



# Hockey

## Off-Ice Speed and Quickness for Ice Hockey

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**S**peed is one of the most sought after characteristics in athletics. The athlete that possesses both speed and quickness will have the capability to out-react and out-accelerate his or her opponent. In the past, many performance coaches have thought that speed and quickness were genetically predetermined and could not be altered by training. Contrary to this belief, in the 1960's, training programs that focused on speed enhancement were introduced.

Since the 1960's, speed and quickness programs have been a large part of performance-enhancement programs. Research has found that a properly executed speed and quickness program will increase acceleration and speed (2). To be effective, a speed and quickness program must follow training principals of specificity, progressive overload, and individuality.

Ice hockey is a sport that requires quick, explosive bursts of speed when reacting to an opponent or the hockey puck. As a result, the successful ice hockey player must acquire both acceleration (the rate

at which one's velocity changes) and quickness to out-maneuver an opponent. Those who follow the principal of specificity might consider on-ice speed and quickness training a preferable method over off-ice training. However, there is a direct correlation between on-ice performance and off-ice speed and quickness (1). Off-ice speed and quickness training, if performed properly, will enhance speed and quickness on the ice.

A successful off-ice training program must incorporate drills and techniques that transfer to on-ice performance. Since ice hockey is an explosive, fast-paced game, it is crucial for a player to quickly react and seize opportunistic situations. To accomplish such a task, an athlete must possess linear speed, power, and quickness.

### Speed

Speed enhancement is often times a misunderstood concept. It is frequently thought that speed training should focus on maximal speed improvement. However, most sports rarely require an athlete to reach top speed. Ice hockey is

a "start and stop" sport, involving repetitive short sprint situations. Therefore, maximal speed is rarely reached in a game. As a result, the preferable method of performance enhancement would be to increase acceleration.

Exercise selection for acceleration improvement must be very specific to the demands of ice hockey. For ice hockey, linear acceleration is a key factor in out-performing the competition. In order to achieve an improvement in linear acceleration, the program should focus on exercises involving repetitive acceleration drills to enhance neuromuscular efficiency (2). This in turn should increase stride length and frequency both on and off the ice. The following exercises focus on acceleration.

### Wall Acceleration Drill (fig 1)

Lean against the wall at around a 45-degree angle, supporting your body with your arms. Bring one knee up while remaining on the ball of the other foot. From this position, drive the up leg down, and the supporting leg up. Perform this drill in cycles of three.

### High Knee Runs (fig 2)

Keep the body in an upright position at all times while performing this drill. Start into a slow jog while emphasizing a high knee, high toe, and proper arm action. The foot should strike the ground in a quiet, explosive action.

### Glute Kickers (fig 3)

Keep the body in an upright position at all times while performing this drill. Start into a slow jog while trying to pull the heel of the lower leg up to touch the glutes.

### Quick Sprints (fig 4)

Begin with the feet staggered, and the arm opposite the front leg forward. Crouch down and lean forward so that your weight is mainly over the front leg. Sprint for a desired distance (20yds or less), keeping the shoulders low at the start, and gradually rising during the acceleration.

### Power

Power can be defined as the product of the force of a movement multiplied by the velocity. Therefore, power output reflects the ability of a muscle group to exert force as quickly as possible. With the physical demands of a sport like ice hockey, lower body power development is an essential component of the off-ice program.

Power is what helps you reach top speed as rapidly as possible. In order to achieve this power, a selection of exercises that require a high amount of single-leg power output is imperative. The following exercises will develop power specific for ice hockey players.

### Box Jump

From a stationary position, push off of both feet and propel yourself onto an elevated box. Focus on a quiet landing with the thigh positioned above parallel (relative to the box). Step back down and repeat.

### Barrier Jumps (fig 5)

Set up five barriers one and a half feet apart from one another. From a stationary position, push off of both feet and propel yourself over the first barrier. Land on both feet and absorb the landing in a balanced position. Sustain your balance, then push off again with both feet and propel yourself over the next barrier. Repeat this for all five barriers.

### One-Legged Linear Barrier Hops (fig 6)

Set up five barriers one and a half feet apart from one another. From a stationary position, push off of one foot and propel yourself over the first barrier. Land on the same foot and absorb the landing in a balanced position. Sustain your balance, then push off the same foot and propel yourself over the next barrier. Continue this through all five barriers, and then repeat with the other foot.

### 45-Degree Skater Barrier Bounds (fig 7)

Set up ten barriers at a 90-degree angle to one another. From a stationary position, push off of one foot at a 45 degree angle to clear the first barrier. Land on the opposite foot, absorb the landing, then immediately push off of your foot at a 45 degree angle to clear the next barrier. Continue bounding from one foot to the other, keeping your body in a balanced position during the landing and take-off.

### Linear Barrier Bounds (fig 8)

Set up ten barriers five to eight feet apart from one another. From a stationary position, push off of one foot, propelling yourself over the first barrier. Land on the opposite foot, absorb the landing, and then immediately propel yourself over the next barrier. Continue bounding from one foot to the other, keeping the lead knee as high as possible, and your stride as long as possible.

### Quickness

Quickness refers to the “first step” movement in acceleration, and most sport coaches would agree that any athlete with an explosive first step is a valuable athlete. When training quickness, coaches commonly use the word “go” or the sound of a whistle. However hockey is a visual, not auditory sport. Visual stimulation that simulates a real game situation will transfer more efficiently when attempting to enhance first step quickness.

The selection of exercises for the improvement of quickness also needs to be specific to the requirements of ice hockey. There are many drills that one can use to increase quickness. Typically, ice hockey demands quick reactions followed by a rapid acceleration. With that in mind, the following visual quickness exercises are more specific to ice hockey game situations.

### Ball Drop Drill (fig 9)

Using a tennis ball, have your partner positioned five yards away from you. Drop the tennis ball from shoulder height. When the ball leaves your hand, your partner must quickly accelerate towards the ball in attempts to catch the ball before the second bounce.

### Medicine Ball Reaction Drill (fig 10)

Using a lightweight (two to four pounds), rubber medicine ball, position yourself behind your partner. Toss the ball over your partner's head so that it lands five to fifteen yards in front of your partner. When your partner visually locates the ball, he or she must accelerate towards the ball in attempts to catch it before the second bounce.

### Four Week Speed and Quickness Program for Ice Hockey

The following is a four week program that has been condensed from a normal training year to demonstrate the progression involved in a speed and quickness program. The program will follow a progression starting with basic technique development and ending with sport specific, higher-intensity activities. To achieve the greatest results, one should implement this regiment in combination with a properly executed weight training program. A dynamic warm up must also precede each workout.

#### Week One

Week one serves as a preparation period. One should use low intensity acceleration and plyometric drills to allow the body a chance to adapt the stress of these exercises. Proper technique is of the utmost importance during this week. The workout listed in table 1 should be completed twice per week.

#### Week Two

Once the body has had a chance to adapt to the stress, one should slightly increase both the intensity and volume of the speed and plyometric drills. Continue to perform the week one workout, focusing

on proper technique. Perform four sets of each exercise this week, and add the quickness drill in table 2. Complete this workout twice per week.

#### Week Three

Week three serves to transition to more task specific single-leg activities. Again, the training intensity should increase slightly for both speed and plyometric activities. Complete the workout listed in table 3 twice per week.

#### Week Four

The goal of the final week is to transfer the speed and power that has been developed during the past three weeks into sport specific single-leg movement patterns. The training intensity should be at its highest for the speed, plyometric, and quickness activities. Complete the workout in table 4 twice per week.

### Conclusion

Off-ice speed and quickness training provides another dimension to overall athleticism. In addition to enhancing performance, off-ice training can also provide a much-needed break from the ice after a long season. By using the exercises discussed in this article, you should improve speed, power, and quickness, translating into a more improved and enhanced performance on the ice.

### References

1. Behm DG, Wahl MJ, Button DC, Power KE, Anderson KG. (2005). Relationship between hockey skating speed and selected performance measures. *Journal of Strength and Conditioning Research*, 19(2):326-331.
2. Craig BW. (2004). What is the science basis of speed and agility? *Strength and Conditioning Journal*, 26(3):13-14.

### About the Author

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Figure 1



Figure 5



Figure 9



Figure 2



Figure 6



Figure 10

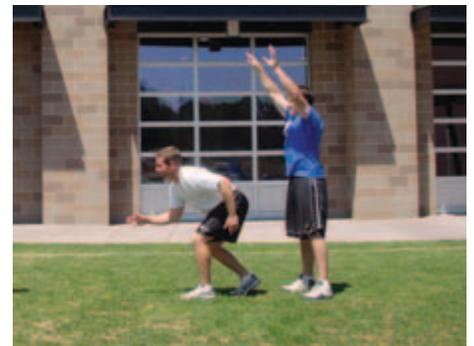


Figure 3



Figure 7



Figure 4



Figure 8



**Table 1. Week One Linear Speed and Plyometric Drills**

Linear Speed Drill	Sets x Repetitions	Comments
High Knee Runs	3x15yds	upright posture, high toes, arm action
Glute Kickers	3x15yds	upright posture, arm action
Quick Sprints	4x10yds	power knees through, keep shoulders low

Plyometric Drill	Sets x Repetitions	Comments
Box Jumps	3x5	hips back on take-off, soft landing
Barrier Jumps	3x5	hips back on take-off, soft landing
One-Legged Linear Barrier Hops	3x5 each leg	balanced take-off with hips back, balanced soft landing

**Table 2. Week Two Quickness Drills**

Quickness Drill	Sets x Reps	Comments
Medicine Ball Reaction	1x5	react as quickly as possible
*Perform 4 sets of all the week one linear speed and plyometric drills.		

**Table 3. Week Three Linear Speed, Plyometric, and Quickness Drills**

Linear Speed Drill	Sets x Reps	Comments
Wall Acceleration	3x5	upright posture, high toes, arm action
Glute Kickers	3x15yds	upright posture, arm action
Quick Sprints	4x15yds	drive knees forward, keep shoulders low

Plyometric Drill	Sets x Reps	Comments
Barrier Jumps	4x5	hips back on take-off, soft landing
One-Legged Linear Barrier Hops	4x5 each leg	balanced take-off with hips back, balanced soft landing
45-Degree Skater Barrier Bounds	4x10	hips back on take-off, soft landing

Quickness Drill	Sets x Reps	Comments
Ball Drop s	1x5	react as quickly as possible

**Table 4. Week Four Linear Speed, Plyometric, and Quickness Drills**

Linear Speed Drill	Sets x Reps	Comments
Wall Acceleration	2x5	upright posture, high toes, arm action
Quick Sprints	4x20yds	drive knees forward, keep shoulders low

Plyometric Drill	Sets x Reps	Comments
One-Legged Linear Barrier Hops	4x5 each leg	balanced take-off with hips back, balanced soft landing
45-Degree Skater Barrier Bounds	4x10	hips back on take-off, balanced landing with immediate, explosive take-off
Linear Barrier Bounds	4x15 yards	long stride, high lead knee, explosive take-off, as little time on the ground as possible

Quickness Drill	Sets x Reps	Comments
Ball Drops	1x5	react as quickly as possible
Medicine Ball Reaction	1x5	react as quickly as possible

