

Cold Weather Training

By Fraser Quelch
For Active.com

Whether it's having your training sessions restricted to climate-controlled indoor environments or dealing with inclement weather in your outdoor workouts, many people find winter a challenging time to keep their fitness program on track.

But it doesn't have to be that way. With some understanding of how to prepare for the colder temperatures, and a willingness to venture into the cold, the winter season can be transformed into an incredible time of outside fun and training opportunities.

So what are the options? We can divide them into two general groups.

Gravity-Based Winter Sports tend to be more strength and power-based and appeal to the fun-loving, adventurous type. The exertion is generally short-lived and intense and is usually coupled with great speed. Downhill skiing and snowboarding top the list, but for those with a more self-propelled spirit, ski touring, back-country skiing and ice climbing are great winter options.

The more vigorous cousins to Gravity-Based Winter Sports are Cardiovascular-Based Winter Sports. Snow-shoeing, running, skating, x-country skiing and skate skiing are winter activities that can be done in almost any temperatures. There is even the option of winter triathlons that merge trail running with mountain biking and skate skiing.

So why do people who love the outdoors hibernate through the cold months as they wait for spring? Most of the time it's because people just don't think they can stay warm, but the following guidelines can help you get beyond the initial obstacles cold weather can present.

10 Winter Training Tips

Use base-layer clothing made from fabrics that are designed to wick moisture away from your skin. This will keep you dry and warm for the duration of the workout. Do not overdress. Though this may feel nice and comfortable at the beginning, you will sweat much more than you would otherwise, making your clothes wet. Wet Clothes = Cold Body. Generally speaking, if you feel slightly cool before starting your activity, you have dressed perfectly for the conditions. Dress to your training plan. Hard workouts will require less clothing than easier workouts. If you are unsure how to dress, bring a shell jacket that can be used for your warm-up and cool-down, but can be easily taken off and stowed for the more difficult part of the workout. Wear shades. In most cool or cold weather conditions, sport sunglasses will protect eyes from the bright sun reflecting off of the snow and prevent them from watering due to the cold or wind. Keep it down. The down coat is king when it comes to cold environments and intermittent activities that involve stopping. A light-weight down coat is the perfect solution to keep you toasty during winter sports that incorporate periods of prolonged rest. Staying on your feet and keeping them warm go a long way toward enjoying outdoor winter activities. Over-layering your feet will cause them to sweat, which can lead to cold toes. For cardiovascular-based sports, a single pair of warm, wicking socks will normally do. In very cold conditions or for gravity-based sports, use a double layer of socks. A good trail running shoe provides extra traction for slippery surfaces and many offer waterproof features that help keep your feet dry. In areas with deep snow, a pair of light gators will keep the snow out of your shoes. H₂O. One of the biggest challenges for training in cold temperatures is avoiding de-hydration. While it may feel unappealing, drinking regularly during these lower temperature workouts is just as necessary as

in warmer weather. Filling water bottles with lukewarm fluids will help to prevent them from freezing or being too cold to drink comfortably. Plan your route ahead of time. Use a loop course to avoid getting too far away from home in the event something were to go wrong during your activity. Avoiding frost bite and hypothermia is the most important consideration when preparing for cold weather activities. Make sure all of your skin is covered and carry an extra layer in case the conditions change during your workout.

The cold weather can bring a winter wonderland of training possibilities for the active person. With a little planning and knowledge, along with the right clothing, you will be amazed at how enjoyable the crisp air can feel. Almost as good as the well-deserved hot chocolate in front of a warm fire afterwards.

Cycling

by Arnie Baker, M.D.
National Team In Training
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Dr. Arnie Baker is a licensed USA Cycling Elite coach and medical injuries columnist for a number of publications, including Bicycling magazine. He has coached 75 national champions and 28 U.S. record holders. Dr. Baker is the author of six books on cycling, including The Essential Cyclist. He is a five-time national champion, with 180-plus career wins.

Bicycle Science and Medicine

Your questions about being the best cyclist probably include:

1. What's new and different?
2. What's the latest medical and scientific information about bicycling?
3. Should I read the ad copy in the magazines to figure out what might be worth trying?
4. Should I read about how pro athletes excel and figure that if they do it or use it, it must be great?
5. Should I ask my friends for help or just spend time, effort or money trying everything myself without getting advice?

For most of us, gathering training tips is a combination of all of the above plus a little hope. And, unfortunately, that little hope is what lots of companies cash in on when, for example, they manage to sell us plain old water at a couple of bucks a gallon or more.

There's another way to train: the scientific way. Looking at what studies/experiments really show, here's my spin on some of the published information on bicycling-related medicine and science that came out in 1997.

Stretching and Warm-Ups:

Although many riders swear by their value, past studies have shown limited, if any, effect on performance. Some information suggests that pre-event stretching, especially for track riders, may actually worsen performance. A new study showed that low-weight warm-ups in the weight room might actually increase post-exercise soreness.

Pedaling Technique:

Some coaches advocate ankling (increasing plantar flexion between the top and the bottom of the stroke). After three months of practice, ankling was still found to be physiologically more inefficient than regular pedaling.

Biomechanics:

Continued research into optimal crank length and optimal cadence has failed to provide much helpful insight into the correct approach to the long-time controversy. One study this year found no optimal crank arm length, studying lengths from 165 to 180 mm. (It did note that the best strategy appears to be to use a slower cadence if you use longer cranks, use a faster cadence if you use shorter cranks. I think most of us could have told the experimenters that before they began.)

A study this year showed that wedges on the inside of the cleat may help front-of-the-knee pain. (Caution: Medical wedges may worsen other problems.) Before you go buy those "big meat"

wedges, consider that the same study showed that simply raising saddle height helps as much, if not more.

Muscle Soreness:

Delayed muscle soreness after exercise continues to be a hot research topic because soreness limits the ability to train again and results in temporary loss of strength. (This is particularly a problem with unaccustomed, eccentric exercise - where muscles lengthen while activated.)

Scientists are still trying to figure out the root cause of this soreness. In the meantime, anti-inflammatory medicines (e.g. aspirin, ibuprofen, naproxyn) may or may not help, depending upon which study you believe. Vitamin E ingestion was shown to have no effect.

Heat and Humidity:

Conventional wisdom is that 10 days are required for acclimation to conditions of heat and humidity. A study this year showed that acclimation can take place in six days.

Thinking of traveling to Tallahassee for Masters Nationals next year? Dean Golich perhaps had it right when he had Norm Alvis ride with a cooling pack on his back to set the American hour record earlier this year. Pre-cooling and cooling during hot and humid conditions improves cycling performance. A cooling pack during warm-up resulted in about 10 more watts peak power, sustainable for a minute longer, in one study.

Effects of Altitude:

I've reviewed two dozen new studies this year. Everyone agrees that acclimatization to altitude may be necessary for racing at altitude. Altitude also provides some great physiologic benefits for sea-level riders; for example, increased red blood cells to boost oxygen carrying capability and improved tolerance of lactic acid. However, since less oxygen is present at altitude and less work can be performed, traveling to altitude can result in detraining. Athletes can lose fitness.

Living high and training low offers the most promise for improved performance for both aerobic and anaerobic riders, as Ben Levine and James Stray Gundersen showed again in a new study of runners. (Unfortunately the control group did not perform quite as much training.)

Seeking to make life less complicated, the Finnish group, led by Heiki Rusko, continues to experiment with altitude houses and motor homes for elite athletes, mostly cross-country skiers. The athletes train at sea-level, but live in a house (or travel to and sleep at races in a motor home) with less oxygen to simulate altitude. The idea is to get the benefits of altitude living and the benefits of sea-level training. Igor Gamow commercially manufactures an altitude chamber, at a cost of about \$13,000, which does the same. Less expensive alternatives are on the horizon, with Britain's Shaun Wallace developing a portable altitude tent.

Role of Resistance (Weight) Training:

A study that looked at women found that although weight training made them stronger, it had no effect on improving one-hour time trial performance, lactate threshold or VO2 max.

Master Riders:

Peak power was constant across five-year age groups from 30-34 through 55-59, showing that conditioned athletes do not lose much, if anything, to aging during these decades.

Nutrition

Calories:

Too few calories can be a problem in some athletes who do not eat enough to meet their exercise needs. Increasing exercise intensity increases carbohydrate and total caloric loss, but the amount of fat burned remains roughly the same. Fat oxidation at levels between 40 and 70 VO₂ max are pretty uniform. In plain English: Ride more, ride longer - you will burn more calories. The party line is eat breakfast, eat before, during and after rides. If you need to lose weight or cut back on total calories, do so late in the date.

Pre-Ride: About 250 carb calories improved time to exhaustion in three studies, but not in another two. It did not affect sprint performance after 50 minutes of exercise in a study of women. Carbohydrate energy bars actually worsened TT performance in one study.

Post-Ride: Previous studies found that adding protein to carbs after exercise helped glycogen reloading but the previous studies were not isocaloric, i.e. the protein represented extra food. When the calories added are the same, protein does not do much better than just adding more carb calories in one study and still does in another.

Antioxidants:

You have perhaps heard that exercise increases the production of free radicals. That is true. From there, it has been a giant leap to companies implying that exercise causes cancer and you had better buy their vitamin antioxidant supplements.

A few more studies this year showed antioxidants have no effect on human performance. And although exercise does increase oxidative damage, antioxidant vitamin supplements were not helpful in reducing oxidative muscle membrane damage in several studies I read this year.

Supplements and Ergogenics:

Twenty percent of athletes in one study used supplements, but were unable to explain why, for what purpose or what they were hoping to achieve.

For example:

- Beta-hydroxyl beta-methylbutyrate (HMB): Improved VO₂ max in one study.
- Branched chain amino acids: Did not improve exercise performance in two studies, did in another.
- Chromium: No effect on performance in six studies.
- Creatine: Repeated explosive efforts, not endurance cycling, may be helped by creatine. (One study showed no help in women, though.) Another study showed that caffeine ingestion cancels creatine's effectiveness.
- Ginseng: No effect in several studies.
- Glutamine: No effect on performance.
- Glycerol: No improvement in performance, no help in keeping body temperature down in the heat.
- Leucine supplementation: No effect on performance.
- Protein supplement: No effect on performance.
- Sodium Dichloroacetate: No effect on performance.
- Vitamin E: No effect on performance.

Measuring Body Fat:

Bioelectrical impedance is significantly altered by hydration status in elite athletes, and so was shown to be an unreliable method of measuring body fat.

Breath-Rite Nasal Strips:

You have seen these Band-Aid-like strips on the noses on lots of athletes, from football players to mountain bikers. They cost about 50-cents each. They claim to improve performance by letting you set more air in through your nose.

Ask yourself: Do you breathe through your nose when working hard? Or do you open your mouth? I found more than a dozen studies about nasal strips this past year. Not a shred of evidence that these "external nasal dilators" improve anaerobic or aerobic performance.

Overtraining:

The search for blood-test markers to help diagnose this condition continues. Two more studies showed that epinephrine, norepinephrine, cortisol, testosterone, urea and a number of other candidates have no value in diagnosing overtraining.

Conclusion:

There is whole lot of interesting science out there, but there really is not much revolutionary or new stuff that is going to make you a better rider beyond what you already knew: Training is still the key.

Specific Exercises for Lower Back Pain

Lordosis is an increased curve (arch) of the lumbar region of the back. When the pelvis is tilted too far forward the back muscles (erector spinae) and hip flexors are shortened and the abdominal muscles and hamstrings are lengthened. To alleviate or prevent this condition, most often articulated as "low back pain" several exercises can be introduced at the start of the season. If the condition is persistent or severe, the participant should consult their doctor immediately. See pictures below for proper positioning during exercises.

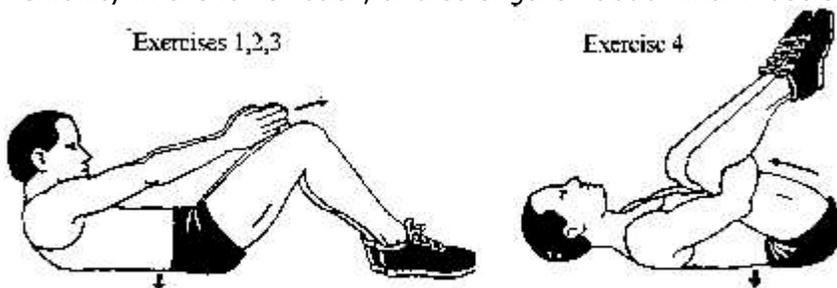
Exercise 1: Pelvic Tilt. Lying on the back with knees bent and feet on the floor, flatten the area immediately below the belt line and keep it pressed against the floor for 10-15 seconds. Repeat 7-10 times. (Note: Keep the upper back flat and pull in the lower abdominal wall concentrating on the oblique muscles.)

Exercise 2: Curl Up. Maintain pelvic tilt and bent knees, tuck chin and slowly curl up until the shoulder blades are off the floor. Feet remain on the floor. Hold this position for 10-15 seconds. Repeat the full exercise 7-10 times. Roll down slowly. As in Exercise 1, keep the abdominal muscles tucked in throughout the exercise.

Exercise 3: Curl Up With Rotation. Get in the Curl Up position as in Exercise 2. Twist the body to one side, hold for 10-15 seconds and roll back down to the floor. Now curl up and twist to the other side holding for 10-15 seconds. Repeat the full exercise 7-10 times. Be sure to maintain a pelvic tilt and do not allow the hips to rotate or come off the floor - they should remain squarely on the floor.

Exercise 4: Lower Back Stretch. Lying on the back, press the lower back flat against the floor. Pull the knees to the chest using the abdominal. Wrap arms under knees. Keep the head on the floor and the neck stretched long. Hold position for 20-30 seconds. Repeat 3-4 times. This is especially good for overcoming swayback.

These exercises should be performed two-three times per week to relieve tension and increase flexibility in the lower back, and strengthen abdominal muscles.



Nutrition

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From the Team In Training® Kitchen

If you are willing to make just one dietary change, I recommend you frontload your calories so you are eating at a hearty, hefty 500 to 800 calorie breakfast. This food provides fuel for your afternoon run, curbs the urge to snack on "junk" and helps control weight. If you are a morning exerciser, you can simply split breakfast into 200 to 300 calories before your workout, then 300 to 500 calories afterwards to refuel and satisfy your appetite.

Sounds fattening? No! Your body can naturally regulate your food intake. That is, if you eat a bigger breakfast, your body will be content with a smaller "diet dinner" - if desired. And you will wake up ready for breakfast again!

Breakfast is the most important meal of the day because breakfast eaters tend to:

- Eat wholesome foods (like cereal, banana and juice, instead of a late-morning donut to stave off the hungry horrors until lunch)
- Have greater stamina and endurance for morning and afternoon runs
- Better regulate their weight. In a survey of people who have lost more than 60 pounds and kept it off, 97 percent of these successful dieters raved about the benefits of eating an adequate breakfast

You do not need to eat breakfast within the first 30 minutes of waking; it can be within three hours after your rise. But breakfast should be:

Planned, so that it includes three types of food.

- Cereal, milk, banana
- Bagel, peanut butter, yogurt
- Oatmeal, nuts, raisins

Enjoyed as one of the day's pleasures.

Appreciated as an energizer that will fortify you with the energy you need to work hard and exercise well

Honored as a diet aid that helps you stay away from fattening evening nutrition temptations that lead to weight gain.

Breakfast of Champions

From: Nancy Clark's *Food Guide for Marathoners: Tips for Everyday Champions*:

Hot fruit on cold cereal converts breakfast into dessert! Any combination of fruit and cereal works well, but here's one winning suggestion.

- One cup Life cereal
- Half cup All-bran
- Quarter cup granola, preferably lowfat
- Half cup blueberries or any other fresh, frozen or canned fruit

1. In a microwavable bowl, combine the cereals.
2. Sprinkle with blueberries or other fruit of your choice.
3. Heat in the microwave oven for 20 to 40 seconds, until the blueberries are warm.
4. Pour the cold milk over the warm fruit and dig in!

Total calories: 500.

Stretching

Your Team In Training® coach will give you a complete lesson on muscle groups along with a pre- and post-workout stretching routine that you should begin to use every time. It will help prevent potential injuries and keep you feeling much better.

Here are some basic tips:

- Never run, walk or cycle without first stretching properly. Not stretching properly is one of the surest ways to cause injury.
- Always stretch slowly and without bouncing; ease your body into the stretching.
- Hold the stretch until it gradually becomes more comfortable.
- Get to know your specific muscle groups and pay close attention to problematic ones when stretching.

For more information, check out these [stretching tips](#) from Jim Newsom, coach of The Leukemia & Lymphoma Society's North Texas Chapter Team In Training program, and physical therapists Christi Nielson-Crotts, M.D., and David Crotts.