



Skiers are made in the summer!

Training Tip 2

Ski jumping:

Your goal: Learn the stretches you should be doing *before each jumping session* – and become more flexible in the process. If you watch the older U.S. ski jumpers before each practice and comp, you will see them going through this stretching routine. Watch Timo demonstrate the stretches in this routine. Try to do the stretches the same way he is doing them.

<https://youtu.be/fuNwE1a-reY>

Believe it or not, serious ski jumpers stretch every day, even during the off season! We will try to put together demos of other daily stretches.

Don't forget to continue working on your inruns!



Cross country skiing: Strength workouts

Your goal: Increase your power.

Skiers need to increase entire body strength during the offseason (starting now!) and you don't need a weight room to do it. **Begin by doing the exercises below once a week.** Increase to twice a week by late July.

Pushups – Carmen Whitham, a former NMU skier, earned her Master's degree at NMU by studying what helps a skier have a powerful double-pole. One aspect of her studies showed that pushups/benchpresses build some serious double-pole power. Start off doing as many pushups as possible, trying to increase the number of pushups every other week.

Pullups – With your palms facing away from you. Do as many as possible, trying to increase the number of pullups every other week.

Horizontal ladder rungs – Go to a playground with one of those horizontal ladders where you swing from rung to rung. Go from one end to the other and back a few times!

For lower body and core exercises, watch Timo show you a few cool things to do. Get your siblings and parents out doing these exercises – they're fun!

<https://youtu.be/Jj6U8U9Qscw>

Don't forget to go on an L1/L2 run or bike two or three times each week!

Training Levels

L1 – recovery, easy

L3 – lactate threshold, moderately high

L2 – endurance, moderate

L4 – VO2 Max, high

L5 – intensive repetitions, very high

Recovery

Intensity: **Level 1.** Easy, 2-3mmol/L below LT; 30-50 bpm below LT.

Duration: 30 mins. - 1.5 hours.

Objective: This zone is used for warm-up and cool-down periods. Training at this intensity will promote recovery following glycogen-depleting workouts or high intensity intervals and maintain cardiovascular and muscular adaptations. The primary goal of recovery is to deliver O₂ and CHO (carbohydrates) back to the muscles.

Endurance

Intensity: **Level 2.** Moderate, 1-2 mmol/L below LT; 10-30 bpm below LT. Level 1. Easy, 2-3 mmol/L below LT; 25-50 bpm below LT.

Duration: 30 mins. - 3 hours.

Objective: A moderate intensity is the optimum zone for improving endurance adaptations. An easy intensity delivers the same benefits, but more slowly. Unlike many athletes in bipedal and less-weight bearing sports, most skiers do most of their endurance training at the easier of these two intensities (around 35 bpm below LT). Training in both of the endurance zones improves the ability to deliver more oxygen to the muscle cell and process more energy from aerobic sources. Specific training adaptations include an

increase in the size and number of mitochondria, an increase in myoglobin, increased capillarization, and an increased number of aerobic enzymes. Skiers tend to lower the intensity the longer the session. Over two hours = level 1. Under an hour = level 2.

Lactate Threshold

Intensity: Level 3. Moderately high, below LT by 5 bpm, or above LT by 5 bpm.

Duration:

- Tempo: 15 to 60 minute continuous effort at 5 bpm below LT.
- Interval: 5 to 15 minutes at LT and up to 5 bpm over LT.

Objective: Training at this intensity will raise LT as a percentage of Vo2 max as well as increase Vo2 max.

VO2 Max

Intensity: Level 4. High, 1-2 mmol/L above LT or at a heart rate associated with 95% of Vo2 max.

Duration: 3-5 minute intervals with half-time to equal recovery.

Objective: This is the optimum zone for improving Vo2 max. Training adaptations include an increase in stroke volume, an increase in maximal aerobic capacity and improved lactate buffering capacity - go fast, hurt less = go faster.

Intensive Repetitions

Intensity: Level 5. Very high, 2-6 mmol/L above LT.

Duration: Short: 30-60 seconds with complete recovery.

Long: 1-2 minutes with complete recovery.

Objective: Training at this zone generally only occurs for a few weeks prior to a major competitive event and increases anaerobic capacity and buffering ability.