

Off-Ice Training for Figure Skaters

This off-ice training program focuses on three key components for figure skaters: **Posture**, which includes back and core strength, **Off-Ice Jump Training**, which includes both explosive power training and rotational training, and **Flexibility** training. Core Strength, Power, and Flexibility are foundations for every athlete's training, but are even more important for figure skaters, who are required to do all of the above- with ease, grace, and a smile!

Posture Training and Core Strength

Posture and Core Strength are at the foundation of every skater's success. Figure skating is, after all, a visual sport, and excellent posture enhances the look of the movement on the ice. More importantly, though, is the role posture plays in the stability of a skater through the complex movements of jumping, spinning, and footwork. When a skater spins, they experience angular momentum. When they leap into the air, they land with a force five to eight times their body weight, and a strong lower back and core is necessary to not only successfully land these jumps, but to mitigate the effect of this impact on their body to reduce injury. Footwork when connected to others needs to be executed with a stable and still upper body; a singles skater executing step sequences will find it necessary to keep a stable core so that body movements can enhance the sequence without adversely impacting balance.

At its most basic, good posture requires an awareness of a straight back and proper form. The first set of posture/core exercises is done on the floor, while the second set will be done standing.

- 1) **Cat-Cow:** This exercise is done with hands and knees on the floor, and gives a basic awareness of back flexibility and movement through arching and rounding the back. When starting this exercise, make sure wrists, elbows, and shoulders, as well as knees and hips, are stacked vertically, perpendicular to the floor, and the back is in a flat "tabletop" position. Inhale and arch back by pulling sit bones toward the ceiling, opening chest and rib cage, and looking forward. Follow by exhaling, pulling your belly button toward your back, and releasing your head toward the floor. Execute 6 reps each of cat and cow, holding each position for five seconds.
- 2) **Forearm Plank:** Place forearms on the floor with elbows directly under shoulders. Squeeze glutes and ground toes, maintaining a straight line from your ears to your shoulders, down through your hips, knees, and ankles. Start with two repetitions of thirty seconds, and slowly increase the length of time of your plank. Do not do this to exhaustion, but only as long as proper form can be maintained.
- 3) **Quadruped Limb Raises:** From the same starting position as cat-cow above, alternately extend opposite arm and leg slowly and lift off of the ground, maintaining balance. Extend and lift right arm and left leg, then left arm and right leg. Remember to keep back flat, belly button toward spine. Execute eight repetitions, four on each side, holding each position for five seconds.
- 4) **Superman:** Lie on stomach, arms extended in front, shoulders down. Keeping

- arms and legs extended and neck in line with the spine, lift upper body (arms, legs, head, chest) and legs off of the floor to hold for ten seconds. Execute the ten second hold four times.
- 5) **Dead bug:** This is very similar to Quadruped limb raises, but is performed on your back. Keeping your hips under and your lower back flat to the floor, start in a relaxed position that is a reverse of the tabletop position, knees aligned with hips, legs bent at 90 degrees, arms extended straight up from your shoulders. Alternate extending right arm overhead and behind while left leg extends forward, bring arm and leg to starting position, then extend left arm overhead and right leg forward. Slowly execute 2 sets of 8 with a break between sets.
 - 6) **Thoracic Spine Rotation:** Though this is more of a “stretch,” this is a simple and effective exercise for building an awareness of a flat, stable back through rotational movement. This is particularly important when executing intricate movements while connected to others with a still and stable upper body. It’s also a nice break from some of the “working” exercises above. Lie flat on back, arms extended straight out from shoulders, shoulders down, knees bent. Allow knees to drop to the left, to the floor, as head turns to the right. Keep shoulders down and upper back flat to the ground throughout! Change direction, taking the knees to the right and the head to the left. Hold position for twenty seconds on each side, repeat for a total of twice on each side.

The next two exercises are standing posture awareness exercises.

- 1) For the first exercise, stand against a wall with your arms at your sides. Use the wall as a contact point for your shoulder blades. Keep hips neutral and do not arch back. Lift arms straight forward until they are extended straight from the shoulders, parallel with the ground. Keeping back in contact with the wall, open arms and rib cage until arms touch wall. Bring arms back in front, relax arms down to your side. Do two sets of six repetitions. Make sure to keep back flat to the wall and focus on form.
- 2) The second exercise will be familiar to anyone who has taken ballet, as it is an alternating plié/relevé exercise. Start standing with feet slightly apart, toes turned out, arms extended to the sides, shoulders down, pelvis under, abs engaged. Maintaining posture, softly bend your knees, making sure they align with your feet. Return to standing position. While keeping the same posture and focusing on body alignment, press down with the balls of your feet, keeping postural muscles engaged, lifting heels and rising up to your toes. Hold the relevé for five seconds, return to starting position. Repeat for a total of ten reps. Execute two sets of ten.

Off-Ice Jump Training

Jump Training incorporates two very important components: vertical explosive power, otherwise known as Plyometric Training, and Dryland Rotational Training. These two key components of successful jump execution can and should be practiced off ice.

The plyometric exercises have been compiled from various training courses developed to

train basketball players to increase their vertical jump. Since basketball is a high-grossing spectator sport with a net a full ten feet off the ground, significant research has been done with respect to increasing vertical jump height in players. For figure skaters I have chosen exercises that are skating-specific and do not require specialized equipment.

Plyometric jumping should be done at 100% effort. The main goal is to train jump explosion rather than jump endurance. Plyometrics incorporate Load (using bodyweight and gravity to cause an eccentric contraction- in other words, contraction as muscle is lengthening,) a brief Amortization (basically a quick pause between load and explosion-needs to be as short as possible,) and an Explosion (snap or release of stored energy.) All published data emphasize one thing: performing too many reps (thereby pacing yourself) actually *lowers* the intensity and effectiveness of the drill. The difference between strength/resistance training and plyometric training is key. From J Strength Cond Res. 2008 Nov;22(6):1799-810, a study comparing muscle adaptation to plyometric vs. resistance training, "Gains in maximal muscle strength were essentially similar between groups, whereas muscle power increased almost exclusively with PT training." (<https://www.ncbi.nlm.nih.gov/pubmed/18978625>) Explosive power needs to be the singular focus of this type of training.

Dryland air rotational training is very much skating specific. Here we are training proper body alignment and position to achieve efficient rotation. For a skater that rotates counter-clockwise this means the axis of rotation should be around the right side of the body as much as possible. When training dryland air rotation exercises, proper form is imperative. Head should be facing forward to start, followed by "spotting," keeping the head aligned with the takeoff position for as long as possible. For the skater this will feel like the head remains to the right throughout the jump- in fact, I frequently tell my skaters to "keep their head to the right" while jumping. If you view the takeoff of any top skater executing triple or quadruple rotation jumps, this head position, which aligns the weight of the head over the axis of rotation as much as possible, is clearly visible. Arms in turn should be folded in to the body during rotation with the left side in front, right side behind, and elbows in and arms crossed on the right side of the body, keeping the center of mass over the right side as much as possible throughout the jump. Again, this applies to skaters rotating counter-clockwise. For skaters who rotate clockwise, head and arms should remain to the left. For all skaters, legs should be crossed at the ankles, no higher, and little or no gap between the legs.

The Plyometric exercises 1-7 should be done every other day so the skater has time to recover. Exercises 1, 2, 3, and 5 are single leg explosive exercises. Exercise 3 utilizes all of the power muscles needed for explosive force through their maximum range. Exercises 4 and 5 require a step down from a height (like a stair) and spring up as quickly as possible. Exercise 6 can be done with a wooden box if available, or back and forth and over for the required repetitions. Exercise 8 is primarily for ankles and calf muscles (gastrocnemius & soleus) which are used in the final stage of explosive jump contraction.

The dryland air rotation exercises (9-13) can be done daily. These exercises are executed with a focus on position and rotational speed. The dryland exercises below are for skaters executing single axels and working on double jumps. For those skaters who can execute all of their double jumps and are working on double axels and/or triples, there are supplemental dryland rotation exercises.

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| 1) | 1-2-3 Jump (three runs, on third step, high power skip) | 2 sets, four jumps (two "123 jumps" on each foot) per set- this takes space- |
| 2) | Power Skips (similar to #1, but each step is a jump) | 2 sets of 6 |
| 3) | Single Leg Frog Jumps | 10 total (5/5) |
| 4) | Depth Jumps (two feet) | 5 reps |
| 5) | Depth Jumps (one foot) | 5 reps/leg |
| 6) | Lateral box jump (with 12-18in "box" or obstacle) | 2 sets of 10 |
| 7) | Plyo lunges (set 1 w/pause for form, set 2 continuous.) | 2 sets of 10 |
| 8) | Zig Zag | 2 sets of 15 |
| 9) | 1/2-1/2-1 rotation | 5 reps |
| 10) | single rotation, spotting | 5 reps |
| 11) | double rotation, spotting | 5 reps |
| 12) | single axel | 5 reps |
| | focus: height/rotation out of left leg, right leg passing DIRECTLY under body | |
| 13) | double loop from hopping back spin | 5 reps |

Flexibility

It is almost impossible to overstate the importance of Flexibility for figure skaters. From Spread Eagles to Spirals to Biellmanns, the necessity for easy, fluid, flexible movement in skating is paramount. Yoga is a great outlet for training flexibility, but there are several exercises at home that can train this important skill.

Before any stretching is done, it is important to warm up the muscles so the skater is not stretching "cold." Flexibility exercises can be done after the jump exercises above, or after a brief warmup that can include jumping rope (also great for figure skaters!) light jogging, or some activity that can raise the pulse and warm up the athlete's muscles.

I always like to start with Dynamic Stretching before moving on to more static stretches. Dynamic Stretching improves mobility and range of motion, and promotes blood flow to the region being worked.

Dynamic "Stretches":

- 1) **Forward Leg Swing:** This dynamic stretching exercise works your hamstrings and hip flexors through their range of motion and well as moderately stretching the quadriceps. Stand perpendicular to a wall with right

hand out to the side, against the wall for support. Or, alternately, hold on to the back of a chair or railing. Swing right leg forward and back for eight repetitions. Turn around, repeat with left hand against the stabilizing object, swinging the left leg. Perform this movement eight times on each leg

- 2) **Lateral leg swing:** Lateral leg swing increases range of motion and stretches your abductors and adductors. Stand facing a stabilizing object, weight on left foot. Swing right leg in front and out to the side. Do not allow the body to rotate through the exercise. Execute movement across and out to the side eight times. Repeat exercise with weight on the right leg, swinging the left leg across and out to the side.
- 3) **Lateral leg swing with rotation:** This exercise is the same as the one above, but the free leg will be bent. As your leg moves across the body the knee and hip will rotate inward. As it moves away from the body the knee and hip rotate externally.
- 4) **Walking high kick/arabesques (spirals):** In this exercise the skater takes three steps swinging the leg forward as in Exercise 1, and on the third, steps into a full arabesque, rising immediately and continuing the movement, alternating arabesques on the next three steps. Repeat, changing direction as needed, until six arabesques on each leg have been executed.
- 5) **Three Direction Dynamic Lunges:** In this exercise, the athlete will perform three standing lunges- laterally, at a 45 degree angle forward, and straight in front of the body. First step to the side, bringing arms in front, keeping back straight, head up, and knee tracking over the toe. Return to a standing position with feet together and immediately step forward and to the side at a 45 degree angle, then again into a forward lunge. Repeat for a total of four sets of the three lunges on one leg, then switch legs. As an advanced variation, maintain balance on the stationary leg and do not put the free foot down between lunges.
- 6) **Arm circles:** Arm circles are important for dynamically stretching the shoulders/rotator cuff and deltoids. This is important for Biellmanns in particular, as shoulder flexibility is necessary for grabbing the free leg behind and pulling it overhead. Maintain posture and use full range of motion for arm circles. Execute fifteen circles forward and fifteen backward. Small arm circles, though not a dynamic stretch, can also be used to strengthen Biceps, triceps, and shoulders.

Static Stretches:

- 1) **Overhead Shoulder Stretch:** After executing full range of motion arm circles, begin static stretching with the Overhead Shoulder Stretch. Reach right arm up toward the ceiling and allow it to bend behind your neck. Take hold of your right elbow with your left hand and pull your elbow behind your head, toward your left side. Hold for ten seconds, switch sides. Stretch each arm twice, alternating arms.
- 2) **Cross Chest Horizontal Adduction:** Extend right arm across body. Keeping the shoulder down and arm straight, use the left hand or arm to engage the right forearm and pull it closer to the body. Hold for ten seconds, switch sides. Stretch each arm twice, alternating arms.

- 3) **Standing Quadriceps Stretch:** Using a chair or other support, stand on the left leg. Bend the right knee behind, bringing heel up. Grasp the ankle with the left hand. Keeping hips under and thighs parallel hold this stretch for 20-30 seconds. Switch sides. Execute each movement twice on either side.
- 4) **Wall Side Splits:** Athlete should scoot as close as possible to a free wall with ample space on either side of the skater. Lying on their back with legs straight up and glutes to the wall, allow legs to relax and split to the side. Relaxation is important and will allow the legs to stretch further than a forced split (where tension usually sets in as maximum stretch is achieved.) Remain in position for 10-15 minutes. You can even read your favorite book while doing this!
- 5) **Pidgeon Pose:** Starting in the tabletop position we used for cat-cow and quadruped limb raises, bend your right knee and slide it forward, between your hands. The right heel should be under the left hip. Extend the left leg back. Use arms for support if necessary, exhale and relax into stretch. Hold stretch for 20-30 seconds.
- 6) **Seated Straddle Split:** In this exercise we will go through a series of stretches in a straddle position. Start sitting on the ground with the legs as far apart as possible. Flex both feet. Reach toward the left leg, taking the body down to the leg if possible. Hold for 15-20 seconds. Move body to the center, and walk hands forward, taking body as close to the floor as possible. Hold for 15-20 seconds, and progress to the right leg. Remember to exhale, relaxing into these stretches. Do not force the body! As the range of motion in this stretch increases, progress to a full side split with body rotation so the left leg is in front. Return to center and rotate to the right, with the right leg in front.
- 7) **Sitting Quadriceps Stretch:** Sit with back straight and legs extended forward. Take right leg to the side and rotate hip internally, bending knee to a 90 degree angle. *Gently* lean back until back touches the floor. From this position, you can rotate your body to the left, grab the top of the right foot with the right hand, and stretch toward a Biellmann Position.

Best of luck and hope to see you back on the ice soon! If you have any questions, feel free to email me at sarah@skatewithsarah.com.

Sarah Smith
PSA Master Rated Coach: MIF, FS
USFS National Technical Specialist
www.skatewithsarah.com