Winter Sports/Exercise

Winter sports are physically demanding and to perform optimally, avoid injury, and enjoy yourself, you must not only invest in the right equipment, but in understanding how to fit in good nutrition when you are on the go.

Plan
Plan what, when, where and how you eat. Schedule time to eat and try to plan meals out to get most out of your day. Try preparing some meals ahead of time.

Snack
Snacking is a good way to take a rest and warm up. Choose nutrient dense foods such as pudding, yogurt, mixed nuts, fruits, low-fat crackers.

Don't skip meals
Skipping meals not only causes you to miss nutrients important for your health and performance but it can also lead to injury. When you are tired you may become unintentionally lazy and this can lead to one last great run or one that sidelines you for a while.

Calculate your energy needs
Energy (calorie) needs will vary with age, sex, body weight, body comp, and most importantly the intensity, frequency and duration of your activity.

Light Activity
Avg. male (23-50 yrs old, 154 lbs.) needs 2500-2900 calories
Avg. female (23-50 yrs old, 120lbs) needs 1800-2200 calories

Hiking
Backpacking with 40lb pack burns 6-7 calories/minute (350-410 per hour)
Hiking at 4mph burns about 6-7 calories/minute (340-425 per hour)
Mountain climbing burns about 8-10 calories/minute (500-600 per hour)

Skiing
Estimates are for a total of about 2 ½ hrs of downhill skiing, 1 hr of skiing at race pace or 4hrs of cross country skiing

Downhill
Leisure skiing (beginner/intermediate) burns about 6-7 calories/minute (1100-1250 per 2 ½ hrs)
Moderate speed skiing (intermediate with some mogul work) burns about 11 calories/minute for women and 15 calories/minute for men (1900-2700 per 2 ½ hrs)
Maximum speed skiing burns about 18.6 calories/minute (1800 for a 2 ½ hr period of racing)

Cross Country
Avg. speed (4 miles per hour) burns 10-12 calories/minute (2400-3000 for 4 hrs)

Functional Exercises for Snowshoeing
Snowshoeing uses same muscles as hiking, running and cycling but there is more emphasis on lifting the leg and clearing each step especially in deep snow. Strengthening the hip flexors and quadriceps (to lift the leg) and hamstrings and gluteals (to ascend hills) is very important.

The exercise program targets key muscle areas in the upper and lower extremities as well as the abs. The focus is on functional activities the directly relate to join and muscle actions used in snowshoeing. Many of the exercises rely on body weight for resistance, thus not all persons will accomplish the same number of reps for a given exercise. In general when you can do 2-3 sets of 15 reps while maintaining proper form you can then progress on. Each exercise should be performed 3-5 days per week to gain maximum benefits.

1.) High Step-up
2.) Lateral Step Down
3.) Walking Lunges
4.) Single Leg Squat with med ball
5.) Single Leg Squat on trampoline

Upper body Exercises
1.) Prone stability ball extensions
2.) Push-ups

Core Stabilization exercises
1.) Supine Bridges
2.) Plank

Functional Exercises for Snowboarding
The primary muscle groups that are involved in snowboarding include the muscles of the core, hips/gluteals, quadriceps/hamstrings, and the muscles of the lower legs and feet. These muscle should be trained as close to the actual sport as possible.
When designing a training program for snowboarding you should focus on a few categories. Compensation and injury prevention, Basic Strength, Power and Eccentric Strength and Specific Strength and Skill Development.

Compensation and injury prevention: it is important to strengthen your body to avoid common injuries related to snowboarding. Ankle fractures, wrist fractures and sprains shoulder injuries and neck injuries all are common injuries found in snowboarding.

Injury Prevention Exercises

1.) Neck strengthening
2.) Wrist flexor and extensor exercises
3.) Rotator Cuff strengthening
4.) Hip flexibility

Basic Strength Exercises
1.) Squats
2.) Lunges
3.) Push-ups
4.) Basic abdominal/core strength

Power and Eccentric Strength Exercises
1.) Box jumps
2.) Interval Training
3.) Plyometrics with rotation

Specific Strength and Skill Development Exercises
1.) Snowboard stance work (balancing on balance discs in a snowboard stance)
2.) Rotational exercises (Cable rotations or rotations with bands)
3.) 180 degree jump turns landing in snowboard stance
4.) Heel-side/Toe-side transition exercises on balance board

Winter Sports Conditioning

Aerobic sports include:
Snowshoeing, Nordic skiing, hiking

Anaerobic sports include:
Snowboarding, downhill skiing

Adequate training will help reduce the chance of injury, progress in the sport and increase the enjoyment of the activity.

Winter conditioning consists of the following areas:
Cardiovascular conditioning, metabolic training, strength training, power training, balance and stabilization, plyometrics and stretching.

Cables and exercise bands are ideal tools for this type of conditioning because they allow the participant to mimic actual movements as close as possible.

Cardiovascular Training
A good cardio base is essential for overall fitness but even more for aerobic activities like cross country skiing and snowshoeing.
The elliptical machine is great for snowshoeing because it mimics the action of snowshoeing more than any other type of equipment.

Metabolic Training

Alpine skiing, telemark and snowboarding are anaerobic activities so it is important to work towards buffering the wastes in the lactic acid environment. Buffering here refers to the muscles ability to work with lactic acid present. Progression and variation of exercises such as wall sits, tuck walks, and tuck jumps help to prolong the onset of fatigue and improve the ability to perform in a fatigued state.

Strength Training
A general strength program will increase one's basic strength while involving the trunk, and extremities to create a well-oiled machine. For Nordic-skiers and snowshoers the strength training goal is to use low weights with high reps to improve muscle endurance.

1.) Cross-Country Skier
2.) Donkey kick
3.) 3-way band

Power Training
For the more aggressive skier and freestyle snowboarder explosive power development is necessary. Powerful movements are demanded on the hill with variable terrain, jumps and variable conditions (hard packed, powder, crud). The conditioning program should recognize these demands by incorporating fast, resistive movements. Group stationary lunges, and lateral band hops together to increase time to fatigue.

1.) Lateral band hops

Balance and Stabilization
Balance exercise increase stability therefore improving performance and reducing injury. Single foot balance squats and balance step-ups on unstable surfaces increase the stability of the knee and ankles. Foam rollers are also great for stabilization exercises.

1.) Balance tele lunges
2.) Snowboard stance to fakie

Plyometrics
Jumping drills or plyometrics are great for increasing metabolic demands of the conditioning workout as well as placing greater demand on leg strength. Plyo's are very demanding so start with sort time intervals and short movements. Gradually progress as you get stronger. For Nordic skiers and snowshoers, power skipping with arm action is ideal. For snowboarders and skiers, box jumps, tele jump lunges and tuck jumps are best. Sport specific movements with unstable surfaces and benches add stability.

1.) Bench jumps w/twist
2.) Lateral hops
3.) Bench squat jump

Stretching

Keeping muscles loose and flexible is very important for sound recovery and injury prevention. Stretching throughout the workout helps prevent blood from pooling in a fatigued muscle.

Preparing for Cold Weather Exercise

Effects of Cold on Exercise Performance
Wind, air temp. chill, clothing selection, body comp and exercise selection all have an effect on exercise performance in the cold. Exercise performance will usually not be compromised unless a significant amount of energy is expended on shivering, which can significantly increase oxygen consumption. The higher the body fat the more heat is generated thus requiring less insulation in the form of clothing.

Clothing Selection for Cold Weather
Wearing multiple layers of thin clothing creates a large air barrier above the skin, which is optimal for preventing heat loss. Wearing multiple layers also gives the user the option of removing layers to adjust to the level of insulation during exercise. The clothing closest to the skin should be made of a material that wicks moisture away from the skin to the next layer of clothing for subsequent evaporation. Natural fibers such as silk, wool and synthetic fibers like polyester and polypropylene do an excellent job of wicking moisture away from the skin, drying quickly and insulating well. Cotton is a poor choice because is absorbs moisture. When material gets wet you loose body heat through the process of conduction. Wool is good when dry or wet so it can be good as an interior or exterior layer. A combination of polypropylene sock liner and wool sock liner is a good choice for stop and go activities such as hunting where the feet may sweat during walking, then become much cooler when sitting for extended periods.
Clothing should be snug fitting to prevent air exchange. Wear a hat, 30-40% of heat is loss through the head. Sock and glove liners should be synthetic materials such as polyester to ensure wicking of moisture from the extremities

Warning signs for cold related injuries
Frostbite is the most common cold related injury. Toes and fingers are susceptible to frostbite it they get wet or sweat a lot. Early warning signs include numbing or tingling sensations. Warm the extremities very slowly and move to a warm place, do not rub the extremities.