

# RICHARD LUBIN, D.C.

Far West Ski Associations "Safety Person Of The Year" *2001 and 2002*  
*Far West Ski Association Safety Chair*

## SKI READY?

Yikes, How did it get to be the end of the year already. That means shopping, decorating and that other ridiculous stuff. It also means it's time to head to the snow for some fun and thrills. Is your body ready for this pleasurable assault? **Let's explore some basic fitness concepts and their relationship to winter sports.**

**FITNESS** What do we mean by fitness? Is it looking good? Feeling good? I think it is a combination of Aerobic, Anaerobic, Flexibility, coordination, balance, and attitude. Of course looking good comes from all of those things.

**AEROBIC** conditioning increases your heart rate and the cells uptake of oxygen. This includes activities like running, stair climbing, rowing, etc. This greatly enhances one's endurance. It is important to aerobically condition yourself. It really doesn't matter what you do as long as you can safely raise your heart rate for a sustained period a few times per week. This makes your body more efficient at converting fuel to energy and utilizing oxygen. There are actual physiologic changes in capillary circulation and in the cells themselves whose 'little furnaces' (mitochondria) can increase. For most people in our club this means to a rate of 110 to 159 beats per minute. You can look it up on a chart to be specific. If not, a rule of thumb is to engage in an activity, which makes you breathe hard, but not so hard you can't have a conversation

**ANAEROBIC** These are activities that involve relatively short bursts of activity like sprinting, jumping, lifting weights etc. This type of conditioning is integral for intense skiing and boarding, especially in moguls, terrain parks, deep pow, jumps, and the like.

**FLEXIBILITY** We are talking about movement, being flexible and loose allows you to do motions through ranges that tight muscles would impair.

**COORDINATION** and **BALANCE** The integrated effort of harmonious actions is how muscle contraction gets translated into an activity. This can improve with training. This is why skilled skiers make it look easy.

### **ALTITUDE**

**SNOW** Sports take place at high altitude, which means less available oxygen. At some of the higher resorts the air may only have 70-80% of the oxygen you are used to at sea level. Initially all exercise seems harder, even walking to the lift. You may experience fatigue, heavy breathing, rapid heartbeat, headache, nausea or insomnia. With the added physical effort of skiing, your body can endure quite a strain. It is important to aerobically

condition yourself. It really doesn't matter what you do as long as you can safely raise your heart rate for a sustained period a few times per week. This makes your body more efficient at converting fuel to energy and utilizing oxygen. There are actual physiologic changes in capillary circulation and in the cells themselves whose 'little furnaces' (mitochondria) can increase. For most people in our club this means to a rate of 110 to 159 beats per minute. You can look it up on a chart to be specific. If not, a rule of thumb is to engage in an activity, which makes you breathe hard, but not so hard you can't have a conversation. Also if you are lucky enough to hang out at high altitude for a few days, your body will accommodate to the rarefied atmosphere. Many elite athletes condition themselves at high altitude for a variety of sports. Make sure you are not anemic or have other medical conditions such as respiratory or cardiovascular maladies, which may limit your ability or even make it dangerous for you to participate. Acidosis is a condition where your body decreases its pH (more Acidity) and occurs at high altitude. Rarely the dangerous conditions of cerebral or respiratory edema can occur at high altitudes. These are more likely to occur at elevations which we do not have here in California ski resorts. These are serious medical conditions that can lead to death which require professional treatment. You may consider the altitude issue especially if you are poorly conditioned in choosing a resort. You will likely NOT want to visit a higher Colorado resort to start your season with a base of 8-9000 feet. You might also experience "altitude sickness" in going from sea level to a high elevation. Symptoms can include, headache, nausea, insomnia, heavy breathing, and general malaise (feeling crappy). In the Tahoe area the lower resorts with a base at just over 6000 feet include Northstar, Homewood, Diamond Peak and the lower part of Squaw Valley. Conversely Kirkwood (my favorite) has a base of 7800', Mount Rose has a base over 8000'. This consideration may seem trivial, but you may notice a tremendous difference, especially at the onset of the season.

### ***AEROBIC (cardiovascular) conditioning some suggestions:***

Ok so you want to get into better shape, do anything physical that will get your heart and breathing rate up. It can and certainly should be fun. Hey have sex in a vigorous fashion, laugh, just get your blood pumping in whatever way turns you on. THINK about being in the snow, that motivates me.

#### ***ELLIPTICAL TRAINERS, STAIR MACHINES, ETC.***

Are all great if you use them. Try varying your posture and position to work all kinds of muscles. For example on a stair machine try turning your body a few degrees off your axis in either direction, try pushing off more with your calves, raising up, try varying your knee angle. Angle your ankles a little. Hey even try standing backwards on the machine, you will work some different muscle fibers.



One of the best exercises is stationary, road or mountain **biking**. This will increase your aerobic capacity and is easy on your body even with many injuries. It is very safe if you don't get hit by a truck. This activity will also strengthen your leg muscles, particularly if you climb hills, and push your pace up a notch. If you are on a stationary bike, you can even watch skiing on TV. Try to keep your pace about one revolution per second to warm up and then sprint by going faster for brief periods. If you have back problems you might consider a recumbent bike, whereby you are sitting with your back supported and your legs in front of you rather than behind you. Many gyms have these and you can even purchase a road bike design.



### **CROSS COUNTRY SKI MACHINES**

On a cross-country ski machine, like a Nordic track, try variations like getting down a little further or reaching forward and back with your legs. Also with the arms you can vary the angle you pull with. Start in the conventional fashion and move your arms up away from your side while maintaining the rhythmical synchronicity of the movement. Try twisting your trunk more to get other muscles involved.

**DOWNHILL SKI MACHINES** While I have not used them I hear these are great for getting into ski shape. They are advertised in ski magazines. There is a track, which allows you to propel yourself laterally side to side in a motion, which mimics skiing. Clearly this is working the same muscles you need for the real deal.

**HIKING** is a great way to get into condition and see a little scenery. We are certainly lucky in the Bay area to have so many great hikes nearby. If you can try something with some terrain variations. Going downhill gives you a great quad workout. I like to run downhill which forces you to make quick decisions (like skiing), works your thighs, calves, and ankles and gives your body tremendous proprioceptive input (position sense). Some great local places include Mt. Diablo, Mt. Tam, Pleasanton Ridge, or how about an extinct volcano, Mt. Sibley in the Oakland Hills.

**RUNNING** A tremendous exercise, if you like it. Try sprinting, running up stairs, hills, or on a treadmill. Alter your gait at times to work different muscles. Concentrate on pushing off with your calves. Buy good shoes, they will optimize your workout and minimize injuries.

**AEROBICS CLASSES** Take a class you enjoy or do it at home to some music. Step classes provide the additional benefit of working the quads, calves, and butt muscles.



**IN-LINE or Roller Skating** Great exercise and fun. This works your muscles and helps balance and coordination. One of my patients used to also use ski poles for extra conditioning in his upper body.

**SWIMMING** there is really no exercise, which is easier on your joints. While it is extremely dissimilar to skiing, it is good cross training and easy for people with injuries or arthritis.

**DANCE**, This is amazing and fun, take a class, do it at home, go to a singles league function, put on your headphones and boogie.



### **AT THE GYM**

Folks if you are a member of a fitness facility GO. Don't just pay your dues go use it. Many have classes, which can help your conditioning. Tae-Bo, yoga, kickboxing, whatever, get involved.

### **STRENGTHENING**

While space does not permit an extensive discussion, you need to do resistance exercises to the point of 'failure' if you really want your muscles to grow and get stronger. That is where you are accomplishing 8-15 repetitions and you cannot do one more with good form. Higher repetitions with lower resistance will tend to tone and make the muscle more capable of endurance activities. Use a combination of both.

**MACHINES:** Use the leg press, leg extension, hamstring, trunk twisting, calf raising, and abdominals. Do upper body exercises like lat pull downs and triceps to help your poling.

*Do not ignore the trunk muscles as they help to stabilize your body on turns, especially in snowboarding.*

**FREE WEIGHTS:** Do squats; if there is a Smith machine (a frame where the bar moves up and down in a track) it is a great way to do them safely. Lunges work lots of muscles, especially your legs. These exercises involve lots of different muscles and are especially good for developing power in your turns. Utilize what your gym has to offer. Ask others or a trainer about what they are doing for some new variations.

The web site <http://www.netfit.co.uk/skiing-cornwall-okwen.htm> has great exercises with photos



## **SKIING EXERCISES** Easy At Home exercises.

Obviously these are only helpful if you do them. Start now. If you can, do them several times a day. Think about skiing while you are doing them. Imagine yourself in a Warren Miller Movie.

### **SQUATS**

This exercise really focuses in on your quadriceps muscles. In a slow controlled fashion bend your knees to about a 90-degree angle. Keep your spine aligned and vertical, and keep your feet flat on the floor. Wash Rinse and REPEAT. Feel the 'burn'. For additional conditioning go slightly to each side, to work other muscle fibers in this quadriceps group.

Get your arms into a tuck just like you are racing. Go edge to edge on your feet, forward and backward while you are squatting. This way you are simulating the ski movement.

**CAUTION:** If you have knee problems consider going less than 90 degrees. Stop at any point if you feel pain.

Another variation is to lean your spine against a wall. Slide down to a sitting position. Hold until you feel the pull. in your thighs.



### **JUMPING**

Hop on one foot twice. Change to the other foot. Keep your balance and control. Try it in one spot side to side. Feel some real spring in your legs. Now try it going forward a few inches on each jump. Put on some reggae if it makes it easier for you. Another variation is to place a string or other line between your legs extending forward maybe 8-10 feet. Hop from side to side of this line. Any of these jumping motions should be continued for at least 1-2 minutes. Try to build up to longer periods. Think about turning on some steep downhill powder...oh yea! Those little trampolines are great for this. Many tricksters use full size trampolines to train in the off season.

Use a jump rope if you like. Jump when possible. Leap onto and off curbs, stairs whatever, be controlled. Make sure the surface is not slippery; try not to land on any pets.

### **CALF RAISES**

And you though calf raising was just for ranchers. Find a step and place only the front of your feet on it. Now rise up your heels, hold for a moment and lower yourself in a controlled fashion to where your heels are now below the toe level.

Do 30 or more. For a variation place your toes towards each other slightly and do the exercise. Repeat with the toes facing slightly outward. These variations help to develop more fibers of your calf muscles (gastrocnemeus,

soleus, plantaris). These are very important for snowboarding especially since toe side turns are accomplished this way.

You can even exercise your calves while sitting and pretending to work. Put some weight on you knees for more resistance

A classic ski exercise is the '**KNEE BEND**' exercise. Support yourself with a chair back turned sideways. Standing on one leg, bend down with a slow smooth motion. Try to get down to a 90-degree bend. Continue until you feel fatigue ('the burn') in the leg. Switch to the other side. Visualize yourself carving nice turns down the hill.

**CAUTION:** if you have problem knees do not go down any further than is comfortable. Consider limiting the motion to less than 60 degrees.

The **duck walk** is another great exercise. Its good exercise and darn funny. Squat down some and try walking. You should feel this in your Quads(the muscle on the front of your thighs. Say the secret word and win \$50.

**Walk backwards, sideways Watch where you are going.** Try it on an incline or decline. The concept is to utilize your muscles every which way for maximum conditioning.

**STAIRS** That right folks forget the elevator and take the stairs. Take them up or down. Try going diagonal, and zig zagging down them. Push off on your way up, controlled motion in your thighs and calves on the way down. By the way how many steps up Coit Tower?

**ROCK** by this I mean rocking side to side and front to back on your feet., Concentrate on getting to the edges in a controlled fashion. Do this with different amounts of knee bend. This will help your edging. You may even try this in your boots and with your skis on. After all that's where it will be really worthwhile. Plus it helps to get the foam in your boot conformed to your feet. Use motion in your knees, feet, and ankles Pretend you are pushing snow or sand to either side if you were sitting flat legged on the ground. Practice this while you are on the phone, waiting in line, or at the meetings. You can do the foot and ankle thing while seated. Do a nice controlled motion with your feet.

## **ABDOMINALS**

These important stabilization muscles for your trunk are important in skiing and boarding. Do 'crunches': while on your back, bend your knees up and pull (don't throw) your neck and upper body up in a controlled fashion. Work the obliques by twisting your right shoulder to the left knee and vice-a versa. To work the lower abs is to start in the position of your trunk by your knees and lower your upper body part way down until you feel the pull in your lower abdomen, come back to the knees and repeat. Also try tightening your abs



throughout the day. Do it on the phone, waiting for the microwave to beep, waiting for a download, hey why not while reading this article.

**BALANCE** Try standing on one leg with no support, bend a little. Do exercises like Tai-Chi that help you find your 'center'. Try walking along a curbside, increase the pace. Good skiing and boarding is all about balance and shifting weight. Hopefully you won't have to perform this with police lights flashing behind you. It is good to use a balance board, or toggle platform. These devices force you to adjust to gravity and can develop these skills. They are finding that these are good for people with back problems too.

**STRETCH** This is very important. Look at stretching charts, do them. Stretching warms up the muscles. It can decrease your risk of injuries. Stretch for at least 20-30 seconds in a slow, controlled, and non-painful manner.

**NUTRITION** clearly plays a role in overall health, eat healthy, take supplements, drink lots of water, and replace your electrolytes. Many experts feel that some of these can augment your endurance and athletic ability.

**BIOMECHANICS** The underlying structure of your body dictates its function. Optimize joint, muscle and nerve function to improve performance. See your Chiropractor or other competent body worker to help make you a better, sounder snow enjoying organism.

***Think Snow, Think Skiing, Think Boarding, Think Fitness, Health, & Fun.***

The better your physical conditioning the more enjoyment and fewer injuries you will have.