Mt. Princeton

"Princeton is a singular mountain. It is a true monarch as its neighbors are far lower and far away. Princeton is one of Colorado’s most powerful peaks. Its summit is less than 9 miles southwest of Buena Vista, and the peak rises abruptly out of the Arkansas River Valley.

Princeton is the most visible of the Collegiate fourteener. As you descend west in to the Arkansas River Valley on U.S. 285, Princeton stares you smack in the face for many miles. You cannot ignore its gaze.” - Gerry Roach, Colorado Fourteeners

The Route
The route is described as a Class 2 route, which means off-trail hiking with some scrambling over large rocks on the upper sections. There are two possible starting points for the Mount Princeton climb, a lower trailhead at 8,900 feet and a higher trailhead at 11,000 feet. The upper point is only accessible by four-wheel-drive vehicles over a narrow, one-lane dirt road. The large size of our group makes it unfeasible to transport people above 8,900 feet. This means that our round trip hike will be 13 miles, with a vertical gain of 5,297 feet in the uphill 6 miles (an average of 882 feet per mile). [We will be able to provide van transportation to a very small number of older Princetonians only up to the Radio Towers at 10,800 feet.] The first section is a 4-mile hike along a dirt road. This ascends from 8,900 feet to 11,820 feet at a rate of 620 feet per mile. The trail then narrows to a dirt path and ascends up a grassy knoll to 12,000 feet in about ½ mile. At this point the trail shifts to a large boulder slope on the south face of the mountain. It involves minor rock scrambling for about 2 miles. There is a significant drop off the boulder slope. This trail basically parallels the ridge so there is little elevation gain. At 12,800 feet, the trail ends and you are required to ascend 400 feet up a loose rock slope to the summit ridge. This is the hardest part of the climb with difficult footing. Slipping and sliding is common here. As in previous climbs we will mark the easiest traversing route on this section with flags. Once up on the summit ridge the trail is mostly rock up to the summit. The descent is the reverse route. The loose rock slope can be difficult to descend as can be the long boulder-trail traverse. See the enclosed map of the mountain for the route.

Logistical & Safety Issues
Our goal is to have an enjoyable day hiking on Mt. Princeton. Reaching the summit will depend on many factors such as weather, hiking pace, and your physical condition. Even on a beautiful day we anticipate that there will be some people who reach the summit and many others who do not. In the end, it’s the journey and the camaraderie that are important.

Due to the large number of participants it will be necessary to break up into smaller groups. By starting at the base, people with different hiking paces will naturally spread themselves out over the first 4 miles along the road so that we won’t be jammed up when we reach the narrower section of the trail above treeline. If you want to stay together with others in your party, then the faster people will need to hike with the slower-paced folks. In families with children, parents will need to decide how to group the family. At least one parent must attend a child or children who are hiking. Because afternoon thunderstorms are common during the summer, everyone must be off the exposed ridge and back at treeline (11,800 feet) around 1:00 PM. This means that we will allow people to continue on to the summit until around 11:30 AM. At that point everyone will need to head down, no matter where you are on the mountain. No one will be allowed to continue to hike up after that point. The actual turn around time will be dictated that day by local weather conditions. If the Checkpoint Staff person instructs you that you need to turn back before the summit, then everyone is required to cheerfully comply. Remember this is for your safety and the safety of the others in our group (as well as the Checkpoint staff who may be higher on the mountain than you). Please accept our judgment in this manner to ensure a safe climb. If you are not willing to follow the instructions of Climb Staff, then you should not participate in the climb.
We will be monitoring the weather closely during the day. If clouds or storms begin to build earlier, we will turn people back from the summit earlier.

There will be several manned checkpoints along the way with staff and supplies (water and trail snacks) to serve as rest stops. Walkie-talkies and cell phones will allow us to keep in touch with all the checkpoints on the mountain. We will also have a four-wheel drive vehicle at Checkpoint 3 for emergencies. In case of a bad weather, we will postpone the climb to Saturday, July 14.

After the climb, we will all rendezvous back at the Mt. Princeton Hot Springs resort to enjoy a real Western barbecue. After all that high altitude exertion, everyone will be ready for a soak in the hot springs and a great meal.

Children: Children 8 years and up can participate in the climb although younger children are unlikely to reach the summit. You should think about the age, physical condition and hiking experience of your child. Children under 10 are unlikely to be able to hike quickly enough to get up to the summit and back before the deadline. Children over 10 may be able to reach to top, but remember; even many adults will not reach the summit. The trail to the South Ridge past Lucky Mine (~12,000 feet) continues along the dirt road and is a more realistic goal for kids. It is a fun hike with beautiful views across the valley to the south. It is ~8 miles round trip with ~3,100 feet of elevation. Families carrying children in packs should do the South Ridge hike. The extra weight, higher center of gravity, and reduced mobility with a child carrier would be quite difficult on the upper rocky sections of the mountain. Checkpoint Staff will determine when to head back based on the hiking time and the need to get back to treeline around 1:00 PM (or earlier).

Hiking Times
The hiking times depend on your physical condition level and how well you do at altitude. Here is a sample chart that indicates the approximate round trip hiking time based on the average hiking time per mile and including time for the ascent and descent. As you can see, for individuals hiking at more than 30 minutes per mile, it won’t be possible to reach the summit and get back down to treeline (11,820 feet) by 1:00 PM. Staff at the checkpoints will keep track of the time and will instruct you about continuing to climb or when to turn back if you cannot reach the summit in time.

<table>
<thead>
<tr>
<th>Hiking Pace for 1 mile</th>
<th>Miles Round Trip</th>
<th>Total Hiking Time hrs</th>
<th>Departure Time</th>
<th>Hours to Reach the Summit</th>
<th>Arrive at the Summit</th>
<th>Arrive back at Treeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>13</td>
<td>7.6</td>
<td>5:00 AM</td>
<td>4.5</td>
<td>9:34 AM</td>
<td>11:37 AM</td>
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<tr>
<td>30</td>
<td>13</td>
<td>9.2</td>
<td>5:00 AM</td>
<td>5.4</td>
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<tr>
<td>35</td>
<td>13</td>
<td>10.7</td>
<td>5:00 AM</td>
<td>6.4</td>
<td>11:24 AM</td>
<td>2:09 PM</td>
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<tr>
<td>40</td>
<td>13</td>
<td>12.2</td>
<td>5:00 AM</td>
<td>7.3</td>
<td>12:19 PM</td>
<td>4:12 PM</td>
</tr>
</tbody>
</table>

After the Climb
Western Barbecue: For those who don’t participate in the hike, meet us at the Mt. Princeton Hot Springs resort on Friday afternoon starting around 4:00 PM to join everyone for the western barbecue. Arrival time at the barbecue will depend on people’s hiking pace on the mountain. Please check off the type of food you would like on your application form.

Hot Springs: There are more than 20 odorless, crystal clear hot springs at the Mt. Princeton Hot Springs Resort, a perfect place to relax your body after the long hike. The outdoor pools are maintained at 95 to 105 degrees for your relaxation and enjoyment. The summer pool and 300 ft. waterslide will be open and provide a special treat for the young at heart.

Medical Clearance, Conditioning, and Acclimatization
The route up Mt. Princeton itself is not especially difficult in terms of terrain, but it does involve a lot of elevation gain (5,297 feet) and a long hiking distance (round trip 13 miles). The strenuousness of the climb is compounded by the effects of high altitude. It is very important that you read the enclosed article on High Altitude Illnesses so you understand the possible risks. Over 10,000 feet about 75% of people will experience mild symptoms of altitude illness.
The long mileage, the steady uphill and the altitude will all contribute to a strenuous climb. It is important that you be in good aerobic condition before the climb. This means some form of regular aerobic activity 30 to 60 minutes a day at least 3 to 4 times a week for 2 to 3 months leading up to the climb. Walking, hiking, jogging, running, and biking are all excellent forms of training. Aerobic exercise that includes hills, stair climbers, or running stairs, are particularly helpful in preparing your legs for a long uphill hike. For all participants, it is recommended that you do several day hikes before the climb. You should build to a point that you can comfortably hike 8-10 miles in one day. If you are not on any regular exercise program, you should consult your physician before you commence your training program and before going on this climb.

There are certain medical conditions that could be contraindications in your participation in the climb. You should discuss the climb with your physician if you have any of the following conditions: previous altitude illnesses, anemia, sickle cell disease, bleeding disorders, heart disease, recent sinus or ear infections, high or low blood sugar, high or low blood pressure, seizure disorders, current pregnancy, history of heart disease, history of stroke, aneurysm, AV malformation, or brain tumor.

If you have any knee problems, you need to think about how the hike could effect your knees. The descent is generally tougher on knees. Trecking poles (basically ski poles) can help reduce the pounding and strain knees take on the way down (helpful even for people without knee problems). Poles should not be used on the boulder section of the trail.

On Thursday, July 12, we will offer half-day and full-day acclimatization hikes on the Colorado Trail leaving from the Angel of Shavano Campground west of the Ponderosa Lodge on Rt. 240. These will be fun opportunities to explore the area as well as to get in some additional acclimatization time. Hiking up to a higher elevation and then going back down to sleep (the “climb high/sleep low” approach – see Altitude information below) will help your body acclimatize. Everyone who plans to hike Mt. Princeton should plan to go on one of the hikes.

**Mt. Princeton Climb Only Participants:** For those who normally live at high altitudes (over 5,000 feet) who are only coming up for the climb, or others (who have been in the area to acclimatize for several days) and are only participating in the climb, please note that we will be getting a very early start (between 4:30 - 5:00 AM). You should arrive in the Buena Vista area on Thursday, July 12 by 9:00 AM in time to participate in the Colorado Trail acclimatization hike. You also need to attend the climb briefing meeting, which will be held at the Ponderosa Lodge on Thursday at 4:30 PM. If you have questions, please contact the Outdoor Action Office.

**Medical Clearance:** Because of the altitude and exertion of the climb, a physical exam or medical clearance by a licensed physician **is required** before going on this trip for:

- **Anyone 40 years of age or older must have had a physical from a physician within the last year or medical clearance from their family doctor. Please have your doctor read the information about the climb and sign the application form.**
- **Children under 18 should have medical clearance by their pediatrician. Please have your doctor read the information about the climb and sign the application form.**

It is strongly recommended for the following:

- Anyone who has not been on a regular exercise program in the last 3 months.
- Anyone with a chronic medical illness or recent hospitalization in the last year.

**Health Considerations**

The Mt. Princeton Climb and many of the other activities take place at a higher altitude than most people live. Please read the information on Altitude Acclimatization and Illnesses carefully (see below). Other issues to be aware of are giardia, an intestinal illness from contaminated water, and tick-borne illnesses. Contact with ticks is unlikely unless you stray off the trail. On past trips there have been a few cases of giardia reported after the trip. If was not clear how the
individuals contracted giardia since they did not drink from streams along the hike. It is possible that this occurred while rafting or kayaking on the Arkansas River, however not all of the people who participated in river activities contracted giardia. You should always be careful about water.

**Educational Programs**

**Climbing to the Roof of the World: Mt. Everest** – We are very excited to have Chuck Demarest ’64 presenting slides and a talk about his 1998 climb to the summit of Mt. Everest on Wednesday, July 11 at 7:30 PM at the Ponderosa Lodge. Chuck is a wonderful speaker who has captivated audiences with his accounts of his exciting mountaineering adventures.

**Transportation**

For people staying at the Ponderosa Lodge we are providing shuttle transportation to and from the Denver Airport on Tuesday, July 10 and on Sunday, July 15. You should indicate on the Application Form if you need shuttle transportation. The shuttle will leave from the Denver Airport at 3:30 PM on Tuesday, July 10 arriving at the Ponderosa Lodge about 6:30 PM. The shuttle will depart from the Ponderosa at 8:30 AM on Sunday, July 15 arriving at the Denver Airport around 11:30 AM. Please plan your airline flights accordingly. All transportation during the week will be provided.

**Driving Directions to the Ponderosa Lodge:** For those of you who will be driving to the Ponderosa Lodge, from Buena Vista Colorado, take U.S. Highway 24/Rt. 285 south to Salida. In Salida take U.S. Highway 50 west through Poncha Springs for 6 miles to County Road 240. Go north (right) on County Road 240 for 1 mile to the Ponderosa Lodge entrance. Turn right into the lodge.

**Driving Directions to the Angel of Shavano Campground:** For those of you who will be providing your own transportation to the Thursday acclimatization hike, we will be meeting at the Angel of Shavano Campground. From Buena Vista Colorado, take U.S. Highway 24 south to Salida. In Salida take U.S. Highway 50 west for 6 miles to County Road 240. Go north (right) on County Road 240 for 4 miles to the end of the paved road at the Angel of Shavano campground. This is the trailhead for the Colorado Trail.

**Driving Directions to the Mt. Princeton Trailhead:** From the traffic light in Buena Vista drive south 8 miles to Nathrop. Turn west (right) on CR 162 and drive about 4 miles. Near Mt. Princeton Hot Springs turn north on CR 321 and go one mile to CR 322 (entrance to Frontier Ranch). Turn southwest (left) for 1 mile. Frontier Ranch will be on the left and the parking lot for Mt. Princeton will be on the right. Most vehicles should park here (elevation 8900').


**Driving Directions to American Adventure Expeditions Rafting Headquarters:** From Salida, Colorado, take U.S. Highway 24/Rt. 285 north to Johnson Village. AAE is on the right just before the bridge over the Arkansas River.

For more information on the Mt. Princeton Climb go to the OA Web Site at www.princeton.edu/~oa/alumni/mtpu/
Optional Day Trip Activities
For those who are participating in the full five-day program, we have a range of exciting optional outdoor activities planned. Individuals who are participating in the Climb Barbecue option are also welcome to participate in any of these activities. Outdoor Action is working with American Adventures Expeditions, an outfitter based in Buena Vista to provide the following options for Wednesday, July 12 and Saturday, July 14. Participants will also be required to sign release of liability forms with the outfitter.

**Wednesday, July 11**
Wednesday is exploration day. You can select from a range of different outdoor activities exploring the beautiful Rocky Mountains.

**Mountain Biking**
The San Isabel National Forest has hundreds of miles of trails for mountain biking. Your day trip can be a gentle ride down a country road or an adventurous single-track trail high into the mountains. Sites may include ghost towns, abandoned mines, beautiful valleys, mountain lakes and streams. Your mountain biking experience and physical condition will help us determine the appropriate trip. Guides will first outfit you with a quality mountain bike (if you bring your own bike, it must pass American Adventure Expedition’s equipment criteria). Experienced guides will then lead you off on a fun-filled morning ride that will teach you basic mountain bike handling skills. After a relaxing lunch, you’ll spend the remainder of the day exploring local trails. Minimum age for children is 13. It is essential that we know your height and weight on your health history form in order to get you a bike that will fit properly. If you have previous biking experience, please describe it on the application so we can place you on an appropriate trip. Lunch will be provided. (Day fee $85.00/person)

**Whitewater Kayaking**
This one-day kayaking instructional program is geared for a range of abilities from beginner to intermediate (Class I-II level). The staff from American Adventure Expeditions are certified American Canoe Association instructors. Everyone will start on the lake for an introduction to strokes. Beginners will spend the day on flatwater learning basic strikes and maneuvering. More experienced paddlers will move to the river and practice skills on easy whitewater. You’ll spend time learning to read water, practicing river-running strategies, and learning personal and group paddling safety. Minimum age for children is 12. Please indicate any previous kayaking experience on your application. Non-swimmers will not be allowed to participate. All equipment including kayaks and wet suits will be provided by American Adventure Expeditions. Lunch will be provided. (Day fee $85.00/person)

**Rock Climbing & Rappelling**
You will spend the day at a local climbing site learning basic climbing techniques and belaying with instructors from American Adventure Expeditions. The rocks provide a range of difficulty of climbs from beginner to intermediate. Wear loose fitting clothing. Lunch will be provided. (Day fee $85.00/person)

**Fly Fishing**
With experienced fishing guides you can spend the day fishing some of the best spots in the Arkansas River Valley. Beginners can learn the basics of fly-fishing and experienced folks can tune up their technique. Bring your own fishing gear or use equipment from American Adventure Expeditions. Fishing licenses are available from American Adventure Expeditions. We need to know your inseam and shoe size in order to properly outfit you with waders. Lunch will be provided. (Day fee $120.00/person includes fishing license)
Thursday, July 12

Acclimatization Hikes

On Thursday we will do easy hikes on the Colorado Trail ranging from 3-5 hours. These will be fun opportunities to explore the Rockies as well as get better acclimatized. Everyone who plans to climb Mt. Princeton should go on the hike to help your acclimatization to altitude. The hike and lunch are included as part of your Climb fee.

Saturday, July 14

Whitewater Rafting

The Arkansas River offers tremendous Class II - Class III whitewater through Brown’s Canyon. This is a great trip for rafters of all experience levels and includes 12 miles of rapids like Pinball, Big Drop, Staircase, Squeeze Play, and Twin Falls. There is a half-day rafting option that departs at noon so you can have a quiet morning to recover from the long day of the climb ($35.00/person). Lunch is provided. Minimum age for children set by the rafting company is 6 years old and 45 pounds in order to fit in a life jacket. Children this young would typically be in a larger oar raft rather than a paddle raft. Wet suits can be rented if you wish.

Food & Lodging

The Ponderosa Plan

The Ponderosa Lodge sits in the San Isabel National Forest outside of Salida, Colorado, on the banks of the North Fork of the South Arkansas River. The lodge is about 20 miles from Mount Princeton. Ponderosa Plan participants will be the only guests at the lodge, allowing for exclusive use of all facilities such as volleyball, badminton, horseshoes, walking trails, swimming pool, and hot tub. There are hiking trails right across the road from the Lodge.

While relishing the spectacular view of the Rockies from the lodge’s dining room, we will enjoy Ponderosa’s “down home” cooking for breakfast and dinner. Meals are family style. There will be one main entrée with a vegetarian option if the entrée is meat. Please let us know of your dietary needs. Friday’s dinner will be the post-climb barbecue at the Mt. Princeton Hot Springs Inn. Lunches will be provided by American Adventure Expeditions, which is providing the activities on Wednesday – Saturday (Wednesday’s Optional Activities, the Thursday Acclimatization Hike, Friday’s Climb of Mt. Princeton and Saturday’s Whitewater Rafting Trips). There will be no lunch served at the Ponderosa. If you are not planning on participating in some of the optional activities, please let us know on your Application Form so that we can make the necessary arrangements for lunch.

The lodge feels like a large, rustic home with 18 rooms that sleep four to eight people in single beds. Also, there are six one-room cabins, which sleep four people. All rooms and cabins have their own bathroom. A maximum of 114 people can be accommodated. Solo participants will be assigned roommates in single-sex rooms grouped by similar age (just like freshman year). Couples will share a room with another couple grouped by similar age. Families will be housed in part depending on the size. In some cases we may be able to accommodate all family members in one room, otherwise we will need to split you up. Every effort will be made to honor roommate requests. In this natural setting, there are no phones or televisions in the sleeping rooms. There is only one pay phone in the lodge (for 114 people). No smoking is allowed in the rooms. No cribs are available so bring your own if you need one.

Alternative Lodging

For those who would rather be on their own, there are a number of other local accommodations in the area including motels, other lodges like Mt. Princeton Hot Springs Lodge, and local campgrounds. Here are some suggestions for local lodging. You can also check out the Chaffee County Colorado Web Site (www.chaffee.net) for other leads. Please keep in mind that this is a popular destination in the summer and reservations are mandatory; many of these establishments will fill by mid-Spring.

- **Mount Princeton Hot Springs Resort**: at the base of Mount Princeton, Nathrop, CO, 888-395-7799
- **Great Western Sumac Lodge**: Buena Vista, CO, 719-395-8111
- **Super 8 Motel**: Buena Vista, CO, 719-395-8888 or 1-800-800-8000
- **Heart of the Rockies Campground**: Salida, CO, 719-539-4051 or 1-800-496-2245
Outdoor Action
Mt. Princeton Climb Schedule

Sponsored by the Outdoor Action Program at Princeton University

**Tuesday, July 10**
3:30 PM – Shuttle Bus departs from the Denver airport
~6:30 PM – Shuttle Bus arrives at the Ponderosa Lodge
7:00 PM – Dinner at the Ponderosa Lodge

**Wednesday, July 11**
7:00 AM – Breakfast at the Ponderosa Lodge
8:30 AM – Depart by bus for Optional Day Activities
9:00 AM – 5:00 PM – Optional Day Activities – Fly Fishing, Kayaking, Rock Climbing, Mountain Biking
5:30 PM – return to Ponderosa Lodge
6:00 PM – Dinner at Ponderosa Lodge
7:30 – 9:00 PM – Chuck Demarest ’64 slide presentation of his 1998 climb of Mt. Everest

**Thursday, July 12**
7:00 AM – Breakfast at the Ponderosa Lodge
10:15 AM – Depart by bus from Ponderosa Lodge for Optional Day Activities
10:30 AM – 3:00 PM – Day hike on the Colorado Trail – depart from the Angel of Shavano Campground
3:30 PM – return to Ponderosa Lodge
4:00 – 4:30 PM – Reception
4:30 – 5:30 PM – Climb Briefing
6:00 PM – Dinner at Ponderosa Lodge

*Early bedtime for early wake-up on Friday!*

**Friday, July 13**
3:30 AM – Wake-up call for Climbers at the Ponderosa
3:30 AM – 4:00 AM – Breakfast-on-the-run at the Ponderosa Lodge
4:00 AM – Depart by bus from Ponderosa Lodge for Mt. Princeton Climb
5:00 AM – Arrive at the Mt. Princeton parking lot (Ponderosa Climbers checked in on the bus)
5:00 AM – Climb Check-in
5:00 AM – Climb departs
5:00 AM – 4:00 PM – Mt. Princeton Climb
4:30 – 6:30 PM – Barbecue Dinner at the Mt. Princeton Hot Springs Inn
7:00 PM – Bus departs for the Ponderosa Lodge

**Saturday, July 14**
7:00 AM – Breakfast at the Ponderosa Lodge
1:30 PM – Half-day Rafting Bus departs for the Ponderosa Lodge (45 minute drive)
4:30 PM – Half-day Rafting Bus returns to the Ponderosa Lodge (45 minute drive)
6:00 PM – Dinner at Ponderosa Lodge

**Sunday, July 15**
7:00 AM – Breakfast at the Ponderosa Lodge
8:30 AM – Depart by bus for Denver Airport
~11:30 AM – Arrive at Denver Airport
The registration deadline for participating in the Mt. Princeton Anniversary Climb is April 1. If you have questions or a specific problem, please contact the Outdoor Action Office at (609) 258-3552. Please read the following cancellation policy carefully so that you are aware of the important dates:

- Registration deadline for the Mt. Princeton Climb is April 1.
- All Applications & Health Forms are due by April 15.
- All fees are due by April 15.
- Cancellations up to May 1 will receive a full refund for either the Ponderosa Plan or the Climb/BBQ option.
- There are no refunds for cancellations after May 1.

Registration & Applications
Fill out one registration form for each trip party and include all persons who wish to be considered part of the group. The first person on the application will be considered the primary applicant and will be the only party member to receive confirmation information, brochures, bills, etc.

Reservations are accepted on a first-come, first-served basis. When a trip is full, applicants are put on a waiting list. Outdoor Action approval (based on applicant’s experience, physical condition, etc.) is required for all trips. Once you have registered and paid the deposit, you will be sent an Application & Health History Form. Your medical and physical condition, as well as your previous experience may be evaluated to determine if your participation is appropriate for this trip. In the event that the trip is not appropriate for you, you will be given a full refund.

Optional Day Activities (Kayaking, Rock Climbing, Mountain Biking, Fly Fishing, Whitewater Rafting)
Since we are contracting the optional day activities through an outside outfitter, we are required to pay for your trip in advance and are bound by their cancellation policy. Final payment is due for all optional activities by April 15. If you cancel prior to April 15, we will be able to refund your payment for the optional activity. There are no refunds for the optional activities if you cancel after April 15.

Transportation
The trip price does not include travel to and from the trip’s starting point. Travel to and from the starting point is your responsibility. Infrequently Outdoor Action finds it necessary to cancel or change trips. Outdoor Action’s responsibility in such instances is limited to a refund of the trip fee. Accordingly, Outdoor Action is not responsible for non-refundable airline or other tickets or payments or any similar penalties that may be incurred as a result of any trip cancellation or changes.

Cancellations and Refunds
You must notify the Outdoor Action Program of cancellation from either the trip or the waitlist. Contact the OA Office weekdays between 9:00 AM and 5:00 PM, EST, at 609-258-3552. The amount of the refund is determined by the date that a trip applicant notifies the Outdoor Action Program of the cancellation. Outdoor Action regrets that it cannot make exceptions to the Cancellation Policy for any reason, including personal emergencies. Cancellations for medical reasons are often covered by traveler’s insurance. You may wish to purchase trip insurance in order to cover any possible losses from a cancellation. You can obtain information regarding trip insurance from your local travel or insurance agent.
Participant Obligations
As a participant you have the following obligations:

- To accurately and completely furnish any personal information requested for Outdoor Action Program approval.
- To carefully review all information furnished about the requested trip, and to understand as thoroughly as possible the physical and mental demands of the trip and the risks to be encountered on the trip.
- To properly equip yourself for the trip in accordance with recommendations of the Outdoor Action Program.
- To avoid breaking any applicable laws and to refrain from antisocial conduct during the trip.
- To follow environmental guidelines and regulations while on the trip in accordance with direction from the leader.
- To follow the instructions of Outdoor Action and American Adventure Expedition staff while participating in outdoor activities.
- To always respect the rights and privacy of other trip members.

Outdoor Action Guide to
High Altitude: Acclimatization and Illnesses

We all enjoy that tremendous view from a high summit, but there are risks in going to high altitude, and it’s important to understand these risks. Here is a classic scenario for developing a high altitude illness. You fly from New York City to Denver at 5,000 feet (1,525 meters). That afternoon you rent a car and drive up to the trailhead at 8,000 feet (2,438 meters). You hike up to your first camp at 9,000 feet (2,745 meters). The next day you hike up to 10,500 feet (3,048 meters). You begin to have a severe headache and feel nauseous and weak. If your condition worsens, you may begin to have difficulty walking. Scenarios like this are not uncommon, so it is essential that you understand the physiological effects of high altitude.

What is High Altitude?
Altitude is defined on the following scale High (8,000 - 12,000 feet [2,438 - 3,658 meters]), Very High (12,000 - 18,000 feet [3,658 - 5,487 meters]), and Extremely High (18,000+ feet [5,500+ meters]). Since few people have been to such altitudes, it is hard to know who may be affected. There are no specific factors such as age, sex, or physical condition that correlate with susceptibility to altitude sickness. Some people get it and some people don’t, and some people are more susceptible than others. Most people can go up to 8,000 feet (2,438 meters) with minimal effect. If you haven’t been to high altitude before, it’s important to be cautious. If you have been at that altitude before with no problem, you can probably return to that altitude without problems as long as you are properly acclimatized.

What Causes Altitude Illnesses
The concentration of oxygen at sea level is about 21% and the barometric pressure averages 760 mmHg. As altitude increases, the concentration remains the same but the number of oxygen molecules per breath is reduced. At 12,000 feet (3,658 meters) the barometric pressure is only 483 mmHg, so there are roughly 40% fewer oxygen molecules per breath. In order to properly oxygenate the body, your breathing rate (even while at rest) has to increase. This extra ventilation increases the oxygen content in the blood, but not to sea level concentrations. Since the amount of oxygen required for activity is the same, the body must adjust to having less oxygen. In addition, for reasons not entirely understood, high altitude and lower air pressure causes fluid to leak from the capillaries, which can cause fluid build-up in both the lungs and the brain. Continuing to higher altitudes without proper acclimatization can lead to potentially serious, even life-threatening illnesses.

Acclimatization
The major cause of altitude illnesses is going too high too fast. Given time, your body can adapt to the decrease in oxygen molecules at a specific altitude. This process is known as acclimatization and generally takes 1-3 days at that altitude. For example, if you hike to 10,000 feet (3,048 meters), and spend several days at that altitude, your body acclimatizes to 10,000 feet (3,048 meters). If you climb to 12,000 feet (3,658 meters), your body has to acclimatize once again. A number of changes take place in the body to allow it to operate with decreased oxygen.

- The depth of respiration increases.
• Pressure in pulmonary arteries is increased, “forcing” blood into portions of the lung, which are normally not used during sea level breathing.
• The body produces more red blood cells to carry oxygen,
• The body produces more of a particular enzyme that facilitates the release of oxygen from hemoglobin to the body tissues.

**Prevention of Altitude Illnesses**

Prevention of altitude illnesses falls into two categories, proper acclimatization and preventive medications. Below are a few basic guidelines for proper acclimatization.

- If possible, don’t fly or drive to high altitude. Start below 10,000 feet (3,048 meters) and walk up.
- If you do fly or drive, do not over-exert yourself or move higher for the first 24 hours.
- If you go above 10,000 feet (3,048 meters), only increase your altitude by 1,000 feet (305 meters) per day and for every 3,000 feet (915 meters) of elevation gained, take a rest day.
- “Climb High and Sleep Low.” This is the maxim used by mountaineers. You can climb more than 1,000 feet (305 meters) in a day as long as you come back down and sleep at a lower altitude.
- If you begin to show symptoms of moderate altitude illness, don’t go higher until symptoms decrease (“Don’t go up until symptoms go down”).
- If symptoms increase, go down, down, down!
- Keep in mind that different people will acclimatize at different rates. Make sure all of your party is properly acclimatized before going higher.
- Stay properly hydrated. Acclimatization is often accompanied by fluid loss, so you need to drink lots of fluids to remain properly hydrated (at least 3-4 quarts per day). Urine output should be copious.
- Take it easy; don’t over-exert yourself when you first get up to altitude. Light activity during the day is better than sleeping because respiration decreases during sleep, exacerbating the symptoms.
- Avoid tobacco and alcohol and other depressant drugs including, barbiturates, tranquilizers, and sleeping pills. These depressants further decrease the respiratory drive during sleep resulting in a worsening of the symptoms.
- Eat a high carbohydrate diet (more than 70% of your calories from carbohydrates) while at altitude.
- The acclimatization process is inhibited by dehydration, over-exertion, and alcohol and other depressant drugs.

**Medications**

- **Diamox (Acetazolamide)** allows you to breathe faster so that you metabolize more oxygen, thereby minimizing the symptoms caused by poor oxygenation. This is especially helpful at night when respiratory drive is decreased. Since it takes a while for Diamox to have an effect, it is advisable to start taking it 24 hours before you go to altitude and continue for at least five days at higher altitude. The recommendation of the Himalayan Rescue Association Medical Clinic is 125 mg twice a day (morning and night). Possible side effects include tingling of the lips and finger tips, blurring of vision, and alteration of taste. These side effects may be reduced with the 125 mg dose. Side effects subside when the drug is stopped. Contact your physician for a prescription. **Since Diamox is a sulfonamide drug, people who are allergic to sulfadia drugs should not take Diamox. Diamox has also been known to cause severe allergic reactions to people with no previous history of Diamox or sulfadia allergies.** Frank Hubbell of SOLO recommends a trial course of the drug **before** going to a remote location where a severe allergic reaction could prove difficult to treat.

**Acute Mountain Sickness (AMS)**

AMS is common at high altitudes. At elevations over 10,000 feet (3,048 meters), 75% of people will have mild symptoms. The occurrence of AMS is dependent upon the elevation, the rate of ascent, and individual susceptibility. Many people will experience mild AMS during the acclimatization process. Symptoms usually start 12-24 hours after arrival at altitude and begin to decrease in severity about the third day. The symptoms of Mild AMS are headache, dizziness, fatigue, shortness of breath, loss of appetite, nausea, disturbed sleep, and a general feeling of malaise. Symptoms tend to be worse at night and when respiratory drive is decreased. Mild AMS does *not* interfere with normal activity and symptoms generally subside within 2-4 days as the body acclimatizes. As long as symptoms are mild, and
only a nuisance, ascent can continue at a moderate rate. When hiking, it is essential that you communicate any symptoms of illness immediately to others on your trip. AMS is considered to be a neurological problem caused by changes in the central nervous system.

**Basic Treatment of AMS**

The only *cure* is either acclimatization or descent. Symptoms of Mild AMS can be treated with pain medications for headache and Diamox. Both help to reduce the severity of the symptoms but reducing the symptoms is not curing the problem.

**Moderate AMS**

Moderate AMS includes severe headache that is *not* relieved by medication, nausea and vomiting, increasing weakness and fatigue, shortness of breath, and decreased coordination (ataxia). Normal activity is difficult, although the person may still be able to walk on their own. At this stage, only advanced medications or descent can reverse the problem. Descending even a few hundred feet (70-100 meters) may help and definite improvement will be seen in descents of 1,000-2,000 feet (305-610 meters). Twenty-four hours at the lower altitude will result in significant improvements. The person should remain at lower altitude until symptoms have subsided (up to 3 days). At this point, the person has become acclimatized to that altitude and can begin ascending again. The best test for moderate AMS is to have the person “walk a straight line” heel to toe. Just like a sobriety test, a person with ataxia will be unable to walk a straight line. This is a clear indication that *immediate* descent is required. It is important to get the person to descend *before* the ataxia reaches the point where they cannot walk on his or her own (which would necessitate a litter evacuation).

**Severe AMS**

Severe AMS presents as an increase in the severity of the aforementioned symptoms, including shortness of breath *at rest*, inability to walk, decreasing mental status, and fluid buildup in the lungs. Severe AMS requires *immediate* descent to lower altitudes (2,000 - 4,000 feet [610-1,220 meters]).

There are two other severe forms of altitude illness, High Altitude Cerebral Edema (HACE) and High Altitude Pulmonary Edema (HAPE). Neither of these is likely to occur on a day hike such as the Mt. Princeton Climb.

**Sources:**


**Additional Reading:**

When planning the equipment for your trip, you need to think about the different activities that you will be participating in (the Mt. Princeton climb, mountain biking, rafting, kayaking etc.) This list should provide you with all the information you need. If you have questions, please feel free to the Outdoor Action Office at (609) 258-3552.

Any time you head into the mountains at higher elevations, you need to be prepared for almost anything weatherwise. “Typical” temperatures for the Buena Vista, Colorado area during mid-July are in the 70’s at the lower elevations. Temperatures at the summit of Mt. Princeton are likely to be in the 40’s - 50’s. However, it is possible to get temperatures in the 30’s and with a strong wind you can have a wind chill temperature below freezing. Even in the summer it is possible to have snow or freezing rain at higher elevations. We also need to be prepared for the possibility of afternoon thunderstorms. Since you can never be sure what the weather will be like, you need to bring a range of clothing for various conditions. We will begin hiking before sun-up and it will be cool, perhaps even chilly. As the day progresses and if the sun comes out it will warm up. By having a variety of layers of clothing you can adjust your layers to suit your activity level and the weather conditions. What you actually bring on the day of the climb will depend on the weather. We will discuss the actual things to bring on the day of the climb at the Climb briefing on Thursday afternoon July 12.

The clothing layers should consist of several different types of fabrics. Cotton is comfortable and breathable, but it absorbs and retains water, and therefore it will not keep you warm if it gets wet. Also it can be difficult to dry. For this reason you should not bring heavy cotton clothes such as sweatshirts, sweatpants or blue jeans for the climb (these will be fine for some other activities like relaxing at the Ponderosa Lodge). Cotton T-shirts and underwear are fine as are lightweight cotton shirts and pants. Wool or synthetic fleece fabrics (such as Polartec 100 or Polartec 200) don’t absorb water so they keep you warm even if they get wet. Fleece also dries very quickly. A wool sweater or fleece jacket provides warmth on a chilly evening.

Combinations of these types of fabrics create a layering system. The inner layer keeps the skin dry and comfortable. Lightweight polypropylene or other synthetic underwear provides good ventilation for the skin to keep dry and cool and during the day. The middle layer provides some insulation and protection from the elements. Long-sleeve shirts and long pants preferably of wool or fleece make up this layer. The outer layer provides insulation and is usually a wool sweater or fleece jacket. The shell layer protects you from wind and rain. A nylon windshell is essential once you get up on the ridge. A waterproof rain jacket is also essential in case of bad weather. Coated nylon is lightweight and works well. Waterproof-breathable fabrics like Gore-Tex are also an option and provide both a wind-proof and waterproof garment but are expensive. The head layer is handled by a wide-brimmed hat for sun and rain protection. The feet layer is actually two layers. You should wear a lightweight synthetic liner sock against your foot, which helps pass moisture away from your foot. On top of this you wear a wool/nylon blend hiking sock. People wonder why you should wear a wool sock with summer heat. Since wool doesn’t absorb water it passes the moisture from your foot outwards, keeping your foot dryer. If your feet stay damp, they get wrinkled and are more prone to blisters. Having two sock layers means that your socks will slide against each other so that the friction from your boots is between the sock layers rather than against your skin (friction against the skin leads to blisters). You will also need a pair of sturdy hiking boots that extend above the ankle to provide support on the trail.
Please check off each item as you assemble your equipment to make sure that you have everything.

**Feet:**

- **1 pair of lightweight hiking boots:** Boots should extend above the ankle and be leather/fabric or all leather with lug soles for traction. It is best if the boots can be waterproof, either by treating the leather with a waterproofing compound before the trip or if the boots have a Gore-Tex liner. Boots should fit comfortably with two pairs of socks, a light liner sock and a heavy wool sock. *Above all, make sure that your boots are well broken in before you arrive. Otherwise your feet will pay the price. We cannot emphasize this enough. Non-broken-in boots invariably cause blisters.*
- **1 pair of running shoes, sneakers, or sandals:** For around the lodge and/or water activities.
- **2-3 pairs of light synthetic/polypropylene liner socks:** Wearing liner socks underneath wool socks helps to prevent chafing since the friction is between the two pairs of socks, not between the boots and your feet.
- **2-3 pairs of medium weight wool hiking socks:** Wool keeps your feet warm even when wet and gives good cushioning. The higher the wool content of the socks the better (we recommend 85% wool, 15% nylon).

**Lower Body:**

- Underwear as needed.
- **1 lightweight polypropylene or synthetic long underwear bottoms**
- **1 pair long pants, loose fitting, lightweight wool, synthetic, or fleece**
- **1-2 pairs of loose fitting shorts**
- **1 bathing suit**
- **1 lightweight polypropylene or synthetic long underwear top**
- **1 long sleeve shirt**
- **1 fleece vest (optional)**
- **1 heavy wool sweater, or synthetic fleece jacket**
- **1 wind shell - nylon:** (if the shell is Gore-tex or another waterproof/breathable fabric, it can also serve as your rain jacket - it must fit comfortably over your other insulating layers)
- **1 rain jacket or poncho:** Coated nylon is recommended. Try to avoid the rubberized canvas jackets if you can. They are heavy and usually result in your getting hot and sweaty. (if the shell is Gore-tex or another waterproof/breathable fabric, it can also serve as your wind jacket - it must fit comfortably over your other insulating layers)

**Upper Body:**

- **2-3 T-shirts**
- **1 lightweight polypropylene or synthetic long underwear top**
- **1 long sleeve shirt**
- **1 fleece vest (optional)**
- **1 heavy wool sweater, or synthetic fleece jacket**
- **1 wind shell - nylon:** (if the shell is Gore-tex or another waterproof/breathable fabric, it can also serve as your rain jacket - it must fit comfortably over your other insulating layers)
- **1 rain jacket or poncho:** Coated nylon is recommended. Try to avoid the rubberized canvas jackets if you can. They are heavy and usually result in your getting hot and sweaty. (if the shell is Gore-tex or another waterproof/breathable fabric, it can also serve as your wind jacket - it must fit comfortably over your other insulating layers)

**Head:**

- **1 brimmed cap:** For sun and rain protection. The sun is especially strong at high altitudes.
- **1 wool or synthetic hat:** For warmth

**Head:**

- **1 pair work gloves/gardening gloves:** For rock scrambling

**Miscellaneous:**

- **3 1-qt. water bottles or canteens:** (high altitude as well as the possibility of a hot day requires more water). You should drink more than 4-5 quarts during the day but we will have water stations along the route for you to fill up.
- **1 daypack to carry your gear:** This should be large enough to carry water, food, and several layers of clothing.
2 bandanas: multipurpose
Sunscreen (at least 15 SPF)
1 flashlight or headlamp with batteries (for early morning start)
1 pocket knife
1 sunglasses or clip-ons
Glasses or contact lenses and spares, glassguard
Any medications you will need to take during the trip
1 small notebook and pencil (Optional)
1 camera and film (Optional)
Trekking poles (Optional) - very helpful in taking the strain off your knees on the descent!

Other Activities

Mountain Biking: - We need your height and weight for proper bike sizing
Biking shorts
Biking Helmet (if you prefer to use your own)

Rock Climbing:
Loose fitting clothing
Hiking boots

Fly Fishing: - We need your inseam length and shoe size for proper wader sizing
All equipment provided by outfitter

Kayaking:
Bathing suit
All other equipment including helmets and life jackets provided by outfitter

Rafting:
Bathing suit
All other equipment provided by outfitter (wet suits and splash jackets available for rental)

Boot Recommendations
You should have a lightweight hiking boot that provides good lateral ankle support. Boots can be lightweight leather or synthetic leather or a fabric/leather combination. Since there are no significant stream crossings on the hike the boots do not have to be waterproof, although it is recommended that they be at least water-resistant. Please make sure that you buy your boots at least a month before the climb and break them in extensively before arriving in Colorado. Below are samples of Men’s and Women’s boots available from Recreational Equipment Incorporated (www.rei.com). There are many other good boots out there. The major thing is to make sure they fit you properly and that they are properly broken in well before the hike.

Fitting
Proper fitting of boots is essential. You should try new boots on in the afternoon, since your feet swell during the day. Select a sock combination of a liner sock and outer sock, and try the boots on. The boots should fit comfortably with moderate tension on the laces so you can tighten or loosen the boots as needed. With your foot flat on the ground, try to lift your heel inside the boot. There should be only 1/4 to 1/2 inch (6 to 12 millimeters) of heel lift.

Breaking In
Break in a pair of boots before your trip. Begin with short walks and gradually increase the time you wear them to allow the boots to soften and adjust to your feet. Easy day hikes are a good way to break in boots. Each time you lace your boots, take the time to align the tongue and lace them properly; otherwise the tongue will set into a bad position. If you haven’t worn your boots for a while, it is a good idea to wear them for several days before a trip to re-break them in.
## Men’s Boots

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
<th>Average weight</th>
<th>Upper</th>
<th>Construction</th>
<th>Midsole</th>
<th>Outsole</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asolo Fusion 45</td>
<td>$100.00</td>
<td>2 lbs. 4 oz.</td>
<td>Suede</td>
<td>Cemented</td>
<td>Polyurethane</td>
<td>Rubber</td>
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<td>Asolo Fusion 95 GTX</td>
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<td>Rubber</td>
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<td>Columbia Sportswear Rockridge Mid III</td>
<td>$60.00</td>
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<td>Suede leather</td>
<td>Cemented</td>
<td>Air cushion/EVA</td>
<td>Rubber</td>
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<td>Lowa Strato Mid</td>
<td>$125.00</td>
<td>2 lbs. 1 oz.</td>
<td>Nubuck/Cordura nylon</td>
<td>Injected</td>
<td>Polyurethane</td>
<td>Rubber</td>
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<td>Lowa Tanark</td>
<td>$160.00</td>
<td>2 lbs. 13 oz.</td>
<td>Full-grain nubuck leather</td>
<td>Cemented</td>
<td>Polyurethane</td>
<td>Vibram rubber</td>
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<tr>
<td>Merrell Chameleon Ventilator</td>
<td>$110.00</td>
<td>2 lbs. 14 oz.</td>
<td>Suede leather</td>
<td>Cemented</td>
<td>Air cushion/EVA</td>
<td>Rubber</td>
</tr>
<tr>
<td>REI Monarch</td>
<td>$65.00</td>
<td>2 lbs. 8 oz.</td>
<td>Split suede/Cordura nylon</td>
<td>Cemented</td>
<td>Air cushion/EVA</td>
<td>Rubber lug</td>
</tr>
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<td>Zamberlan Scrambler</td>
<td>$115.00</td>
<td>2 lbs. 11 oz.</td>
<td>Split-grain leather</td>
<td>Cemented</td>
<td>Polypropylene</td>
<td>Vibram</td>
</tr>
<tr>
<td>Asolo Cerro Torre Gore-Tex</td>
<td>$150.00</td>
<td>3 lbs. 2 oz.</td>
<td>Polyester/suede</td>
<td>Cemented</td>
<td>Asoflex</td>
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<td>Lowa GTX Renegade Mid</td>
<td>$155.00</td>
<td>2 lbs. 6 oz.</td>
<td>Nubuck/Cordura nylon</td>
<td>Cemented</td>
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<td>Lowa Klondike Gore-Tex</td>
<td>$138.00</td>
<td>2 lbs. 1.6 oz.</td>
<td>Cordura nylon/leather</td>
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<td>Polyurethane</td>
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<tr>
<td>Merrell Torrent Waterproof Mid</td>
<td>$100.00</td>
<td>2 lbs. 2 oz.</td>
<td>Nubuck leather</td>
<td>Stitched</td>
<td>EVA</td>
<td>Rubber</td>
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<tr>
<td>REI Gore-Tex Leather Monarch</td>
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<td>Leather</td>
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<td>REI Gore-Tex Monarch</td>
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<td>Vasque Fusion GTX</td>
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<td>Nubuck/split leather/nylon</td>
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<td>Zamberlan Lima Gore-Tex Mid</td>
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<td>Direct molding</td>
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<td>Rubber/polyurethane</td>
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## Women’s Boots

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
<th>Average weight</th>
<th>Upper</th>
<th>Construction</th>
<th>Midsole</th>
<th>Outsole</th>
</tr>
</thead>
<tbody>
<tr>
<td>Columbia Sportswear Rockridge III</td>
<td>$60.00</td>
<td>1 lbs. 14 oz.</td>
<td>Suede leather</td>
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<td>Lowa Klondike Gore-Tex</td>
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<td>1 lb. 14 oz.</td>
<td>Cordura nylon/leather</td>
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<td>Polyurethane</td>
<td>Rubber</td>
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<tr>
<td>Lowa Strato Mid</td>
<td>$125.00</td>
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<td>Nubuck/Cordura nylon</td>
<td>Cemented</td>
<td>Polyurethane</td>
<td>Rubber</td>
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<tr>
<td>Merrell Chameleon Ventilator</td>
<td>$110.00</td>
<td>2 lbs. 8 oz.</td>
<td>Suede leather</td>
<td>Cemented</td>
<td>Air cushion/EVA</td>
<td>Rubber</td>
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<tr>
<td>Montrail Sandia Peak</td>
<td>$120.00</td>
<td>2 lbs. 5 oz.</td>
<td>Full-grain water-resistant leather</td>
<td>Cemented</td>
<td>Polyurethane</td>
<td>Rubber lug</td>
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<tr>
<td>REI Monarch</td>
<td>$65.00</td>
<td>2 lbs. 8 oz.</td>
<td>Split suede/Cordura nylon</td>
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<td>Tecnica Mesa</td>
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<td>Asolo Fusion 70 GTX</td>
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<td>Lowa GTX Renegade Mid</td>
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<td>Vasque Picacho</td>
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