



Pacific Rim Hockey Academy

“Youth Hockey is becoming increasingly more competitive & physically demanding. Studies have shown that a majority of hockey injuries occur without physical contact, but rather from muscle strains due to poorly trained or warmed up individuals.”

Scott Miller
Agility Physical Therapy & Sports Performance
Manitoba Moose, National Women's Hockey Team

Why Dryland & Strength Training Happens in Hockey

Experts (hockey coaches, strength trainers, physiologists) suggest that dryland training for hockey is best started with players between the ages of 12 – 14 yrs. This age range is when young players can benefit the most from both on & off ice conditioning. The training supports hockey skills and creates the foundation for faster skating and harder shots. *SIRC Blog, Dryland Training for Ice Speed, July 20, 2010*

From High School Hockey to NHL Conditioning Coaches...

...the most common general weaknesses seen in hockey players are (from NHL Digest, March 11, 2010):



1. A lack of good core/abdominal strength
2. Flexibility – mostly hips, back
3. Hip Strength
4. Leg Strength – related to explosive power



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PERFORMANCE TESTING



Pacific Rim provides baseline testing both on and off the ice as a means to determine player improvement. These tests are repeated throughout the semester in an effort to show a marked level of improvement.

Good, powerful, fast skating requires the athlete to have good posture, balance, strength and endurance. Some of which can be trained on ice – but the rest is supported by off-ice training.

Make-Up of a Dryland Conditioning Program

Warm-up: WHY? (1) Good way to settle the mind and focus to the session ahead; (2) Open up muscles and joints for exercises to come; (3) Increase body temp, blood flow which allows to train better & with less risk of injury.

Warm-ups can include general cardio (walking, spinning running), static stretching (i.e. hip flexor stretch), dynamic stretching (inchworms, downward dog), drills (marches, butt kicks).

Core/Ab Training: can be added right after warm-up to get the full body stability system (deep abs or postural muscles, outer abs, back extensors and hips) woken up to handle the loads & forces in the exercises.

Why the core? How well a player can skate, shoot and handle contact starts from the center of our body or our core. Planks of all styles, back extensions, crawling movements, sit-ups make up the key exercises of core training.

Agility, balance & coordination: usually tackled in the beginning of a session when the athlete is warmed up and not too tired. This includes fast foot work, skipping, jumps, and stationary and moving balance activities. This work improves reaction skills and most importantly first-step speed...important in hockey to get past opponents.

Strength & Power Training: body weight exercises (push-up, squats) + added resistance work (partners, medicine balls, and dumbbells) help to build training foundation that improves leg strength and power – keys to good skating.

Aerobic & Anaerobic Fitness: covered by running, jogging, biking, skipping, skating. Continuous pace running builds aerobic endurance which improves recovery between games & intervals that improve speed on ice and recovery between shifts.

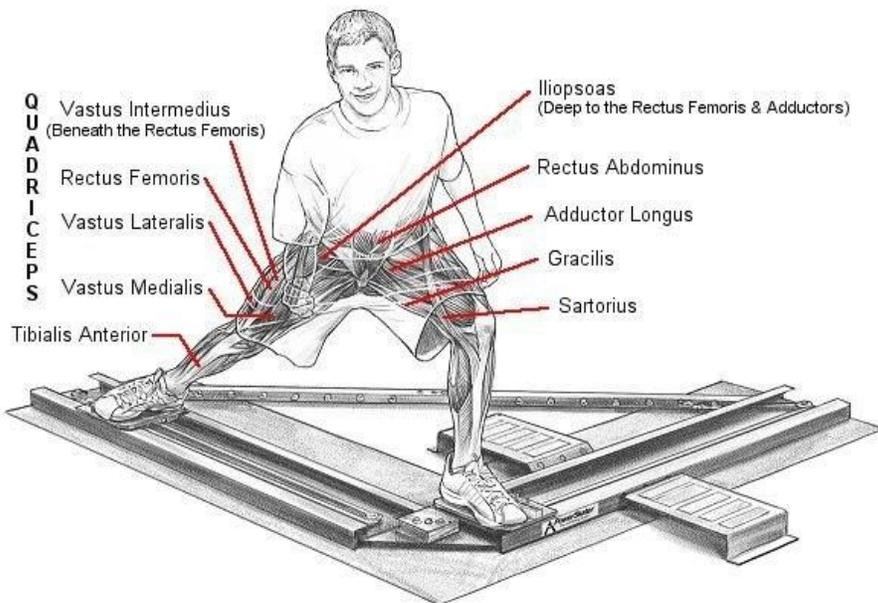


Make the Distinction

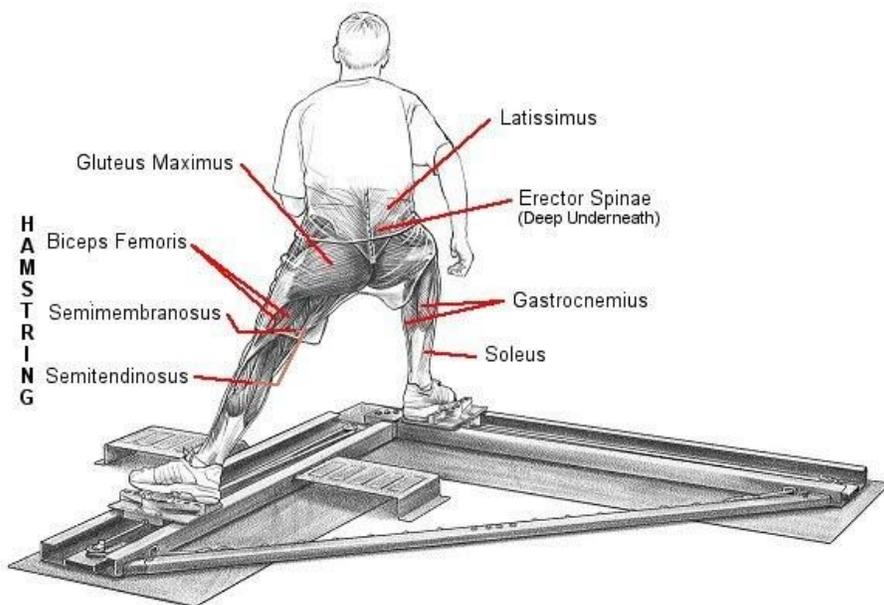
"Make the distinction between activity & accomplishment. Too many athletes perform the activity of training but don't progress at the rate they should because they don't train hard or smart enough."

Mark Nemish
Strength Coach
Washington Capitals

Hockey Skating Muscles:



Diagrams from hockeypot.com



The abdominal and extensor muscles of the back are the support muscles that help stabilize the core area. These are the muscles that connect the lower body movement to the upper body maintaining stability in the hip and lower back.

ANKLE JOINT

The calf muscles (soleus and gastrocnemius) and the anterior shin section (tibialis anterior) muscles contract isometrically during the push-off phase and the glide phase.

KNEE JOINT

The knee performs the action of extension (skating stride push-off) and flexion (returning the leg to the glide position). The quadriceps are made up of four muscles: vastus intermedius, rectus femoris, vastus lateralis, vastus medialis. Three muscles make up the hamstring muscle group: biceps femoris, semitendinosus, semimembranosus.

The movements of the knee are:

Knee Extension - quadricep muscle group are the key muscles involved in the knee extension.

HIP JOINT

The hip joint allows for a wide range of motion providing six important movements. Many muscles cross the hip from various angles. In skating, the abduction, extension and external rotation motions are the three most important. The six movements of the hip joint are: **External Rotation** - muscles of the external rotation turn the leg and kneecap outward.

Internal Rotation - muscles of internal rotation turn the leg and kneecap inward.

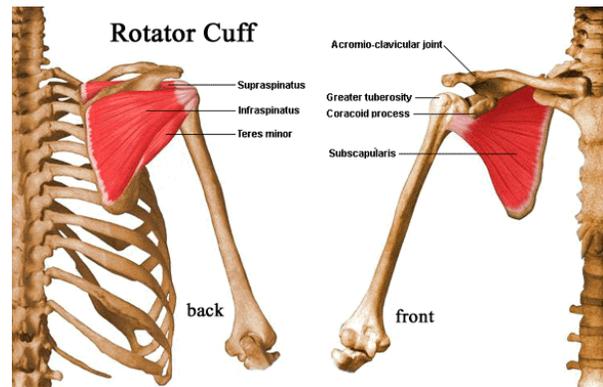
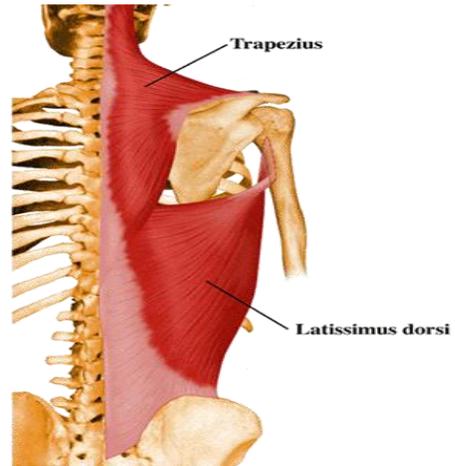
Abduction - The abduction muscles move the leg away from the midline of the body.

Adduction - The adduction muscle group consist of the groin muscles that move the legs toward the midline of the body.

Extension - muscles move the thigh backward opposing the flexion muscles.

Flexion - muscles move the thigh toward the chest opposing the extension muscles.

From hockeypot.com



Muscles used in shooting:

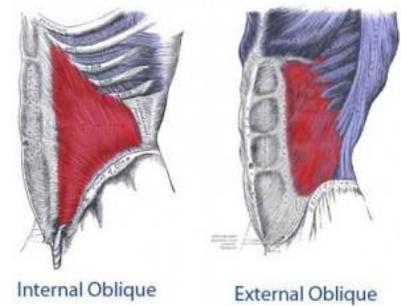
Hips (adductors, hip flexors)

Legs (Quads)

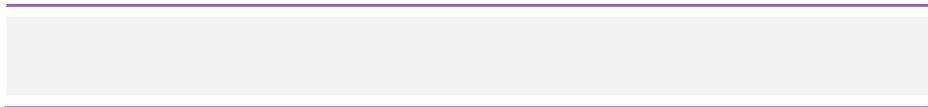
Back/Trunk (Latissimus Dorsii, back extensors, oblique abs)

Shoulders & Arms (rotator cuff, deltoids, triceps)

Chest (pectoralis major)



Anatomy pictures from Britannica.com



So what strength training exercises can we do to improve hockey skills and performance?

Lower Body:

Squats

Deadlifts

Split Squats

Lunges (forward, backward, lateral, 45 degree)

Calf raises/ Toe raises



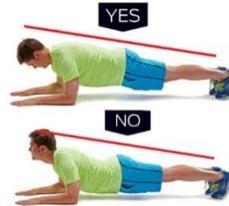
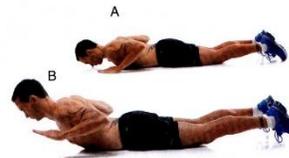
Core:

Planks

Back Extensions

Seated/Standing Rotations

Sit-Ups



Upper Body:

Pull-ups

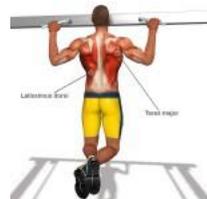
Lat Pull Downs

Rows

Shoulder Presses

Push-ups

Chest presses



Additional Resources:

Hockey Speed & Power by Kevin Miehm

NSCA Essentials of Strength & Conditioning, 3rd Edition

USAHockey.com