

# Technical Principles Jumping

## Principles of Jumping

There are two basic types of jumps in a free skating program:

- A jump whose primary emphasis involves rotation -
  - speed over the ice,
  - springing into the air from a clean take-off,
  - transfer weight to the landing foot,
  - airborne rotation around the landing foot,
  - a controlled landing exiting a jump ranging from 3/4 to quad revolutions
- A jump whose primary emphasis is the position in the air -
  - speed over the ice,
  - springing into the air from a clean take-off,
  - attaining an aesthetically pleasing airborne position
  - transfer weight to the landing foot
  - a controlled landing exiting jump, usually 1/2 or less revolution

## Jumps consist of four basic phases:

The Entry phase consists of several component parts -

- skating foot prior to jumping
- skating direction
  - Forward take-off
  - Backward take-off
  - the edge of the blade which the skater uses to take-off
  - Inside
  - Outside
- Take-off or Spring/Jump Phase can be divided into two basic types of jump take-offs -
  - Inside or outside edge without a toe assist
- Inside or outside edge with a toe assist
- Airborne Rotation Phase

Some jumps (axel, salchow, and toe loop) require a transfer of weight from the primary take-off leg to the landing leg. If the transfer of weight occurs just prior to landing, the landing position is awkward and off balance. The entry, rotation, and exit of this type of jump is identical to a starting a forward upright spin, changing to a back upright spin, and the exiting the spin.

Other jumps (loop, flip, and Lutz) start with the principle take-off thrust coming from the same leg that eventually will be the landing leg.

There is no transfer of weight during the jump. The rotation and exit is identical to the positions in a back outside upright spin.

## In the Air Rotation Phase

Transfer of weight from take off foot to allow rotation around landing foot - axel, salchow, and toe loop Maintaining rotation around take off/landing foot - loop, flip, and Lutz

## Landing or Exiting Phase

The landing position of conventional full revolution jumps, including the axel, is the back outside edge that is identical to the exit used in a back upright spin.

Counter clockwise (CCW) skaters would land on a right back outside (RBO) edge. Clockwise (CW) skaters would land on a right back outside (RBO) edge. The landing edge is also called the "exit edge". Ninety percent of skaters jump and spin in the CCW direction.

## Definitions of Commonly Used Jumping Terms

### Jump Preparation

Includes the immediate "preparatory edges and turns prior to the skater performing the correct entrance edge to perform the jump. The complexity of the edges and turns leading into a jump adds to the jump's difficulty.

A beginning skater generally needs to concentrate on performing the jump and thus use very basic preparatory steps preceding the jump. As skaters pass their free skating tests, they are expected to perform a series of complicated edges, steps, turns, spread eagles, spirals, etc. before the jump's actual entrance edge.

### Toe Assisted jumps

Some jumps require the skater to take off from both feet - combining a running edge of one blade and the toe pick of the other blade. The toe pick anchors the blade in the ice and the straightening of the leg provides a "pole vaulting" action, which maximizes the height and distance of the jump.

### Jump Combinations

A jump combination is two or more jumps are performed without additional steps or turns between the landing of the first jump and the take-off of the following jump. The most common com-

binations include two jumps performed in series. If the first jump lands on a RBO edge, the second jump must take-off from a RBO edge for a seamless combination to result. Thus, the second jump is usually a loop or toe loop. If the second jump is a half loop landing on a LBI edge, a salchow can be incorporated as the third jump of the combination.

### **Jump Sequence or Jump Series**

Jump sequences include additional steps or turns, excluding 3-Turns and Mohawks, between the jumps, providing that the jumps are performed in a rapid succession.

### **Rotation During a Jump**

The primary objective in a rotational jump is performing a jump at full speed and attaining the maximum elevation to develop the longest possible elapsed time in the air. The skater can use this technique to achieve multi-revolution jumps or slow/delay the airborne rotation.

The slow rotation of an open axel emphasizes an open leg position throughout the waltz and loop jump. A delayed axel describes when the waltz jump portion is emphasized to a point of delaying the loop or backspin rotation from occurring until just prior to landing.

### **Rotation around the axis of the core body**

A skater should aspire to achieve an esthetically pleasing body position that allows controllable rotation. The ideal air position is upright posture with a straight back, and the head held erect. The left leg should be close to the landing leg, the free leg may be in a crossed position at the ankle level, and the arms pulled in across the chest.

*Note: a deduction is taken if the free leg crosses the skating leg forming a "4" position. The error is known as wrapping or a high free leg.*

The toe of the landing foot should point toward the ice, in preparation for the landing. The body should exhibit a vertical line or axis. An off balance position or tilt will result in lower grades of execution marks for the jump.

A jump's air-borne posture is the same position in a fast back scratch spin, thus skaters are urged to practice their back spins to improve their multi-rotation jump technique.

Execution of a single jump does not require a tight rotational position, but to complete a triple or quadruple jump; the athlete must achieve a

compact, very straight posture. The ideal position requires the legs to be tightly crossed at the ankles with the boots together.

Wrapping the free leg results in an awkward unwinding motion during the landing. Some skaters are able to perform multi-revolution jumps with the left leg wrapped loosely around the right leg; however, judges take a deduction for this error.

### **Rotational Axis**

The rotational axis refers to vertical gravitational line that the body rotates around in the air. For CCW jumpers, the left leg crosses over the right. In preparation for landing, body weight centers over the right leg.

The right leg must point straight toward the ice and align with the body's vertical axis in order for the skater to balance on the landing foot upon connecting with the ice. If the core body is not balanced over the landing foot, the skater will have torque that has not been cancelled. The result is the body bending forward and side ways at the waist and the free leg swinging out of control.

### **Counter-Rotation**

There are three basic counter-rotation (or counter-revolution) jumps including the lutz, toe walley and walley. Counter-rotation jumps are characterized by the skater gliding into the jump in the opposite direction to which he will rotate in the air. Counterclockwise skaters will glide clockwise into the jump but will execute the rotation in their natural counterclockwise direction.

An inherent difficulty to these jumps is taking off from the intended edge. While initiating rotation, many skaters switch edges before lifting off the ice. A change of edge is a serious error and will result in a jump being downgraded.

### **Differentiating Jumps**

Jumps may be distinguished by noting the entry edge of the jump:

- if the jump takes off with or without a toe assist.
- actual air position split, stag, etc.
- the landing edge - a RBO edge or LBI
- a skater may add to the degree of difficulty by varying one or both arm positions:
  - arm(s) over the head,\*
  - sides,
  - hips, etc.

The arm over head variation in the Lutz was made popular Olympic gold medalist, Brian Boitano.

### **Toe Jumps**

Also known as “toe assisted jumps”, these rotational jumps require tapping with the toe pick to assist in the take-off. The pole-vaulting action of the free foot picking into the ice contributes to the height and distance of toe jumps.

### **Toe Loop Jump**

<http://www.monkeysee.com/play/2331-ice-skating-the-toe-loop>

The toe loop is generally considered the easiest toe jump and is generally one of the first full-revolution jumps taught to beginners. It is most often entered from a RFI3 turn. After checking the turn on the RBO edge, the skater reaches back with a straight left leg, picks the ice with the left toe and draws his body back into the jump. The right leg passes forward across the body throughout the turn into the jump and reaches for the rotational axis.

A change of axis occurs in the toe loop because the skater jumps from the left toe pick and changes the axis of rotation to perform an aerial backspin over the right side of the body. After completing the desired number of revolutions, the skater lands on his RBO edge.

The skater should not hesitate and stand on the toe pick, turning completely forward before jumping. Rather than creating a fluid jumping motion, this error results in a “toe waltz jump” which is not a toe loop at all but a waltz jump initiated from the toe pick. Judges give negative GOEs to toe waltz or toe axel jumps.

Toe loops can be performed as singles, doubles and triples. Quadruple toe loops are becoming a staple of elite men’s skating. Toe loops are also used in jump combinations and may be added to any jump that lands on a RBO edge to create a combination.

### **Toe Walley Jump**

Toe walleys are so similar to toe loops that a distinction is not usually made between the two for the purposes of competition. While the toe loop takes off from a RBO edge, the toe walley lifts off from a RBI edge.

The most common preparation for a toe walley is a LFO3 turn followed by a push and

change of feet to a RBI edge. From the RBI edge, the skater reaches back with the left leg, picks and pulls backward into the jump.

Since most skaters change to a RBO before jumping, they actually perform a toe loop rather than a toe walley. This is why these jumps are not differentiated in competition. If the jump is executed correctly, it is actually a counter-revolution jump, like the Lutz, described below.

### **Flip Jump**

<http://www.monkeysee.com/play/2332-ice-skating-the-flip-jump>

A flip is generally entered from a LFO3 or RFI Mohawk. If a LFO3 is used, the turn must be very flat so the skater is not gliding on a deep curve before picking. A straight preparatory sequence contributes to control of the jump, and distance and height in the air.

Starting from a LBI edge, the skater reaches back with the right leg and picks with the right toe. The skater draws back with the toe pick and pushes upward. The flip lands on a RBO edge. This jump may be performed with single, double or triple revolutions.

### **Half Flip**

A half jump only involves a half of a turn in the air. Like the flip jump, the half-flip takes off from a LBI edge assisted by vaulting with the right toe pick. Common preparatory steps include a LFO3 or mohawk. After completing a half revolution, the skater lands on his left toe pick facing forward then pushes off onto a RFI edge.

The half-flip jump is a basic skill taught to beginning skaters. However, more advanced competitors may use the jump in a footwork sequence. It is also the foundation for toe assisted split jumps, which will be covered in the Positional Jump section.

### **Lutz Jump**

<http://www.monkeysee.com/play/2333-ice-skating-the-lutz-jump>

The Lutz is a counter rotation jump, meaning the skater glides into the jump in the opposite direction to which he will rotate the jump in the air. CCW skaters will glide clockwise into the jump but will execute the rotation in their natural counterclockwise direction. The counter rotation in the Lutz makes it a difficult element.

A long shallow LBO edge into a corner of the rink is the most common telegraphed preparation for a Lutz. Before picking with the right toe, the skater deepens the LBO edge. Reaching straight back, the skater taps with the toe and draws them self backwards. Propelling them self into the air.

Ideally, the skater does not change edges to an LBI before taking off into the Lutz. This is not usually a problem with a half or single Lutz, but becomes difficult for some skaters to avoid when performing multi-revolution Lutz jump. The jump lands on a RBO edge.

Competitive skates commonly perform triple Lutz jump. Quads have been attempted in competition by American skater, Michael Weiss.

### **Half Lutz**

The half Lutz is performed identically to the basic Lutz jump; however, it lands forward on the left toe pick then the skater pushes onto a RFI edge.

### **Edge Jumps**

In contrast to toe jumps, edge jumps take-off from a clean edge unassisted by vaulting with the toe pick.

### **Waltz Jump**

The waltz jump is a half revolution jump and is often the first venture from the ice surface made by beginning skaters. The skater takes off from a LFO edge. Facing forward, the skater bends the left knee and reaches the free leg straight ahead of their body. Kicking of the free leg, reaching forward with both arms and springing from the left knee combine to lift the skater upward and linearly across the ice. The legs should be straight and parted in the air.

When performed by advanced skaters, the legs stretch almost to a split position. Because accomplished skaters perform this jump with great speed and vigor, the position seems to hover in the air as the athlete flies over ten or more feet of ice. After completing a half turn, the jump lands on a RBO edge.

This is a critical jump in the development of a figure skater because the movements involved in the take-off of this jump are similar to those required for the toe loop and salchow. The forward edge take-off provides the foundation for the axel jump.

### **Three Jump**

A three jump is basically a LFO3 turn performed in the air. It also resembles a waltz jump performed on one leg. The jump takes off exactly like a waltz, but instead of shifting balance to the right side to land the jump on the RBO edge. Like the waltz jump, the skater completes a half turn while centered over the left side and lands on a LBI edge. In combination, this jump can be followed by a salchow.

### **Salchow Jump**

<http://www.monkeysee.com/play/2328-ice-skating-the-single-salchow>

A salchow represents a step up in difficulty from the waltz jump; however, execution of the jump is very similar. Salchows are generally initiated from a LFO3 turn or a RFI Mohawk. If a LFO3 is used, the turn must be very flat so the skater is not gliding on a deep curve before jumping.

A straight preparatory sequence contributes to control of the jump, as well as distance and height in the air. From the shallow LBI edge, the skater begins to turn forward while passing the free leg close to the body. The skater then reaches forward with the free leg and arms while simultaneously springing into the air from a bent left knee.

This combination of movements is similar to the waltz jump. Like the toe loop, the salchow also requires a change of axis in the air. After completing the rotations, the skater lands on the RBO edge.

Salchows are commonly performed as triples in competition, and some elite male skaters have landed quadruple salchow jumps. Surya Bonaly of France was the first woman to attempt a quadruple jump in competition. Unfortunately, she did not complete her quadruple salchow.

### **Loop Jump**

<http://www.monkeysee.com/play/2329-ice-skating-the-loop-jump>

The loop is unique because it takes off and lands on the same foot unassisted by toe picking or reaching with the free leg. Common preparatory steps include backward crossovers in the natural jumping direction, a LFO3 turn followed by a step onto the RBO edge, or a RFI3 turn.

Any combination of steps and turns that result in a RBO edge can be used to initiate a loop jump. While gliding backward, the skater deepens

her RBO edge and springs upward from a deeply bent right knee.

No change of axis is required to achieve the aerial backspin position. After completing the revolutions, the jump concludes on a RBO edge, just as it started. Elite skaters commonly perform triple loops.

Any jump that lands on a RBO edge can be combined with a loop jump. Rather than extending the free leg into the common arabesque landing position, the free leg remains in front of the body.

The skater deepens the bend in the skating knee and with the thrust of the loop jump occurring from the same foot and edge as will become the landing edge of the first jump. The skater explodes upward into the backspin position and lands a single or multiple revolution loop jump on the RBO edge. Loops may also be performed in series as a multiple loop combination.

### **Half Loop Jump**

A “half” loop is actually a misnomer, because this jump requires a full rotation. It takes off like a basic loop jump, but the skater reaches forward with the left leg creating an open position in the air. The half loop lands on the LBI edge, rather than the more common RBO edge. For a variation, the skater may also kick forward into the jump executing a split position before landing.

In jump combinations, including a half loop allows a skater to transition from a typical RBO edge landing to a LBI edge. From the LBI edge, the skater can leap immediately into a salchow. It would also be possible to pick into a flip jump; however, this combination is rarely performed in high-level competition.

### **Walley Jump**

Like the Lutz, a walley is a counter-rotation jump. It is somewhat similar to the loop because it takes off and lands on the same foot without a toe assist. The jump initiates from a RBI edge, usually with the free leg swinging backward to lift the skater into the air. It lands on a RBO edge. Multi-revolution walley jumps are rarely performed.

A series of two or more walley jumps in alternating directions (CCW then CW) adds a difficult transition to a competitive routine. A walley or walley series can be followed with a double or triple jump to create a technically challenging jump sequence.

Under the ISU regulations, the walley jump has no value and is considered as a part of foot-work/transition.

### **Axel Jump**

<http://www.monkeysee.com/play/2330-ice-skating-the-axel-jump>

The axel is considered the ultimate jumping challenge in figure skating. The basic single axel takes off from a LFO edge, rotates one-and-a-half times in the air, landing on a RBO edge. The forward entrance and extra half revolution make the axel the most difficult of the single jumps.

To execute an axel, the skater must bend deeply in the knee on the LFO entrance edge then reach forward with the free leg and arms while simultaneously springing from the skating knee.

This motion is identical to that used to perform a waltz jump. Like the toe loop and salchow, the axel requires a change of axis in the air. As the skater jumps into the air, the skater must immediately transfer their rotation axis to achieve the backspin position to complete one-and-a-half revolutions.

### **Open Axel Jump**

A variation on the basic axel, the open axel is performed in an open position rather than the tightly contracted backspin posture. The open axel looks like a backspin before the skater pulls the free leg and arms in to increase the spin's speed and create a blurred effect.

To perform an open axel, the skater must be capable of a high jump taken with speed to have time in the air to rotate with their arms and legs open. This jump is usually performed as a single. However, for some elite skaters who also can perform triple axels, it is not necessary to pull into a tight backspin position to complete a double axel.

### **Delayed Axel Jump**

The delayed axel is a variation on the basic axel. The skater springs into the air while reaching forward with the free leg. The snap over the rotation axis does not happen immediately, as required for a basic axel.

By holding the extended position for an instant, a delay occurs before the one-and-a-half revolutions are completed. To create the delay, the skater must be able to jump very high while traveling fast over the ice. This allows time in the air to hesitate before snapping into the backspin position.

Some elite and professional skaters perform double axels that are so big, the rotation is slowed or has a slight delay. In most cases, the true delayed axel is performed as a single jump.

### **The One-Foot Waltz or Three Jump**

The one-foot Waltz or Three jump is a variation of the waltz jump that lands on the back inside edge of the takeoff foot. This landing allows a skater to perform salchow and flip jumps as part of a combination of jumps. Refer to previous description of three jump.

### **The One-Foot Axel Jump**

The one-foot axel is a variation of the axel that lands on the back inside edge of the takeoff foot. This landing allows a skater to perform salchow and flip jumps as part of a combination of jumps.

There are other recognized variations of the axel jump that are rarely seen. Included among these are the:

- **Tuck Axel Jump**  
A variation on the basic axel, the tuck axel requires the skater to tuck one or both legs close to his body while in the air. The skater may assume a sit spin position or pull both legs up in a squatting or cross-legged pose. For the jump to appear spectacular it is usually performed as a delayed axel and the skater seems to hesitate for a moment in the air in a tucked posture.
- **One-Foot Axel Jump**  
This jump combines the principles of the axel and half loop. The one-foot axel takes off like a basic axel, but the skater lands on the LBI edge as in a half loop. Because of the inside edge landing, this jump is often combined with a salchow.
- **Inside Axel Jump**  
This variation is performed entirely on one leg. It lifts off from the RFI edge, completes one-and-a-half revolutions the lands on the RBO. Because the free leg does not aid in the take-off, the jump cannot achieve the same height and distance of a basic axel. While this jump is challenging, its small stature makes it difficult to recognize and causes it to become lost in footwork sequences.

***The descriptions provided are not provided as official ISU or USFS definitions.***