the nail with a heated pin.



And, you can always round the evening with your partner off by going to bed with your socks on, or, better yet, with cling film / plastic wrap around your feet. That way your moisturising treatment will be held in over night! The only positive is that if you both go the distance, you and your feet will be more attractive in the long run!

Choosing your Lube...

Suitable lotions and potions for both before and during long treks include everything from biobas and neutrogena foot cream to compeed's dry and cracked skin cream, E45 and nappy rash creams. Out in the hills, old favourites like Vaseline, or indeed any other petroleum jelly, are great, inexpensive ways of reducing friction and delaying the onset of blisters, calluses, fissures, general skin maceration and infections since they protect the feet from waterlogging and harmful irritants. One Runner's World article even suggested using Vick's Vapor Rub since it too is petroleum based!

I generally start with a layer of tincture of benzoin, followed by my choice of cream (usually biobas, compeed's cream or sportslick). Hydropel Protective Barrier Ointment and Kiwi's 'Camp Dry' are other options - the latter is a beeswax and lanolin preparation designed to waterproof footwear. Not surprisingly, this is more durable than Vaseline-based products! If you are a creative type with tons of time on your hands, you could make your own cream by boiling a container of Vaseline and then adding a tube of antibacterial ointment or cream and a tube of antifungal cream.

People with sweaty feet are sometimes better opting for powders rather than lubricants since the latter (like traditionally popular thick trekking / mountaineering socks) can hold sweat in more. Powders like Zeasorb are particularly popular in the States. Alternatively, try a second skin or simple antiperspirant spray on your feet before you start the luring regime. If that is still not enough, ask your GP about strong antiperspirants like Anhydrol Forte. When used consistently for a couple of weeks, this can drastically reduce sweating - also a great idea for winter mountaineering when you want to avoid having your feet bathing in cold sweat with the temperatures dropping.

Basically, you need to spend some time and money trying out a few different options and seeing what works for you. Most creams containing urea are fairly effective on your feet so try a few out. And, on the subject of private parts (kind of), all these creams are worth a try on your butt too since that invariably starts to get sore after a few days of peeing on the trail. I swear by biobas's foot cream for that purpose - I like the uplifting menthol type 'zing' from its essential oils - but some of the guys in my team find it a little intense!

Footwear that Fits

Your sock and footwear combination is probably the next thing to think about. At the risk of teaching you to suck eggs, the key things I have learnt over the years about footwear are:

Weight is Crucial...

Do you really need boots? I honestly think that 70% of the people I see out walking around the hills would be better off in approach shoes. It has been said that every pound on your feet is equal to 6.4 pounds on your back. Although not ideal, adventure racers even wear crampons attached to approach shoes to cross glaciers rather than carry / wear excess weight! Companies like Montrail, [Inov-8](#) and Nike ACG all do great approach shoes and there are some extremely lightweight boots on the market from companies like [La Sportiva](#) and [Salomon](#), so check these out next time you think you need new footwear. You may also save some money in the process!

What type of Shoe?

That obviously depends on what you are wanting them for but you really don't need a heavy reinforced shoe. Shoes with open mesh allow your feet to breathe well but also allow trail debris and sand into the shoe. Some mesh is so thick that it will cause excessive sweating. Again it comes down to knowing your feet. My team mates have tried nearly every shoe on the market and now swear by the Orizabas from Nike ACG whilst those are too narrow in their forefoot for me. I tend to opt for a more open mesh, even in sandy conditions, since I have found that I am more likely to get blisters when my feet are squashed or sweating than from sand or debris. Whatever shoe seems comfortable in the shop, check to make sure water can drain out of it and if it can't, make some holes near the heel and mid-shoe.



Don't Buy your Footwear too Big

In the good old days, there may have been some sense in buying boots at least a size too big, both to allow room for your feet to expand and to stop your toes hitting the front on the down-hills. Nowadays, however, that has become an old wives' tale. Footwear design is now so advanced that $\frac{1}{4}$ to $\frac{1}{2}$ inch is probably enough extra room at the front and the size of the toe box relative to your foot is actually the most critical issue when it comes to avoiding blackened toes. You can easily reduce foot swelling by using well venting socks and staying hydrated, and shoes that are the right shape for you should hold your feet well enough (even without the laces being drawn tightly) to prevent your toes hitting the ends. So, go try on new shoes when your feet are slightly swollen at the end of a day on your feet and then aim to get the best fit possible.

Checking that the insoles fit you is a pretty good way of establishing the general fit. Take one out and place your heel in the correct position. Make sure that your foot doesn't overlap it in any place and that your foot is less than $\frac{1}{4}$ inch from its edge all round. (If you are planning on using old shoes, it is still worth checking your insoles since these are key to foot comfort and yet are one of the first things that will become worn in your shoe.) Try replacing factory insoles with supportive or cushioning ones, depending on your specific needs.

Once you have established that the shoe is the correct size, then put it on and check the size of the foot box, the general comfort, whether or not seams or uppers feel like they might rub (walking around in them a little without socks on sometimes helps), whether or not the tops of your feet feel pinched or the insteps pressured when the shoes are laced and when you flex your feet, and whether or not your foot is held well within the boot, particularly at the heel. The toe box should be large enough to be able to accommodate swollen toes and feet. The shoe must grip your heel with no more than $\frac{1}{4}$ inch of up-and-down movement. Be aware, however, that if you have your own orthotics, you will have to check to make sure that they fit in the shoe in question without pushing your foot too high or too far forward.

Lacing...

Different lacing variations can make a shoe fit better by allowing for spacing in the tongue area or providing better heel control. The conventional method of lacing - crosscrossing to the top of the shoe - works best for the majority of people. Other lacing patterns can alleviate problems arising from swollen feet, toenail and forefoot pain, instep or top-of-the-foot pain, and heel slippage. A website called 'Ian's Shoelace Site' (www.fieggan.com/shoelace/) shows a variety of lacing techniques.



Choose Good Socks

The choice of socks is also crucial and well venting, moisture-wicking technical socks (either synthetic, woollen or blends) are definitely worth the extra money. The basic principle is that the thicker the sock, the more moisture it can hold and the longer it will take to dry. Thick heavy socks are basically overkill even if they feel more comfortable and cushioned in the shop. They just lead to continuously wet feet from excess perspiration and are simply not necessary if the boots fit well and are as comfortable as they should be.

If you are of the school of thought that believes in wearing two socks, then a very light sock liner of a hydrophobic material such as Thermax or Capilene or a moisture wicking fabric like Coolmax are good options. Bridgedale make one of the best liner socks on the market. Over this, a lightweight sock of similar material or wool (which retains its softness for the longest time), can be worn for additional warmth. This type of combination won't pick up much weight and will dry reasonably quickly.

That being said, I never wear two pairs of socks any more. Over time, I have gone down a shoe size, started to use 1 thin, well wicking sock (I totally swear by X socks - particularly the thinner running models - since they ensure that my feet aren't bathing in old wet sweat), concentrate on keeping my feet as cool and dry as possible and use lubes and powders to reduce friction. Consequently, I can now get through the 1000km races we do without doctors wanting to photograph the appalling state of my feet for medical journals along the way (e.g. photo taken below for French medical journal).



Just be careful that there are no seams or loose fibres which could rub and cause blisters in the socks of your choice, and when you are out on the trail, get used to changing them on a regular basis. Stop at running streams, rinse the used ones out and then air dry them on the outside of your rucksack. Similarly, bathe your feet whenever possible and then let them air dry in an elevated position to reduce swelling.

Airing your Feet and Keeping them Dirt Free

Elevation can also be useful in combating swelling and water retention but a surprisingly easy way of reducing this is to make sure you are well hydrated! Anti-inflammatories can also prove really useful, particularly before the pain starts to grow.



Water retention and swelling within shoes increases the likelihood of blisters, so aim to avoid.



Gaiters can also help a lot by reducing the amount of friction-causing debris (trail dust, grit and scree) entering shoes. Very few companies produce mini gaitors that fit well over approach shoes. However, OR have a fairly small new model on the market and OD are designing one at present, so watch this space! Nearly 50% of all AR racers use mini gaitors in the longer races so there must be something in it! Some even go as far as to sew in gaitor 'socks' into their shoes - particularly when it comes to things like the Marathon des Sables!

Forming a barrier around the leg and the top of the shoe, gaiters keep rocks, dust and water-borne grit from getting into socks or between the socks and shoe. Gaiters can make the difference between having healthy feet in a race or feet plagued with hot spots and blisters. You can also make your own from nylon or spandex - breathable materials are preferred and it is preferable to design them so as to fit to the shoe rather than having an underneath strap since this facilitates shoe changes etc.

Avoid Trench Foot

More than anything, though, your basic aim with your foot care regime on the trail is to avoid water saturation and trench foot. When your foot gets so waterlogged that air drying it doesn't stop it looking like a prune, you are in trouble. At this point, macerated skin starts to open up around blisters and pressure ridges and the result isn't pretty, as can be seen in the following two pictures of my feet during long Scottish races.



This doesn't, however, necessarily mean avoidance of river crossings. One big difference between climbers and adventure racers is that the former will generally go out of their way to avoid getting their feet wet (although they don't think twice about their feet bathing in cold sweat) or they will take off socks and shoes to keep them dry whilst crossing rivers (risking damage to feet or toes in the process), whereas adventure racers have no choice but to wade in.

In reality, regular airing of your feet when taking food breaks etc is far more important than trying to keep them dry all the time. When in camp (for us, when we are in transitions), we wear surgical slippers or sandals so that we can take our tight shoes off and walk around without the risk of dirt or infections. Sandals and flip flops don't weigh much, so they are worth carrying with you - you may even be able to do parts of the approach hike in sandals!

Get your Feet Fit!

In the same way that your legs and lungs need to get specifically fit for your chosen activity, so too do your feet. When they are not, pain and discomfort follow. So, whatever else you do in those crucial lead-up weeks, you need to get out in the footwear you will be wearing, on as similar terrain as possible to what you expect, and simply put in the miles to condition your feet. At least 60% of your training should be done while carrying a pack with similar weight to that which you will use during your hike or climb. Besides working your upper and lower body, this also trains the muscles, tendons and ligaments of your ankles and feet to handle the extra weight.

For me, doing a three or four day race a couple of weeks before an important long one (i.e. long enough before-hand for any problems that develop to recover) really toughens up my feet. It also tells me where hot spots are likely to develop, to anticipate problems in different types of terrain and therefore where I should apply preventative tape in the future.



Remember too to strengthen your ankles. This will help prevent a sprain, a likely injury when travelling uneven trails or scree, especially at night. You can strengthen your ankles by working on 'proprioception': the neurological signals from your body to your brain that tell it where your body is relative to the space around it. A simple exercise is to stand on one foot and keep the other leg bent back at the knee, as if you were in the normal support phase of a running stride. Starting with 30 second intervals, practise until you can hold your balance for several minutes. When you have mastered this step, practise it with your eyes closed. Alternatively, try using a wobble board.

Your Taping Arsenal

Pre-taping likely blister areas is a 'no brainer' and the principles of taping at home and in the field are the same. Mountain marathoners and adventure racers will go as far as taping the night before an event to allow tape to conform to their feet (with socks on top of course!) but that isn't so applicable to climbers. Regardless, don't under-estimate the art of foot taping. Four years in, and I am still learning!

Big Bad Blisters

So what do you do when, for whatever reason, you peel off your shoe and find a blister already there?



It basically depends a little on where the blister is, whether or not it is still intact, and how much further you have to go. If, for instance, you are on your way home and the blister isn't really bothering you, then your body will reabsorb the fluid after a few days and it will simply go away (and you can help the drying process by e.g. soaking your feet in Epsom salts and warm water or by dabbing on Neomercurichrome). When you are in the mountains, however, that is far from the truth. When you have to keep walking on blistered feet, the blisters will simply get bigger until they burst and at that point, infection is common.

Some schools of thought argue vehemently for cutting away all the skin on and around the blister since it then has no chance of tearing and less chance of getting infected. However, having once had a doctor remove about 40% of the skin on my feet when I had 900km still to race, I am not sure I agree. It is true that the blisters had improved by the time I finished the race 6 days later, but I had had to take so many pain killers along the way that I was probably half way to needing new kidneys!



The most effective method we have come across is pretty simple but requires a slightly masochistic streak. The first thing you need to do is to clean the skin and remove any lube or grit using an alcohol wipe. Then make a hole in any blister containing palpable fluid at the point where pressure will push fluid out (if you cut it in the forward

part of the blister, it is more likely to tear and take the top skin off). Use either the bevelled edge of a syringe needle (18 ga. needles are generally large enough to ensure that the hole won't re-close) or cut a small V with scissors or a scalpel if the blister is large and seems likely to refill.

Once you have drained the blister, fill the syringe with a small cc of iodine, betadine or friars balsam and hold your breath whilst you inject. The five to ten seconds of agony are well worth it. It seems to effectively cauterize the damaged area as well as reducing the likelihood of infection.

Neomercurichrome also works really well and is probably the best thing I have tried for drying out both blisters and small wounds, but its high organic mercury content means that it is pretty controversial and that it is banned in some countries in its original form! Once the skin has dried, it is then time to cover the wound and protectively tape the area.

These tips should work regardless of what kind of tape you can find and it honestly doesn't take more than say 10 minutes at the trail side to quickly tape hot spots - not a bad time investment when it can save you hours of painful feet delays later in the trip.

Top Taping Tips

1. Any half decent taping procedure, whether prophylactic taping or taping 'on the move', should start with clean dry feet. Use either antiseptic wipes or an iodine solution to clean the feet. Then let them air dry before applying tincture of benzoin. This forms a sticky base coat to which tapes adhere easily, thereby reducing the chance of them rolling up at the edges and forming blister-causing ridges.
2. When you are simply treating a hot spot, you can go straight to a simple tape once the base coat is on. I don't personally use products like compeed if I am going away for more than three or four days, although it is the first thing I reach for if I have a hot spot out training. If, however, having read all of this, you think that the whole procedure seems too complicated and you want to stick to compeed in all situations, try using a tiny bit of lubricant (e.g. Second Skin Avon Silicon Body Glove) or Vaseline gauze underneath since that might enable you to remove the tape a couple of days down the line without taking your skin with it.
3. If you are taping to protect a blister, use Vaseline-impregnated gauze and second skin (a burn-type gel) to both provide some cushioning and to protect the blister if the outer tape starts to come off. Then add a very thin protective tape like mefix or a stretch cover roll and then a strongly adhesive strapping tape like leukotape or elastoplast EAB.



If the blister is forming from pressure rubbing, you don't want the taping to create further pressure build-up so it will be wise to use thin tapes, even if they don't protect from pain as well. However, as the pain gets increasingly severe or in cases when you have had to remove the skin on the blister because of infection, you can use simple gauze soaked in iodine as padding or e.g. a hypafix type dressing followed by an adherent tape.



4. If you use something like Elastikon, you just consider using e.g. micropore to help keep the edges stuck down (another trick when you are pre-taping your feet at home is to take a normal votive candle and rub it over the edges of the tape. The small amount of wax reduces friction and helps prevent curling).
5. Taping toes can be challenging. There is a self-adhesive tape called cihuban on the market that works particularly well for toes, but basically, anything goes and you just need to beware of taping into creases of the toe and the join of the foot. Use a vaseline impregnated gauze cut to size, then tape firstly over the top of the toe, before encasing it like a glove. Make sure that all areas of the toe are secure with no gaps or ridges and cut off any bulky corners, securing the tape with more tincture. If one toe is taped and the toe next to it is not, make sure the tape is absolutely smooth so that the rubbing that occurs will not blister the next toe. If this proves too challenging, then a number of companies, including profoot and bunhead, produce 'jelly toes' - non-silicone polymers, formulated with medical grade mineral oils (U.S.P.) that cushion and protect. They are supple, hypoallergenic, non-toxic, dermatologist-tested, washable and re-usable and can be cut to size.



6. Betadine gel forms a great protective barrier on top of whatever taping extravaganza you have produced.



7. Once you have so many blisters that your whole foot has started to look like a mummy, it is time to think about 'encasing' it to hold it all in place and make sock changes easier.



Just be careful not to restrict circulation if you wrap a stretchy self-adhesive bandage around your foot.



8. Duct tape is an easily available option but it is non-porous and can cut quite easily into the skin so, whilst a simple stop-gap, it is definitely not a wise prophylactic taping choice for the over-enthusiastic.



For further tips, check out: <http://www.footworkpub.com> (this also gives you the option of signing up to a monthly ezine) and <http://www.sportsmed.com>. Alternatively, have a look at e.g. 'Fixing Your Feet: Prevention and Treatments for Athletes' by John Vonhof; 'Natural Foot Care: Herbal Treatments, Massage, and Exercise for Healthy Feet' by Stephanie Tourles, or 'Hand & Foot Massage', by Mary Atkinson.

You basically need to get out there, try a few of the suggestions, and just figure out what works for you through trial and error. Every person's feet react differently to the stresses and strains of trekking and no two feet can be treated the same way. Regardless, knowing your own feet and how to take care of them is always worth it in the end since you will be able to make smart footwear choices and ultimately prevent a great deal of unnecessary pain and suffering along the way.

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