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Backcountry Health and Hygiene

Trip Preparation: Gear, Food, Quads . . .

As you are reading this, the snow line is probably well up the mountains and the Canada mayflower is poking through in the lowlands. It's time to start thinking about that summer trip! If this is going to be the year for some serious backpacking, it is never too early to start preparing.

Much that is written about preparation for camping and backpacking deals with gear, clothes and food. Despite the best intentions, this preparation is frequently left for the last minute.

Another type of preparation, however, cannot be put off. While gear may be used fresh off the EMS shelf, the body is not so adaptable. Proper physical preparation for mountain hiking and camping may take weeks or months, but can make the difference between a pleasant trip and a miserable experience. Moreover, poor physical conditioning is frequently cited as a contributing cause of disastrous backcountry mishaps.

As a physician and guide, I am

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frequently asked by patients or clients for suggestions on getting ready for treks. My general advice is to concentrate on three areas: heart and lung conditioning, strength and foot care. Together, these comprise a three-link chain; weakness of any one can offset optimal condition of the other two.

Heart and lung conditioning. Any exercise demands that the heart and lungs work together to supply oxygen to muscles. Heart and lung conditioning is required to support the extra effort of

lugging a pack over the up-and-down Adirondack terrain.

Conditioning starts with a couple of lifestyle matters. Smoking, among its myriad nasty effects, adversely affects the ability of the lungs to deliver oxygen to the blood. In case one needs yet another reason to quit smoking, feeling better when hiking is it.

The other related lifestyle is weight. Excess weight puts increased demands on the heart and lungs in a couple of ways. First, carrying any extra weight, be it in a pack or on the thighs, requires more effort. Second, when that weight is a part of the body, blood must be pumped through it, making even more work for the heart. This is not the place for a treatise on weight control; there is plenty of available information on the topic. Suffice it to say that the cornerstones of any weight loss program have to include *both* exercise and diet.

Is there a weight at which strenuous hiking is inadvisable? Although this depends on too many other variables to validate a firm recommendation, I suggest looking at the *body mass index*. This is calculated as the weight in kilograms (weight in pounds divided by 2.2) divided by the height in meters (height in inches times .025) squared. For example, a 150-pound, six-foot-tall person has a body mass index of 21. An index of 27 or over is indicative of dangerous obesity. I would be very cautious before suggesting that someone with such a measure embark on a strenuous trek.

As these "lifestyle" issues are

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coming under control, it is next time to begin some serious aerobic exercise. The point of this is simply to exercise the heart and lungs, preparing them for the extra work of carrying heavy loads. In my opinion, at least 30 minutes of such activity four times a week constitutes a *minimal* program of preparation for mountain hiking.

From the standpoint of aerobic conditioning, not all exercise is equal. Since the point is to provide a workout for the heart and lungs, the exercise must result in a sustained increase in the heart rate and breathing rate. There are a variety of formulas for this. One simple one is to aim for a sustained heart rate (pulse in beats per minute) equal to 80% of the difference between 220 and one's age in years. Thus, a 40-year-old hiker should try to achieve a heart rate of 144 beats per minute (80% of the difference between 220 and 40, or 180) for 30 minutes four times per week.

Activities in which effort comes in "spurts" (bowling or golf, for example) may have health benefits of their own but are not good sources of aerobic conditioning. Activities in which effort is sustained (running, cycling, tennis, swimming, for example) are much more effective. Walking is popular and easy on the joints; to be effective, however, it must pass the "pulse test" given above. Indoors, treadmills, stair climbers, ski machines and similar devices can provide an effective aerobic workout.

Strength. Simply having well-conditioned heart and lungs is not enough to enjoy a trek in relative comfort. Lifting a pack-laden body up and down hills requires considerable leg strength. The muscle group most involved in this activity is called the quadriceps ("quads"): the large mass of muscle on the front of the thigh. This is probably the muscle group that ached unmercifully after that first long hike a couple of years ago.

The quads also help to stabilize the knee. Weakness in these muscles may put the knee at risk of injury, especially during

descents with a heavy pack.

The type of quadriceps exercise which provides the best strengthening for backpacking is what orthopedists and trainers refer to as "eccentric loading." This occurs when resistance is applied to the muscle as it is lengthening. A simple way of doing this is actually running *downstairs*. Interestingly, from the standpoint of quad strengthening, riding an elevator to the top of a building and jogging down the stairs is actually excellent exercise. Jumping rope

**Not all exercise
is equal.**

for about five or ten minutes daily also provides helpful loading. Weight machines can be used for quad strengthening, but in a way somewhat different than usual: pushing the weight up quickly, letting it down gradually over five seconds.

Foot care. Months of conscientious training are for naught if your trek is aborted after the first day because of severe blisters. There is a lot of new information on the *treatment* of blisters, but the focus here is *prevention*.

Blisters tend to occur when skin is suddenly exposed to stresses to which it is not accustomed. The weekend gardener may develop a handful after a few hours with a rake and shovel. The professional landscaper, however, has a thick layer of *callus* on her hands,

protecting her from blisters. Just like the landscaper's hands, the hiker's feet can similarly be toughened.

One simple way of doing this is by wearing the usual hiking footwear for a few hours a day several weeks before your trek. Other tricks include walking outside in bare feet (with the obvious precaution of knowing the area to be safe from hidden sharps), exposing the feet to the air as much as possible, and massaging them with rubbing alcohol. Of all of these, however, the regular wearing of hiking footwear is by far the most helpful.

A final word. No discussion of pre-trek conditioning is complete without mention of the need for a complete physical. As someone who is approaching the 35th anniversary of his last physical, I may not be the best one to talk about this! Although such exams are a hallowed tradition, there is an increasing body of opinion among physicians that the yield of this yearly ritual in otherwise healthy adults is marginal. On the other hand, it is certainly important for anyone with a chronic disease (diabetes, asthma, hypertension, for example) to consult with a physician before embarking on an extended wilderness trip. This would also be the case for usually sedentary folks for whom such a trip would represent a significant change in daily activity.

—Thomas R. Welch, M.D.

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