

# S.T.A.R.S. PROGRAM EXERCISE GUIDE



Welcome to the S.T.A.R.S. Program Exercise Guide. This guide is meant to be a starting point for athletes, coaches and trainers to work on the athletic attributes important to on-ice skills development and, of course, to improve your S.T.A.R.S. testing performance in key areas: agility, power, coordination, strength, power and flexibility.

**Safety note:** While it is strongly recommended that all athletes train under the direct supervision of a coach or trainer, the exercises marked with an \*\* denote that these should ONLY be done in a supervised and safe setting.

*This guide, and further information about the S.T.A.R.S. program can, be found online at <http://www.STARScombine.org>. Happy training!*





# GET READY FOR S.T.A.R.S.

S.T.A.R.S. (Standardized Testing of Athleticism to Recognize Skaters) is a one-day event (called a combine) that consists of 15 office tests that evaluate you in three main areas: Agility/Balance/Coordination, Strength and Power, and Flexibility. S.T.A.R.S. is meant to help you figure out where you are strong and where you need work in your athletic skills — specifically those that are most relevant to jumping, spinning and other skating skills.

Two members of U.S. Figure Skating's Sports Science and Medicine Committee, Dr. Kat Albour and physical therapist Judy Holmes, worked together to create this exercise guide to help you prepare for the S.T.A.R.S. testing. This guide is available as a free download at the S.T.A.R.S. website — [www.STARScombine.org](http://www.STARScombine.org). Keep in mind that while the guide is not intended to be a complete or one-size-fits-all workout, it is an excellent starting point for you, your coach and trainer to plan out an effective off-ice fitness routine.

The S.T.A.R.S. guide was first developed to share exercises that are specifically related to each skill in the S.T.A.R.S. testing. The guide can help you prepare for the upcoming S.T.A.R.S. testing by guiding you through exercises that can help improve your flexibility, strength, power and agility — all of these areas will also help you on the ice.

Additionally, this guide was designed to be able to be used with a minimum of equipment and space, so it is a good starting point for your office program. While you should always consult your coach or trainer when beginning or modifying your office training program, the exercises are basic enough to be done with a minimum of supervision. There are however some specific moves that you should only do under the supervision of an adult (preferably a coach or strength and conditioning specialist), and these are clearly marked in the S.T.A.R.S. guide.

There is also a new section for 2013 that gives you a sample schedule for your aerobic and anaerobic energy systems — which will help you keep a high intensity throughout your skating programs and also help you to recover quickly.



If you are new to off-ice training (have never participated in an organized off-ice workout before), see the suggested exercises below as a good place to start. All of the exercises below can be found in this guide. Safe and happy training!

Obviously, the S.T.A.R.S. guide contains a lot of information, that's why we have put together a sample workout in the guide for you to use and integrate into your off-ice conditioning. On the next page, you can see how the exercises can be combined into a strength/power workout or stretching session.

## SAMPLE WORKOUT: STRENGTH TRAINING

Complete the first six exercises as a circuit, resting 10 seconds between exercises. At the end of the circuit, recover for two minutes then repeat the circuit two more times (three sets in total). Now move on to the final six exercises, following the same format. If you are not accustomed to working out, start with only the three sets of the first six exercises then stop. The following week, add the first two exercises from the next set. Continue in this way, adding in two more exercises each week until all 12 exercises are in the same workout.

Notice that this sample workout follows a formula: (LLUUC — that's Lower Lower upper upper core core — and this is how you can choose different exercises from each section of the guide to vary your workouts and keep it fresh for your body).

EXERCISE	REPS X SETS
Single Leg Dead Lift	10 per leg X 3
Two Step Run	30 seconds X 3
Push-Ups	12-15 X 3
Standing Rows with Bands	12-15 X 3
Alternate Leg Lowering	30 sec X 3
Side Lift	30 sec X 3

EXERCISE	REPS X SETS
Sitting Straight Leg Raise	12-15 X 3
Prison Squat Jumps	12-15 X 3
Standing Chest Fly	12-15 X 3
Standing Back Fly	12-15 X 3
Side Plank Star	30 sec X 3
Mountain Climbers from Plank	30 sec X 3

## SAMPLE WORKOUT: FLEXIBILITY

Complete each stretch in the circuit, hold each stretch for 20-30 seconds, then repeat twice on each side. If not accustomed to stretching, start with shorter times of 10-15 seconds for 2 sets of each stretch for 2 weeks, then progress to 3 sets.

EXERCISE	REPS X SETS
Standing Hamstring Stretch:	30 sec X 3
Hip Flexor Stretch:	30 sec X 3
Butterfly:	30 sec X 3
Straddle-Sit:	30 sec X 3
Supine Hamstring Stretch:	30 sec X 3
Splits:	30 sec X 3
Standing Spiral Stretch (foot on wall):	30 sec X 3
Split: Back shin on wall	30 sec X 3

**EXERCISES (ORGANIZED BY CORRESPONDING S.T.A.R.S. TEST)**

**Hex Jump**

**Jump Rope Drills**

**Two Foot Jump/Hop:**

Jump on two feet with a hop in between each jump over the rope.

**Two Foot Whips:**

Jump at quick pace over the rope without an intermediate hop.

**Jogging: Alternate left and Right Jumps:**

Jog over the rope, switching left then right foot.

**10 Repetition Alternate Left and Right Whips:**

Jump on the left foot for 10 jumps then alternate to the right foot for 10 jumps. No intermediate hop is used between jumps.



**Double Whips:**

Jump on two feet several times to find a rhythm, then jump slightly higher and twirl slightly faster to spin the rope two times per one jump.

- Progress to doing consecutive Double Whips
- All jump rope drills can be completed forward or backward

**Ladder Drills**

**Forward and Sideways:**

Run through ladder putting one foot in each square (B-E-H)

**Two Step Run:**

Step left then right in each box (B-E-E-H-H)  
Repeat drill with right foot lead

**Side Shuffles:**

Take two steps per square moving sideways down ladder  
Lead leg steps first then training leg (B-B-E-E-H-H)

**Grape Vines:**

Stepping with one foot per square, proceed over then under the leading leg (B-E-H)

**Straight Line Hop:**

Hop in each or every other square on one foot (B-H)

**Zig Zag Hops:**

Hop diagonally across each square or every other square on one foot (A-E-H)

J	K	L
G	H	I
D	E	F
A	B	C



**In In Out:**

- Start to the left of the first square
- Step in with the right then left foot (B-B)
- Step out to the right with right foot (F)
- Step in with the left then right foot (E-E)
- Step out with left foot (G)

**In In Out Tap-Under:**

- Start to the left of the first square
- Step in with the right then left foot (B-B)
- Then tap-under with the left foot as in a forward cross over second push
- Step in with the left foot (E)
- Repeat to the left (G-G)

**Cross-In Out Out:**

- Start to the left of the first square
- Left foot crosses-in (steps over the right foot) and into the square (B)
- Step out with right then left foot (feet are parallel along side of ladder) (C)
- Now cross-in with the right and out with the left then right foot (E-D-D)

**Cross-Under Out Out:**

Same as above, except cross-under the standing leg to get into the square (feels like the skip on the Yellow Brick Road) (B-C-C-E-D-D)

**Agility Drills**

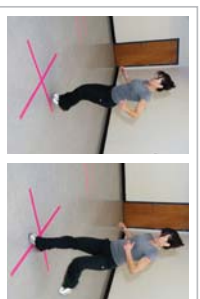
**Two Parallel Lines (//) Drills (48 jumps):**

- Place two 24-inch pieces of tape 12 inches apart on the floor
- Start to side of line
- On two feet, jump sideways over line for eight jumps (back and forth four times)
- Continuing on the left foot, jump sideways over line for eight jumps
- Continuing on the right foot, jump sideways over line for eight jumps
- Immediately turn to face the line, jump on two feet forward and backward over line for eight jumps
- Continuing on the left foot, jump forward and backward over line for eight jumps
- Continuing on the right foot, jump forward and backward over line for eight jumps



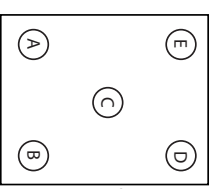
**Two Crossed Line (X) Drills (48 jumps):**

- Place two 24-inch pieces of tape perpendicular to each other on the floor
- Start in South East Box
- On two feet, jump counter clockwise for eight jumps (two times around)
- Continuing on two feet, jump clockwise for eight jumps (two times around)
- Immediately go to the left foot, jump counter clockwise for eight jumps then clockwise for eight jumps
- Immediately go to the right foot, jump counter clockwise for eight jumps then clockwise for eight jumps



**Agility Dot Drills:**

Complete the following five drills continuously without stopping in between. Less than 50 seconds is considered excellent/elite. Less than 60 seconds is very good.



**UP and BACK Drill:**

- Start with feet on A/B
- Jump to C with both feet then to D/E
- Immediately jump backward the same way
- Complete six times up and back



**RIGHT FOOT Drill:**

- B C D E C A B
- Complete six times around

**LEFT FOOT Drill:**

- End with right foot on B
- Hop left foot to C
- D E C A B
- Complete six times around

**BOTH FEET Drill:**

- End with left foot on B
- Hop both feet to C
- D E C A B
- Complete six times around

**TURN AROUND Drill:**

- End with both feet on B
- Both D/E
- 180-degree turn on D/E
- Jump to A/B
- 180 turn on A/B
- Complete six times up and back

**Other Dot Drills:**

- Open Close Open:**
  - Both feet: 4/5, 3, 1/2
  - Backwards
  - Complete four times

**Open Close Open Pivot (180-degree turn in air):**

- Both feet: 4/5, 3, 1/2, pivot 2/1
- Complete four times

**Both Feet Four Corners:**

- CCM/1s 1,2,5,4
- CW/1s 1,4, 5, 2
- Complete four times

**X it Drill -- Two Feet:**

- 5/3,1/2,3/4/5
- Complete two times each direction

**One-Foot Drill:**

- Complete two times each direction

**Two Right Foot Four corners:**

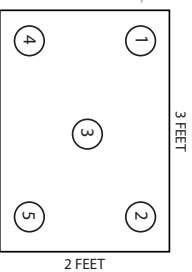
- Complete two times each direction

**X it Drill LEFT:**

- 5/3,1/2,3/4/5
- Complete two times

**X it Drill RIGHT:**

- 5/3,1/2,3/4/5
- Complete two times



**T-Test**

- Moving in one direction: Run forward/back pedal/ lateral shuffle left/lateral shuffle right
- Alternate directions every 5 steps for lateral shuffle and grapevine drills; focus on quick and safe foot plant for change of directions.

**Vertical Jump Height**

**Jump Rope Drills**

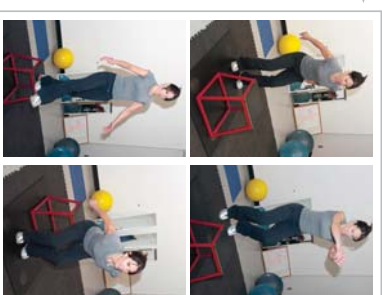
**\*\*Box Jumps:**

Note: With every landing, make sure the knee is directly over the foot. The NOSE-KNEE-TOE makes a straight vertical line when standing on one foot.

- 1) Begin by standing on the floor directly in front of a 4-12 inch plyometric box.
- 2) With hands at your side, jump up on to the box with both feet, then immediately back down to the starting position (stick the landing-hold for two seconds in excellent alignment.)
- 3) Repeat this for 30 seconds (low intensity) or 60 seconds (medium intensity).

**\*\*Vertical Jumps:**

- 1) Start with feet under hips and hands on hips
  - 2) Perform a "counter movement" in the lower body, where the knees and hips bend
  - 3) Jump up and fully extend the knees in the air.
  - 4) Land on soft knees and continue into the next jump quickly
- Use only legs for height and quickness
- Variation: Hold squat for five seconds between jumps.



**\*\*Alternating Squat Jumps:**

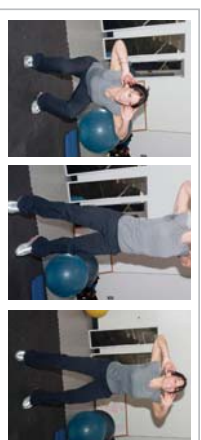
- 1) Start in squat position with both knees bent and knee lined up over front toes. Jump up in the air fully extending the knees
- 2) Land with soft knees back into a squat position
- 3) Immediately jump back into the air
- 4) Repeat

**\*\*Weighted Squat to Jump:**

- 1) Stand with leg wide and a weight on the floor between your legs.
- 2) Squat and lift the weight, squat to return the weight to the floor
- 3) Immediately jump up from the squatted position without the weight

**Prison Squat Jumps:**

- 1) Start in a squat position, knees bent at 90 degrees and hands behind head
  - 2) Jump up and fully extend knees in the air
  - 3) Land on soft knees and continue in the next jump quickly
- Use only legs for height and quickness
- Variation: Hold squat for five seconds between jumps





### Maximal Vertical Jumps:

- 1) Start with feet under hips
  - 2) Perform a "counter movement" where the arms swing back while the knees and hips bend
  - 3) Jump up as high as possible, swing arms over head and fully extend knees in the air
  - 4) Land on soft knees and continue into the next jump quickly
- Use arms and legs for height and quickness
- Variation: Hold squat for five seconds between jumps



## Timed Tuck Jump

### Box Jumps in Tucked Position:

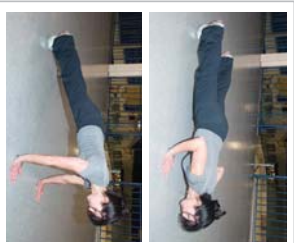
- 1) Start with feet under hips standing on the floor directly in front of a 4-12 inch plyometric box
- 2) Perform a "counter movement" where the arms swing back while the knees and hips bend
- 3) Jump up on box, swinging the arms through to shoulder height and bend the knees to the chest in the air
- 4) Land on the box with soft knees, sticking the landing, hold for two seconds in excellent alignment

## Push-Ups

### Push-Ups:

To maintain a straight line from the shoulders to the feet, strength is needed in the mid back (between the shoulder blades), low back muscles, abdominalis and thighs (to hold the knees straight). Keep the shoulder blades in a neutral position; not pinched together or spread wide, rounding the back. There should be no sag in the low back and the buttock should be level with the shoulders. Hands should be directly under the shoulders, feet together, ankles flexed and fingers facing forward.

- 1) Start in a plank
- 2) Lower body to ground bending the arms and lowering the chest until elbows are flexed at 90 degrees, and push back up to arms straight while holding body erect
- 3) Stop when unable to maintain proper alignment or unable to return to the starting position



### Standing Chest Press with Bands:

- 1) Anchor two bands in a door by looping handles around door knob and shutting the door, or have a partner hold the handles
  - 2) Start facing away from the band with elbows bent and hands next to chest
  - 3) Press both arms forward at shoulder height without leaning forward
  - 4) Torso stays erect throughout exercise
- Increase difficulty by completing the exercise standing on one foot.



### Standing Chest Fly with Bands:

- 1) Anchor two bands in a door by looping handles around door knob and shutting the door, or have a partner hold the handles
  - 2) Start facing away with arms wide and out to side
  - 3) Bring both arms forward at shoulder height maintaining sore bend in elbows
  - 4) Torso stays erect throughout exercise.
- Increase difficulty by completing the exercise standing on one foot.



## Bent-Knee V-Up

### Alternate Leg Lowering:

- 1) Lie on back with slightly bent knees over hip. Brace trunk muscles as when laughing. Your abs and side trunk will be firm to the touch
- 2) Slowly lower one leg while holding the trunk firm. If the low back raises up more than an inch from the floor, then don't lower the leg as far on the next repetition
- 3) Return to the starting position and alternate left and right legs



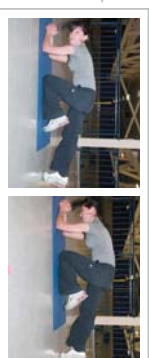
### 60-Degree Abdominal Isometric:

- 1) Sit on floor with knees out straight (allow a slight bend), heels can stay on the floor
- 2) With trunk straight lean back to a 60°
- 3) Level of difficulty can be increased by arm position
  - a. Reach forward toward feet
  - b. Cross arms over chest
  - c. Hands behind head



### Mountain Climbers from Plank (hands on floor):

- 1) Start in a prone plank position, hands on floor, elbows extended
- 2) Bring one knee up toward your chest
- 3) Alternated bringing the other knee up to the chest



### Mountain Climbers from Prone Bridge (elbows on floor):

- 1) Start in a prone plank position, with elbows on the floor directly under your shoulders
- 2) Bring one knee up to your chest
- 3) Alternate bringing the other knee up to the chest

## Side Plank

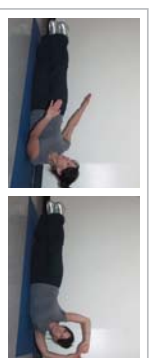
### Side Plank:

- Side plank at wall – back close to wall to keep head, shoulders hips and heels all lined up.
- 1) Rotate to side by coming to the edges of your feet (feet together) and balancing on one hand. Shoulders are in same vertical line over support hand, the other arm is at your side
  - 2) Lift your body and make a straight line from your feet to your shoulders. Do not let your hips sag, rise up or jut forward or back.



### Side Plank Star:

- From side plank position, lift the top arm and leg straight up. Keep your shoulders and hips in straight line by holding the core muscles tight
- Work on position up against a wall -- keep both shoulders, hips, feet and head in contact with the wall



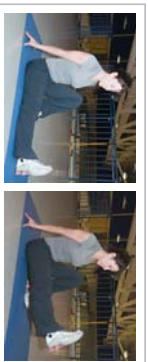
### \*\*Side Lift:

- 1) Lie on your side on the floor with a pad under your hip
- 2) Lift up shoulders, trunk, arms and both legs to balance on the side of hip (like Superman on your side)
- 3) Feel the side-waist muscles working on the top side of your trunk

## Hand Press

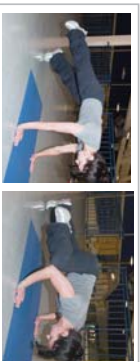
### Long Sitting Straight Leg Raise:

- 1) Sit with both legs out straight
- 2) Resting on your hands, tighten the muscle on the front of your leg and lift 6-8 inches from the ground, keeping the knee straight but not hyperextended
- 3) Alternate legs



### \*\*Spiderman Push-Up:

- 1) Start in a push-up position with elbows straight and feet wide apart
- 2) Bring one leg forward your chest with your hip open as you lower your chest toward the floor
- 3) Return to the starting position and change legs on the next repetition.



### Leg Lifts (knees bent or straight) from Dip Machine or

#### Hanging Ab Slings:

- 1) Starting with your legs hanging, tighten your core and keep your back straight
- 2) With knees bent or fully extended (depending on strength), flex your hips and lift your knees or legs to 90 degrees
- 3) Lower the legs slowly with control back to the starting position
  - Be sure you keep your shoulder blades down and back during this exercise. Do not allow your shoulders to come up toward your ears.



## Front Split

### Supine Hamstring Stretch:

- 1) Lie on back and with both legs straight
- 2) Lift one leg up and hold calf or foot
- 3) Keep both legs extended fully. Draw the leg over up toward the head as far as possible
- 4) If unable to catch foot, use belt around foot to connect the stretch



### Seated Hamstring Stretch:

- 1) Sit with both legs extended out in front with feet together
- 2) Reach forward toward feet, keeping legs straight
- 3) Feel stretch in the back of the legs and low back. If unable to reach the feet, use a towel around both feet
- 4) Once able to hold feet, bend elbows and draw torso toward legs



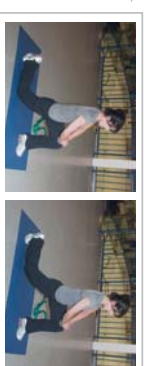
### Seated Half Straddle:

- 1) Sit with both legs together straight out in front of body
  - 2) Bend one knee and place the sole of the foot on the inner thigh
  - 3) Stretch the spine up and slightly rotate the torso over the extended leg
  - 4) Reach for the extended knee with opposite hand
  - 5) As flexibility increases, walk the hands farther down the right leg toward the outside of the foot to continue the stretch
- The spine remains elongated throughout the stretch



### Standing Hamstring — Supported Stretch:

- 1) Stand facing a bench or chair. Place heel on chair with toes facing ceiling, hips square to front and standing foot facing straight ahead.
  - 2) Both knees are straight with the front thigh muscle contracted, to prevent the knee from locking.
  - 3) Keep spine ting and lifted off pelvis then lean forward. Both sides of buttocks stay evenly pressed back as torso inclines forward.
- Feel a very strong stretch in the back of the top leg.  
Progress by placing the front foot on higher surfaces or pressing sole of foot into the wall.



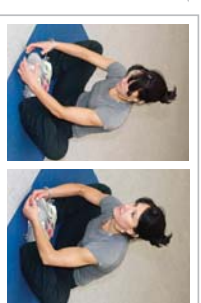
### Hip Flexor Stretch:

- 1) Stand with one foot 3-4 feet in front of the other, hands on the hips. Allow the back heel to lift while keeping the toes pointing straight ahead.
  - 2) Draw the stomach up and in then bend the front knee directly over the toes so the shin is vertical. Press the back leg straight and stretch the spine up while pressing the hips forward.
- Feel the stretch in front of the hip of the back leg.

## Straddle

### Butterfly:

- 1) Begin in sitting straddle with legs in a "V." Bring soles of feet together.
- 2) Hold ankles in the hands and press the forearms down into the thighs
- 3) Lean forward keeping the heels close to the body.



### Straddle-Sit:

- 1) Sit on the floor with legs in front of body in a "V." The knees are pressed to the floor and the feet are actively flexed with toes pointed up to ceiling.
- 2) Support the weight of the torso on the hands, progress to the elbows.
- 3) Hold for 60 seconds, shake out the legs, then repeat once.

Feel the stretch on the inner thighs and hamstrings.  
Care should be taken to maintain the lower spine in a lengthened position to avoid over stretching the lumbar region. The navel is rotated forward throughout the stretch.



## Standing Spirals

### Splits:

- 1) Start in a high kneeling position with one foot forward and back knee cap facing straight down into the floor.
- 2) Slowly lower the hips toward the floor, toes facing wall and free leg behind and turned out.
- 3) Lift torso straight up, tighten the abdominal muscles and square the hips to the front, use your hands for support.
- 4) You may use a block as you progress to lowering all the way to the floor.

**Single Leg Dead Lift:**

- 1) Start balanced on one leg. Maintain slight bend of 10-20 degrees at the knees and a straight spine throughout the exercise.
- 2) Tighten core (abs and low back) muscles and bend forward from the hip joint; lift buttocks up and press chest forward throughout down phase. Lift the free leg up and back into a spiral position.
- 3) Return to standing by tightening gluts and hamstrings, not from pulling on the back.

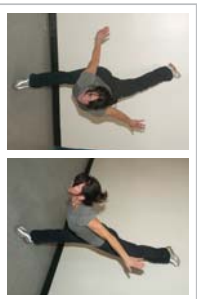
This exercise is to be completed by individuals with adequate hamstring flexibility and core strength.

Add weight (bar bell or dumb bell) only when form is excellent and is supervised by a conditioning coach.



**Standing Spiral Stretch (foot on wall):**

- 1) Stand a few feet from a wall, bend forward and put hands on the floor and tip toe on the wall
- 2) Lift torso and arms to spiral, keeping toe on the wall for balance. Hold a few seconds
- 3) Straighten both legs fully, then lift toe UP off wall by using buttocks, not by bending knee or jutting head forward.
- 4) Hold five seconds then repeat with same standing leg a few inches closer to wall. Work both sides evenly, starting with your tight side



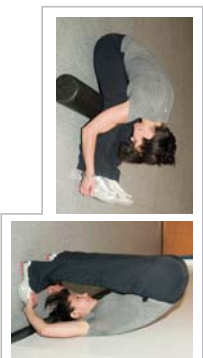
Seated Reach

**Seated Hamstring Stretch:**

- 1) Sit with both legs extended out in front with feet together
- 2) Reach forward toward feet, keeping legs straight
- 3) Feel stretch in the back of the legs and low back. If unable to reach the feet, use a towel around both feet
- 4) Once able to hold feet, bend elbows and draw torso toward legs

**Standing Hamstring Stretch:**

- 1) Stand facing a wall. Place your hands on the wall with elbows bent at about 90 degrees.
- 2) Round down and let the wall hold you as you stretch your hamstrings and back.
- 3) Rest your hands on the ground for support (use books or blocks if the floor cannot be reached)
- 4) Hold for 30 seconds, round up slowly using your buttocks and abdominals to return to standing.



**Seated Lumbar Stretch:**

Perform "Seated Hamstring Stretch" with knees slightly bent with a roller or support under the knee and rounding the back to stretch the lumbar spine.

**Standing Forward Bend:**

- 1) Exhale: Bend the spine forward and extend the arms toward the ground in front of the feet
- 2) When the hands are comfortably resting on the ground, reach back of heels.
- 3) Bend the knees and draw the head toward the shins.
- 4) Hold for 3-5 breaths. Repeat once

*Extra help: If the fingers do not reach the floor, use support (stack of books or a step) under the fingers to prevent excessive strain on the lumbar spine. Extend the knees.*



# TRAINING YOUR ENERGY SYSTEM

By Kat Abour

When you exercise you access two types of energy systems: the anaerobic system and the aerobic system. Sometimes the majority of the energy to run your muscles comes from one system or the other, but in figure skating a good deal of time you access both energy systems during training and competition. For that reason, figure skaters are categorized as aerobic-anaerobic athletes.

Every skater has felt the uncomfortable lactic acid burn in the thighs associated with high-intensity skating, such as doing a program run-through, during fast power stroking drills or a "sprint" portion of off-ice interval training. This burn is associated with the anaerobic (without oxygen) metabolism when your body breaks down glucose (carbohydrates) without oxygen. It is not possible for your body to maintain this high effort for long; therefore this system is used for short-duration, high-intensity exercises that are at or near your maximal exercise effort. Without getting too technical, metabolic waste products (such as lactic acid) accumulate in your working muscle faster than your body can remove it during these high intensity bursts of activity. As the lactic acid builds up in your

muscles, it contributes to producing the familiar feelings of muscle pain, burning and fatigue. The good news is that interval training increases your tolerance for this build up of lactic acid, allowing longer periods of high-intensity exercise before you fatigue. Interval training is an especially important component of off-ice training to help your program run-throughs on the ice.

Skaters are also familiar with the sensation of skating at an intensity that can be maintained for the whole session, such as working on choreography or spins, or moves in the field. You are using aerobic (with oxygen) metabolism when you can maintain exercise for long periods of time and are working at a low to medium-level intensity. Your aerobic energy pathway uses oxygen to convert carbohydrates, fats and proteins to produce energy. It provides the oxygen to muscle from the blood, which is moved through your body as your heart beats. Training your aerobic energy system can be thought of as the cardiovascular/endurance exercise portion of your training. This type of exercise improves the strength and efficiency of the heart muscle which increases your tolerance for long duration exercise.

## Aerobic – Cardio Training

To elicit a training effect, aerobic training needs to be done consistently at an intensity of 75-85% of your maximal heart rate (HR max) for 20-60 minutes, several times per week. For best results, vary the method and cardio equipment to keep it interesting and to help prevent overuse injuries. Examples of cardio machine-based training would be bike, treadmill (run, or walk up hill at a 3-5% or greater grade and quick pace), elliptical machine, swimming, etc.

### CARDIO TRAINING

#### Level and Duration

- Pre-pre - Pre Juvenile, 10 - 15 min
- Juvenile - Intermediate, 15 - 20 min
- Novice - Junior, 20 - 30 min
- Senior, 30 - 40 min

**This should be done 1-3 days per week for machine-based cardio - jogging, elliptical, bike, etc. Please keep in mind that the number of days per week depends on season**

### CARDIO TIPS for Machine-Based Training

- Maintain heart rate above 75% of your estimated max heart rate, calculated by subtracting your age from 220, for the duration of the cardio training
- Within a cardio workout, alter the intensity frequently as if you are running up and down a series of short hills
- Increase the intensity by turning up the resistance (level) or cadence (pedal or run faster) for 30-60 sec, then decrease one or both for the same amount of time. Repeat this 10-20 times in a workout for best results.
- You will train your body more specifically for the demands of skating, and you will burn more calories this way than if you stay at the same intensity throughout your workout!
- As always, your coach and/or trainer should help design your program and help you to monitor your progress.

### Heart Rate Chart

AGE	MHR	75%	85%	95%	AGE	MHR	75%	85%	95%	AGE	MHR	75%	85%	95%
10	210	158	178	199	17	203	152	172	192	24	196	147	166	186
11	209	157	177	198	18	202	152	171	192	25	195	146	166	185
12	208	156	176	197	19	201	151	170	191	26	194	146	166	184
13	207	155	176	196	20	200	150	170	190	27	193	145	164	183
14	206	155	175	195	21	199	149	169	189	28	192	144	163	182
15	205	154	174	194	22	198	149	168	188	29	191	143	162	181
16	204	153	173	193	23	197	148	168	187	30	190	143	161	180

## Anaerobic / Intervals (agility/plyometrics)

### Interval Training Protocols:

Should be done about 2 days / week (Days per week may vary depending on where you are in your season!)  
 1 day / week of Long Sprints  
 1 day / week of Short Sprints

### INTERVAL-SPRINT TIPS

- Alternate SHORt and LONG intervals each Interval Session, starting with long intervals each week
- Sprints are a MAXIMAL effort. I.e. you want to attempt to reproduce program-run-through intensity during your sprint.
- Use cardio equipment or set up agility course with cones, ladders, etc. There are many varieties you can use:
  - o Running Sprints:
  - o Cardio Equipment - adding Elevation and / or Resistance:
  - o Spinning Bikes - standing or seated sprint against resistance;
  - o Box Jumps; Lunge Jumps with/without added weight;
  - o Stair Stepping (Sprint up, walk down);
  - o Cardio Step: Up/Up/Down/Down while curling/pressing weights
- Always take at least one day off between interval training sessions

**LONG Interval Sprints: High Intensity Training**

- Warm up for 5-10 minutes
  - o Repeat 3 sets of 60 sec max-effort sprints, followed by a 30 sec walking/recovery (written "60:30")
  - o If you are doing these at the correct intensity, at the end of your third sprint, you should feel that you could not proceed to a fourth right now
  - o Recover for additional 3 minutes at a walking (or equivalent) intensity
  - o Repeat 3 sets of 60:30 sprint/recovery intervals
  - o If you are doing these at the correct intensity, at the end of your third sprint, you should feel that you could not proceed to a fourth right now
  - o Recover for additional 3 minutes at a walking intensity
  - o Repeat 3 sets of 60:30 Sprint/Recovery Intervals
  - o If you are doing these at the correct intensity, at the end of your third sprint, you should feel that you could not proceed to a fourth right now
  - o Recover for additional 3 minutes at walking intensity
  - Cool down for 5 minutes then do your normal warm-down stretches
  - (Total of 9 Very High Intensity 60 second intervals per workout)

**SHORT Interval Sprints: Very High Intensity Training (ALL-OUT Max Effort for 20 sec burst)**

- Warm up for 5-10 minutes
- Repeat 3 sets of 20 second maximal-effort sprints, followed by a 20 sec walking (or equivalent intensity) recovery (written "20:20")
  - o If you are doing these at the correct intensity, at the end of your third sprint, you should feel that you could not proceed to a fourth right now
  - o Recover for additional 3 minutes at walking intensity
  - o Repeat 3 sets of 20:20 Sprint/Recovery Intervals
  - o If you are doing these at the correct intensity, at the end of your third sprint, you should feel that you could not proceed to a fourth right now
  - o Recover for additional 3 minutes at walking intensity
  - o Repeat 3 sets of 20:20 Sprint/Recovery Intervals
  - o If you are doing these at the correct intensity, at the end of your third sprint, you should feel that you could not proceed to a fourth right now
  - Recover for additional 3 minutes at "walking" intensity
  - Cool down for 5 minutes then stretch
  - (Total of 9 Very High Intensity 20 second intervals per workout)

**INTERVAL-SPRINT TIPS**

- With increased conditioning, you will be able to maintain a high exercise intensity is without increased effort on your part.
  - o The overload of specific muscles makes them better able to clear lactic acid during exercise. A result of anaerobic training is improved performance.
  - The heart rate at the end of the interval should be in between 85% - 100% of your estimated or measured maximal heart rate.
    - o For most accurate results, take your pulse immediately, within 5 seconds after finishing the interval.
    - o Heart rate monitors are an excellent training tool to objectively familiarize skaters with high intensity exercise, and appropriate target heart rates. Use them if they are available.
  - Start interval training by the middle of the Late Off Season, around mid-April
  - Alternate SHORT and LONG intervals each Interval Session, starting with Long Intervals each week
  - Sprints are a MAXIMAL effort. Attempt to reproduce program-run-through intensity
  - Use cardio equipment or set up agility course with cones, ladders, etc
  - Always take at least one day off between interval training sessions
  - The week before you are going to a competition, decrease your interval training to 1-2 X's per week.

Interval training is best accomplished by combining body weight exercises (lunges, jumps, push ups, pull ups) and quickness drills including stepping up and down from a box, jumping rope or agility drills. Stationary aerobic equipment (bike, treadmill, stair stepper, elliptical trainers) are also incorporated into the intervals if they are available. The anaerobic requirements of a program run-through (the skate maintains a nearly maximal heart rate for the duration of the program) can be matched by any of the above training methods. The athlete increases conditioning by gradually increasing the duration (length of interval) and frequency (intervals per session and workouts per week) of interval training sessions. Interval training performed at the right training intensity can improve the power and stamina of the skater.

**SAMPLE SEASONAL SCHEDULE**

Date	Season or Comp	Senior Sprint	Junior Sprint	Novice Sprint	Informed: Sprint	Juv/Int Sprint	Recovery	Repeat X's	Days/Week	
2012										
23-Apr	LATE OFF SEASON	1:00	1:00	:30	:30	:30	1:00	8x's	1Long/1Short	
30-Apr	LATE OFF SEASON	1:00	1:00	:30	:30	:30	:45	8x's	1Long/1Short	
7-May	LATE OFF SEASON	1:15	1:15	:30	:30	:30	:30	8x's	1Long/1Short	
14-May	LATE OFF SEASON	1:15	1:15	1:00	1:00	1:00	1:00	7x's	1Long/1Short	
21-May	LATE OFF SEASON	1:30	1:30	1:00	1:00	1:00	1:00	7x's	1Long/1Short	
28-May	LATE OFF SEASON	1:30	1:30	1:00	1:00	1:00	:45	6x's	1Long/1Short	
4-Jun	LATE OFF SEASON	1:45	1:45	1:00	1:00	1:00	1:00	:45	6x's	1Long/1Short
11-Jun	LATE OFF SEASON	1:45	1:45	1:00	1:00	1:00	:45	6x's	1Long/1Short	
18-Jun	PRE SEASON	2:00	2:00	1:15	1:15	1:15	1:30	5x's	1-2Long/1Short	
25-Jun	PRE SEASON	2:15	2:15	1:30	1:15	1:15	1:30	5x's	1-2Long/1Short	
2-Jul	PRE SEASON	2:15	2:15	1:45	1:30	1:30	1:30	4x's	1-2Long/1Short	
9-Jul	PRE SEASON	2:30	2:30	2:00	1:30	1:30	1:30	4x's	1-2Long/1Short	
16-Jul	PRE SEASON	2:30	2:30	2:00	1:30	1:45	1:30	3-4x's	1-2Long/1Short	
23-Jul	PRE SEASON	2:45	2:45	2:15	1:45	1:45	1:30	3-4x's	1-2Long/1Short	
30-Jul	PRE SEASON	3:00	2:45	2:15	1:45	1:45	1:30	3-4x's	1-2Long/1Short	
6-Aug	PRE SEASON	3:15	3:00	2:30	2:00	1:45	2:00	3x's	1-2Long/1Short	
13-Aug	PRE SEASON	3:15	3:00	2:30	2:00	2:00	2:00	3x's	1-2Long/1Short	
20-Aug	PRE SEASON	3:30	3:15	2:45	2:00	2:00	2:00	3x's	1-2Long/1Short	
27-Aug	PRE SEASON	3:45	3:15	2:45	2:15	2:00	2:00	3x's	1-2Long/1Short	
3-Sep	PRE SEASON	3:45	3:30	3:00	2:15	2:00	2:00	3x's	1-2Long/1Short	
10-Sep	IN SEASON	4:4:30	3:30	3:00	2:30	2:15	2:00	3x's	2Long/1-2Short	
17-Sep	IN SEASON	4:4:30	3:45	3:00	2:30	2:15	2:00	3x's	2Long/1-2Short	
24-Sep	IN SEASON	4:4:30	3:45-4	3:30-3	2:30-3	2:2-30	2:00	3x's	2Long/1-2Short	
1-Oct	IN SEASON	4:4:30	3:45-4	3:30-3	2:30-3	2-2:30	2:00	3x's	2Long/1-2Short	
8-Oct	TAPER	4:4:30	3:45-4	3:30-3	2:30-3	2-2:30	2:00	1-2x's	0-1Long/0-1Short	
15-Oct	<b>Regionals</b>	3:30-3:45	3:30	3:00	2:15	2:00	2:00	3x's	2Long/1Short	
22-Oct	PRE SEASON	3:45-4:00	3:30-3:45	3-3:30	2:30	2:15	2:00	3x's	2Long/1-2Short	
29-Oct	IN SEASON	4:00	3:30-4:00	3-3:30	2:30	2-2:30	2:00	3x's	2Long/0-1Short	
5-Nov	TAPER									
12-Nov	<b>Sectionals</b>									
19-Nov	EARLY OFF SEASON	None	None	None	None	None	None	None	None	
26-Nov	LATE OFF SEASON	3:00	2:30	2:00	1:15	1:00	1:00	8x's	1Long/1Short	
3-Dec	LATE OFF SEASON	3:30	3:00	2:30	1:15	1:00	1:00-1:30	8x's	1Long/1Short	
10-Dec	PRE SEASON	3:45	3:15	2:45	2:15	2:00	1:30 - 2:00	4x's	2Long/1Short	
17-Dec	PRE SEASON	3:45	3:15	2:45	2:15	2:00	1:30 - 2:00	4x's	2Long/1Short	
24-Dec	IN SEASON	4:4:30	3:30	3:00	2:30	2:15	1:30 - 2:00	3-4x's	2Long/1-2Short	
31-Dec	IN SEASON	4:4:30	3:30-3:45	3:30-3	2:30	2-2:30	2-2:30	3-4x's	2Long/1-2Short	
7-Jan	IN SEASON	4:4:30	3:45-4	3:30-3	2:30	2-2:30	1:30 - 2:00	3-4x's	2Long/1-2Short	
14-Jan	TAPER	4:4:30	3:45-4	3-3:30	2:30	2-2:30	1:30 - 2:00	3x's	1Long/0-1Short	
21-Jan	<b>Nationals</b>									
28-Jan	ACTIVE REST	None	None	None	None	None	None	None	None	
4-Feb	ACTIVE REST	None	None	None	None	None	None	None	None	

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# Thank you!

*All photos by Peter Zapala*