



General Fitness and Nutrition Information for Tryouts

Nutrition is often the missing link for the top sports performance. Hockey players are training harder and harder - but they are not maximizing their potential. Training and Conditioning is only 50% of the equation for optimal sports performance. Professional sports team's have their own Sports Nutritionist who designs customized nutrition programs. Unfortunately many professional sports nutritionists charge over \$200 an hour for consultations.

Most of us are not in the market for such consultations and rely on some good basic nutrition habits and Basic Fitness routines to optimize our performance and enjoyment from the game of Hockey or any other sport for that matter. The following is a combination of excerpts and research pulled from various sources regarding some of the fundamental nutrition and fitness information that it is available.

Regardless of how hard you work, without good nutrition you will not achieve optimal performance.

Good nutrition can increase energy, delay fatigue, speed post-game recovery, help prevent illness and assist in rehabilitation after an injury. Six nutrients (carbohydrates, fat, protein, vitamins, minerals and water), within four food groups (grains, fruits and vegetables, milk and meat products) are essential for good health. Carbohydrates are the main source of energy during a hockey game. Complex carbs come from grains (breads and cereals) and fruits and vegetables; simple carbs come from foods like sugar and honey. As an athlete, you should derive up to 65% of your daily caloric intake from complex carbs and no more than 10% from simple carbs; no more than 20% should come from fats, with up to 15% proteins. Protein helps to repair and build muscle tissue. However, excess protein does not make you stronger and is usually stored as fat. The best sources of protein are milk products and meat. Foods such as split peas, lentils, kidney beans and skim milk are both high in protein and carbs and low in fat. Vitamins are not an energy source but are needed to help produce energy; excess vitamins will not improve performance or increase energy or strength.

Water accounts for more than half your body weight. Athletes should drink more than 8 cups per day, not including replenishment during and after games and practices. The ideal post game or practice replenishment is orange juice, which is high carb, low fat and has vitamin C to help muscle repair.

Nutrition and conditioning are both key to optimal performance. The best ways to increase your energy are through conditioning and carbohydrate loading. Good nutrition helps you train harder and longer and well-conditioned athletes can store more carbohydrates. Players need repetitive refueling, eating carbs every day and with every meal, both before and after games and practices. Most carbohydrates are stored in muscles as muscle glycogen. Glycogen storage, in the face of daily activity, is a continual process and cannot be completed in one sitting the day of or before a game. It is equally important to cut fatty junk foods like potato chips, chocolate and soda. In addition to eating high carb, low fat foods every day, below is a suggested game-day nutritional regimen:

High carb meals the day before and during breakfast on game day; Five hours prior to gametime eat a high carb, low fat and low protein meal. A pre-game nutritious snack approximately three hours prior to gametime will supply some extra energy, but the closer you get to gametime, the lighter, more digestible and liquid food the better (such as yogurt, fruit juice, bananas, bagels, low fiber cereal and skim milk). Avoid “quick energy” (such as fruit, candy and sugar filled products or regular carbohydrates) within an hour of a game or practice... they can actually have a negative effect, despite the initial energy boost you may attain. Avoid eating within 60 minutes of games or practices. Water is required for chemical reactions in the muscles that release energy for movement. Drink plenty of water during the day prior to games and practices. Stop consumption of fluids 60 to 90 minutes prior to games or practices, to allow body to eliminate excess, then drink one or two cups of water 10 minutes prior to game.

During the Practice:

Ingest carbohydrate liquids (like sports drinks) during the practice. This will help ensure enough energy for the period. Failure to replace the fluids you lose during games or practices will affect circulation and reduce blood supply to muscles. Do NOT wait until you are thirsty to replace fluids; consume small amounts of fluids after every shift and between periods.

After the Practice:

Continue replacing fluids. Cold fluids are absorbed better. Replacing carbs immediately following strenuous exercise is just as vital as carbo loading prior. Caffeinated and alcoholic beverages slow rehydration and muscle recovery. Within first 20 minutes after game or practice drink high carb fruit juice and eat high carb, low fat foods like bananas, bagels, pretzels or pop tarts. Consume a full high carb, post game meal 60 to 90 minutes later

The day after a game or high energy depleting practices should be spent on carbohydrate re-loading and light work-outs featuring intense but short drills such as quickness and agility drills.

Suggested nutrition prior to and after a Sunday practice with a 7pm start time (in addition to eating a regular daily well-balanced, healthy, low fat diet):

- Carbo load Friday and Saturday; eat plenty of vegetables
- High carb, low fat breakfast Sunday, plus plenty of fluid
- Pre-practice meal at 1:30 PM Sunday (high carb, low fat, low protein, more fluids)
- Pre-practice snack at 4:30; drink fluids until 6:00
- No complex carbs or simple sugars in the last hour before game
- During practice: sip water or Gatorade continuously
- Post practice: Carb reload by consuming fruit juice and bagels within 20 minutes
- Eat a full carb meal 60 to 90 minutes after the game

Why is Off-Ice Conditioning so important?

Minor hockey is becoming increasingly more competitive and physically demanding. Studies have shown that a majority of hockey injuries occur without any physical contact, but rather simple muscle pulls due to poorly trained or warmed up individuals. “Power skating per se, even in the absence of contact, can predispose to muscle tendinous injuries (usually of the groin)”. It goes on to state that over 40% of all hockey injuries were either muscle pulls or contusions, specifically the shoulder (22%) and knee (16%) which made up the majority of the bodily content.

The same studies went on to show that pre-season examinations and off-ice conditioning programs can significantly minimize the frequency and severity of these hockey injuries. Therefore, we feel that today's athletes must be knowledgeable on these sport specific components which will lead to success. These studies prove that a significant amount of injuries can be prevented if the athlete is in the sports specific shape needed for the game of hockey.

The off-ice fitness variables that have consistently been found to predict skating speed and acceleration for male and female hockey players of any age and skill level include: vertical jump height and 40 yard dash time.

Vertical jump can be enhanced by performing various jump training.

In addition to vertical jump and 40 yard dash, other off-ice fitness variables that predict skating performance include

- Push-ups/minute
- Sit-ups/minutes
- Hamstring Flexibility

This is not to say however, that if a hockey player increases his or her vertical jump height, 40 yard dash time, push-ups and sit-ups/minute and hamstring flexibility, he or she will automatically become a better skater.

It is important to understand that skating is a very complex motor skill. High performance skating takes many years to acquire. Therefore, the research evidence which will be presented later on this page, indicates that at young ages, improvements in fitness do not have a drastic impact on skating performance. This means that, at a young age, the best way to improve skating performance, is to skate. A strength and conditioning program will help with strength, power and endurance which can enhance performance. A hockey player has to first of all become a proficient skater and to be able to coordinate his or her movement patterns, before off-ice fitness will make drastic improvements in skating ability. Now remember, the best way to improve skating is to skate like you skate during a game! Balancing on one foot for extended periods of time, doing the polka on the ice, doing the "duck walk" or shoot the duck will not improve your game-performance skating. Doing drills like this will only help you balance on one foot (which is never done during a game), become a better dancer, and improve unnatural balance positions. For more information on skating instruction please go to the Skating Page on this web site. This is not to say that strength and conditioning will not help a young hockey player. On the contrary, there are numerous advantages to improving the fitness level of a young hockey player. At older ages, when a hockey player has high-performance muscle memory for skating, strength and conditioning may be the key to improving skating acceleration, speed and balance.

Electromyographic studies (placing electrodes on the skin to measure the electrical activity of the muscles) of ice skating have shown that the vastus medialis and vastus lateralis have the most activity during the propulsion phase of skating. The two muscle mentioned above are part of the muscle group known as the quadriceps (the big muscle on the front of the thigh). The quadriceps appears to be an important muscle for skating.

The other muscles that are important for skating performance include the gluteus maximus (the buttocks), and the muscles on the inside (adductors) and outside (abductors) of the hip.

It appears that lower body, upper body and total body fitness variables predict skating performance. It seems warranted to suggest that hockey players should engage in a multi-faceted approach to off-ice training. Following is a cursory look at a strength and conditioning program for hockey players.

1. An important component of an off-ice training program is strength training. The components of muscle fitness that should be emphasized include: strength, power, and endurance. Improvements in strength, power and endurance can be accomplished with or without weights.
2. Cardiovascular Endurance and Power . . . Anaerobic / Aerobic training. The specificity of training rule would suggest the best type of training for the cardiovascular system of a hockey player is interval training. Interval training can be any activity that is performed for a medium to long period of time (15 - 30 min) with alternating periods of high intensity and low intensity exercise. It has been found that the recovery of college hockey players was enhanced from pre-season to post-season after an entire hockey season which consisted of no aerobic type training. The on-ice practices described were high intensity short duration type training. This means that being able to recover from high intensity on-ice work is essential for a hockey player. This may be best accomplished by performing interval training during the off-season.
3. Flexibility. Less focus on stretching the hip adductors (groin) and more focus on the other body parts, especially the hip abductors. Hip range of motion exercises are important for hockey players, especially defensemen. The ability to internally and externally rotate the hips is important for high-performance skating.
4. Any strength and conditioning program for hockey players should follow a periodized protocol and not just progressively overload the body with increased weight and intensity of exercise. A periodized training program has alternating cycles of high, medium and low intensity training for both muscle, and cardiovascular, fitness.