



INTRODUCTION

Sledge hockey is a fast-paced, aggressive sport which is extremely demanding physically. In order to play the sport at the elite level, excellent physical conditioning is required. Even playing the sport recreationally, a strong level of conditioning will allow the participant to succeed and enjoy their experience more.

Due to the nature of the sport, strength in the body's core is of particular importance. This manual is designed in order to give sledge hockey players and coaches a resource to use in order to improve their own core strength and help them enjoy and achieve a higher level of success in the sport of sledge hockey.

The activities described in this manual are designed specifically with sledge hockey players in mind. However, these activities may also prove useful to other disabled and able-bodied sports.

For more information about sledge hockey visit <u>www.hockeycanada.ca/sledgehockey</u>.





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BEGINNER



SEATED SLEDGE POSITION

Sit directly in the middle of the training ball. Disability permitting, extend your legs outward off the ground (as shown).

This is called Functional Sledge Position (FSP) and is for all seated exercises in this manual.





The Start	In Functional Sledge Position (FSP).
The Motion	Keeping your shoulders as level as possible, tilt your pelvis from one side of the training ball to the other.
The Goal	To mimic turning and to strengthen your core.
Progressions	Beginner: Keep feet on the ground.Advanced: Keep feet off the ground.
Variation	Turn the ball over so round side faces down.

SEATED LATERAL TILTS







The Start	In FSP.
The Motion	Doing a lateral tilt, reach with your fingers and touch the ground. Retract and tilt in the opposite direction.
The Goal	To remain stable and stay on the ball through both side reaches.
Progressions	Beginner: Keep feet on the ground.Advanced: Keep feet off the ground.
Variation	Turn the ball over so round side faces down.

SEATED SIDE TOUCHES





SEATED BALL ROTATIONS

* A weighted ball is required.

The Start	In FSP, hold a weighted ball at chest height and arms length, as shown.
The Motion	Keeping the weighted ball at chest height and arms length, rotate to the left and then to the right.
The Goal	To remain stable on the ball, not tilting the pelvis or leaning back.
Progressions	Beginner: Keep feet on the ground.Advanced: Keep feet off the ground.
Variations	Turn the ball over so round side faces down.Use hand weights or resistance band.







SEATED FRONT BALL TOSS

* A partner and a weighted ball are required.

The Start	In FSP, face your partner.
The Motion	Using a weighted ball, toss the ball back and forth with your partner. Catch the ball at chest height, elbows up and out. When tossing the ball, extend your arms at chest height.
The Goal	To be able to effectively catch and throw ball while remaining stable on the ball.
Progressions	Beginner: Keep feet on the ground.Advanced: Keep feet off the ground.
Variations	 Decrease or increase the weight of the ball. Decrease or increase the distance between partners Turn the ball over so round side faces down.





SEATED RESISTED BACK STRIDES

* A partner and resistance bands are required.

The Start	In FSP. The resistance band is in front of you, either held by your partner or attached to a stable surface.
The Motion	Extend arms backward, replicating the on-ice stride. Repeat the stride motion.
The Goal	To remain stable on the ball while replicating an on-ice stride.
Progressions	 Beginner: Keep feet on the ground. Advanced: Keep feet off the ground and/or increase the tension in the resistance band.
Variation	Turn the ball over so round side faces down.







SEATED RESISTED FORWARD STRIDES

* A partner and resistance bands are required.

The Start	In the position indicated above (Seated Resisted Back Strides), with your partner in front of you.
The Motion	Extend arms forward, replicating the on-ice stride. Repeat the stride motion.
The Goal	To remain stable on the ball while replicating an on-ice stride.
Progressions	 Beginner: Keep feet on the ground. Advanced: Keep feet off the ground and/or increase the tension in the resistance band.
Variation	Turn the ball over so round side faces down.







INTERMEDIATE



SEATED SINGLE-ARM TENNIS BALL MOCK SHOT

The Start	In FSP, with an equal number of tennis balls within reach (6 to 12 inches) on either side of training ball.
The Motion	Lean to one side, pick up a tennis ball and throw it forward. Repeat on opposite side.
The Goal	To remain stable while picking up the ball and throwing it. The throwing motion should mimic an on-ice shooting technique. Keep ball throws consistent, both in direction and speed.
Progression	Use weighted balls for throwing.
Variation	Turn the training ball over so round side faces down.







SEATED DIAGONAL CORE ROTATIONS

The Start	In FSP.
The Motion	A - Start by holding a weighted ball at waist level with both hands toward the right. Keep arms straight, rotate from a lower right position to an upper left position.
	B - As explained above, except change direction of motion. Rotate from a lower left position to an upper right position.
The Goal	To remain stable on the training ball while keeping head facing forward and back straight.
Progression	Increase the weight of the weighted ball.
Variation	Turn the training ball over so round side faces down.



В





The Start	With the training ball on the floor, place hands on either side of the ball with fingers pointing down. Extend lower extremities as far as possible.
The Motion	Do a pushup by extending or straightening arms out.
The Goal	To remain stable while keeping center of chest over the ball.
Progression	Place legs / lower extremities on an elevated surface (ie. a chair, step or bench).
Variations	 Turn the training ball over so round side faces down. Change position of hands on ball so that they are diagonally opposite each other.

PUSHUPS







SEATED BALL TOSS ROTATIONS

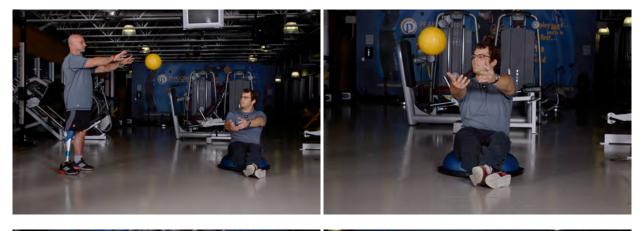
* A partner and a weighted ball are required.

The Start	Sit on training ball with arms extended outward at chest level. Your partner, holding a weighted ball, stands or sits facing you, 4 to 5 feet to your side.
The Motion	Partner throws ball. Catch and absorb momentum of the ball. Let arms rotate in opposite direction. Recoil and toss ball back to partner.
The Goal	To remain stable and prevent core and body from rotating. To keep body as stable as possible. To keep the ball toss direct and forceful.
Progressions	 Increase the weight of the ball. Increase the distance between you and your partner. Increase strength and speed of ball toss.
Variations	Turn the training ball over so round side faces down.Have partner throw from different spots.

* Images on following page



IMAGES FOR SEATED BALL TOSS ROTATIONS







SEATED DUAL BALL TOSS

* A partner and a second training ball are required.

The Start	In FSP, with arms extended outward at chest level. Your partner, holding a weighted ball, in FSP facing the opposite direction, 4 to 5 feet to your side.
The Motion	Partner throws ball. Catch and absorb momentum of the ball. Let arms rotate in opposite direction. Recoil and toss ball back to partner.
The Goal	To remain stable and prevent core and body from rotating. Keep body as stable as possible. To keep the ball toss direct and forceful.
Progressions	 Increase the weight of the ball. Increase the distance between you and your partner. Increase strength and speed of ball toss.
Variations	Turn the training ball over so round side faces down.Have partner throw from different spots.

* Images on following page



IMAGES FOR SEATED DUAL BALL TOSS







SEATED RESISTED SHOOTING

* A partner and resistance band are required

The Start	Sit on training ball holding resistance band in one hand. Partner holds and stabilizes other end of resistance band behind you.
The Motion	Initiate shooting motion and follow through.
The Goal	To keep shooting motion identical to on-ice motion. To remain stable and prevent core and body from rotating.
Progression	Increase the tension of resistance band or the distance of partner behind you.
Variations	 Turn the training ball over so round side faces down. Have a resistance band in each hand. Shoot with left hand then shoot with right.







ADVANCED



The Start	Place hands on either side of training ball with fingers pointing down. Extend lower extremities as far as possible.
The Motion	Do a pushup. While pushing up, pull ball off the floor and bring ball to chest. Replace ball on the ground quickly with elbows slightly bent.
The Goal	To keep body / torso as straight as possible in mid-air. To get the ball up to chest quickly and then back on the ground in a controlled return to starting position.
Progressions	Have lower extremities elevated on a chair or step.Have lower extremities elevated on a second ball.
Variation	Leave ball on ground while pushing off. Successfully land back on ball in initial pushup position.

PUSHUP WITH BALL PULL-UP

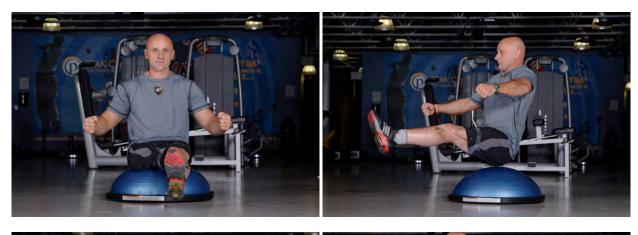






SEATED JUMPS

The Start	Start in FSP.
The Motion	Using core, thrust or jump off ball, rotate in mid-air and return to ball in FSP.
The Goal	To maintain FSP at all times. To successfully thrust off ball and stabilize body upon landing.
Progressions	 Hold a weighted ball. Have a partner throw a weighted ball either while in midair or upon landing.
Variations	Combine Seated Jumps with Resisted Strides or Tennis Ball Tosses .



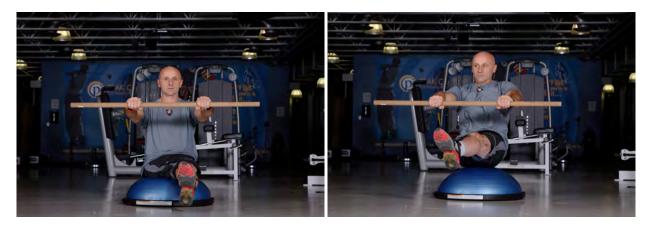




SEATED JUMPS WITH STABLE STICK

* A hockey stick is required.

The Start	Seated on training ball, hold a stick with arms extended outward at chest level.
The Motion	Using core, thrust or jump off ball, rotate in mid-air and return to ball in FSP.
The Goal	To remain stable at all times. To successfully thrust off ball and stabilize body upon landing. To keep the stick stable and straight as possible.
Progression	Have a partner attach a resistance band to the stick and provide resistance during rotation.
Variation	Start off with the stick angled and maintain the angled position during the jump.



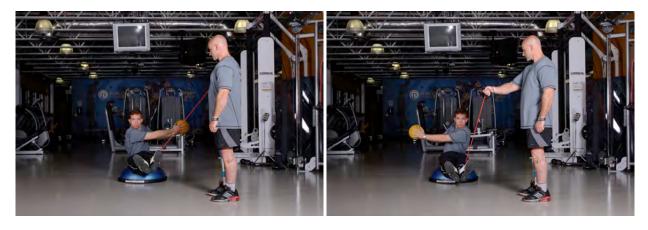




SEATED ROTATIONS WITH IN-MOTION DISTURBANCE

* A partner, a weighted ball and resistance band are required.

The Start	Seated on ball, hold a weighted ball with arms extended outward at chest level. Place a loop of resistance band around ankles.
The Motion	Rotate arms to left and right while partner applies tension through resistance band and constantly changes the angle of pull.
The Goal	To remain stable at all times and prevent core from rotating while resisting the tension applied by partner.
Progressions	 Increase the weight of the ball. Increase the tension of the resistance band. Have partner speed up the motion and increase the tension of their disturbance.
Variations	 Place resistance band around upper chest or around waist. Place a loop of resistance band around one or both wrists. Change arm motion to an angled rotation.







SEATED RESISTED STRIDES WITH IN-MOTION DISTURBANCE

* Two (2) partners and resistance band are required.

The Start	Seated on training ball, hold resistance band with arms extended backward. Place a loop of resistance band around ankles.
The Motion	While one partner provides resistance to forward stride, other partner provides in-motion disturbance with resistance band attached to ankles.
The Goal	To remain stable and in FSP at all times. To prevent core from rotating while resisting the tension applied by both partners.
Progressions	 Increase the tension of the resistance band. Have partner speed up the motion and increase the tension of their disturbance. Turn ball over so round side faces down.
Variations	 Place resistance band around upper chest or around waist line. Perform backward strides in the same fashion.





TUG OF WAR

* A partner, two (2) training balls and resistance band are required.

The Start	Sit on training ball facing away from your partner (also sitting facing away on training ball), about 1 to 2 feet apart. Hold 2 resistance bands, with the other ends held by your partner.
The Motion	Try to win the Tug of War by driving arms forward at high speed.
The Goal	To pull partner off ball by driving arms at high speed, while remaining stable and keeping feet off the ground.
Progressions	 Increase the tension of the resistance band. Turn one or both training balls over so round sides face down.
Variation	Increase the distance between training balls.







STRETCHING



GENERAL STRETCHING INFORMATION

The following section illustrates ideal stretches for sledge hockey. Since sledge hockey requires highly repetitive use of the shoulders, arms and wrists, the focus is on stretching the upper body. Maintaining upper body flexibility is essential for optimal performance and injury prevention.

Sledge hockey athletes with any disability should maintain a regular stretching routine using the *Key Stretches* section. Different athletes may vary in their upper body range of motion; however there are no risk factors or contraindications to stretching the upper body and limbs for any athlete with a given disability.

The Bonus Stretches section follows Key Stretches. Bonus Stretches is specific to the lower body and pelvis. Athletes with disabilities such as spina bifida, sacral agenesis and higher levels of paraplegia may be restricted in their range of motion and therefore have a difficult time performing the Bonus Stretches. Consult with your physician or therapist before attempting Bonus Stretches.

Stretching Basics

- Ensure that you stretch before and after activity. This includes games, practices and both weighttraining and cross-training sessions.
- All stretches must be done in a controlled fashion. "Bouncing" and quick sudden movements may cause muscles and/or other soft tissues to strain or even tear.
- There should be no pain with stretching. The ideal sensation is a light pulling, which may include or be followed by a "release" or a "letting go" of the stretched area.
- Ideal stretch time for a muscle is roughly 1 minute. You may reach this goal various ways:
 - 1. 10 seconds x 6 sets
 - 2. 15 seconds x 4 sets
 - 3. 20 seconds x 3 sets
 - 4. 30 seconds x 2 sets
 - 5. 60 seconds x 1 set

Most stretch routines are sufficient at 15 seconds x 4 sets or at 20 seconds x 3 sets. Use these parameters before progressing to the more aggressive and longer holds.



KEY STRETCHES



TRAPS

The trapezius or "traps" is a major support muscle of the neck. Shrugging your shoulders in an "I don't know" gesture contracts this muscle. The upper part of this muscle is the bulky area on top of our shoulders. Flexibility in your traps will reduce neck stress and strain and allow you to have full range of motion in your neck.

Sitting or standing, place your right hand on the outer part of your left shoulder (as pictured). Maintain good posture and relax both shoulders. Apply a gentle downward pressure onto your left shoulder with your hand. Gently bend your head and neck forward and to the right, as if looking at your right hip. Hold this position. The desired stretch will occur in your left trap muscle.

Repeat on the opposite side to stretch the right trap.

Advanced tip:

Increase the effort of your "look down" to increase the stretch. While stretching your left trap, reach down with your left hand and arm to further increase the stretch in the left trap.





PECS

The pectoralis or "pecs" muscle is the major muscle on the front of the chest. This muscle is mainly active once a stride or "push" is over. You use your pecs to bring your arms forward from behind you to start your next stride. Tight pectoralis muscles will give the look of rounded shoulders and poor posture. Maintaining flexibility in your pecs will not only give you a full-length stride, but also full range of motion in your shoulders. Overuse injuries such as rotator cuff tendonitis, shoulder bursitis and impingement syndromes are linked to tight pecs.

Sitting or standing with good posture, place your left hand (as pictured) against a wall, door frame or any other stable surface. Maintain a slight bend in your elbow. If standing, gently shift your weight forward so that your feet are underneath your body, yet ahead of your hand. Your posture and back should remain upright and tall at all times.

If in a wheelchair, use your outside hand to move your chair forward. The desired stretch will occur in your left pec. Make sure you do not twist to engage the stretch. Hold this position. Repeat stretch on the right pec.

Advanced tip:

Increase the stretch gently by walking your feet forward while keeping your hand on the wall. You may change the stretch by changing the placement (or height on the wall) of your hand.





WRIST FLEXORS (FOREARM)

The wrist or forearm flexors are a group of muscles located on the front of your forearm. As a whole, they flex your wrist and fingers. Stick gripping and shooting are the main movements where these muscles are used. Because of the high amount of gripping and shooting in sledge hockey, these muscles tend to be overused and can become very tight. Neglected wrist flexor stretching can result in wrist, forearm and/or elbow tendonitis.

There are 2 main stretches for your wrist flexors:

- 1. Sitting or standing, grab your right hand with your left (as pictured, figure 1) on the palm side of your hand around the base of your fingers. With your elbow bent, apply gentle pressure so that your wrist extends back. The desired stretch will occur in the front of your forearm. Hold this position.
- 2. The second stretch occurs in the same fashion except that once gentle pressure has been applied to your fingers, slowly straighten your elbow so that your arm is straight out ahead of you (as pictured, figure 2). Repeat both stretches on the left forearm.

Advanced tip:

To increase your stretch, change your initial grip from the base of your fingers to the tips of your fingers. This will include your fingers in the stretch and help progress your flexibility.



FIGURE 1

FIGURE 2



WRIST EXTENSORS (FOREARM)

The wrist or forearm extensors are a group of muscles located on the back of your forearm. As a whole, they extend your wrist and fingers. Stick handling and backhand shooting are the main movements where these muscles are used. Because of the high amount of gripping, stick handling and shooting in sledge hockey, these muscles tend to be overused and can become very tight. Neglected wrist extensor stretching can result in wrist, forearm and/or elbow tendonitis.

There are 2 main stretches for your wrist extensors:

- 1. Sitting or standing, grab your right hand with your left (as pictured, figure 1) on the back side of your hand around the knuckles. With your elbow bent, apply gentle pressure so that your wrist bends forward. The desired stretch will occur in the back side of your forearm. Hold this position.
- 2. The second stretch occurs in the same fashion except that once gentle pressure has been applied to your knuckles, slowly straighten your elbow so that your arm is straight out ahead of you (as pictured, figure 2). Repeat both stretches on the left forearm.

Advanced tip:

To increase your stretch, curl or bend your fingers. This will include your fingers in the stretch and contribute to your flexibility. You can also achieve this by changing your initial grip. Slide the fingers of your left hand onto the fingers of your right. Using your left fingers, gently bend your fingers on your right hand.



FIGURE 1

FIGURE 2



BICEPS

The bicep muscle ("bi" meaning two) has 2 parts. It is the muscle on the front part of the upper arm, above the elbow. In sledge hockey, this muscle is needed for overall shoulder and elbow function. However, the bicep is active during shooting and striding. An inability to straighten out your elbow is an indication of tight biceps. Tightness in the biceps can lead to injuries such as shoulder and elbow tendonitis.

There are 2 stretches for the bicep muscle:

- 1. Sitting or standing up tall, place your right arm out to your side at the height of your shoulder (palm facing up), parallel to the ground. While maintaining good posture and square shoulders, slowly rotate your arm outwards and backwards. Now gently extend your arm behind you, while keeping your arm rotated (as pictured, figure 1). The desired stretch will occur in the inside bicep. Hold this position.
- 2. Sitting or standing, place your right arm out to your side at the height of your shoulder (palm facing up), parallel with the ground. While maintaining good posture, rotate your arm forward, so that the palm of your hand is now behind you. Gently extend your arm back (as pictured, figure 2). The desired stretch will occur in the outer part of your bicep.

Remember:

Good posture and having your shoulders square are key to these stretches.



FIGURE 1

FIGURE 2



TRICEPS

The tricep muscle ("tri" meaning three) has 3 parts. This muscle is located opposite your biceps, on the back of the upper arm, above the elbow. The tricep is a key muscle in sledge hockey. The triceps are extremely active while driving the picks into the ice, as well as propelling and pushing during the stride. Tightness in your triceps will limit your elbow and shoulder range of motion during your stride. This will in turn affect the potential power, strength and speed of your stride.

The tricep stretch can be done various ways:

- 1. Sitting or standing tall, place your right arm over your head, with your elbow bent and hand behind your head. Place your left hand (as pictured, figure 1) over your right elbow. Using your left arm and hand, apply gentle pressure downward. The desired stretch will occur in your right tricep. Hold this position.
- Athletes with tight upper backs (found in spina bifida and sacral agenesis) may use an alternate method. Place one arm up over your head with elbow bent. Have a towel, strap or belt hanging from your hand. Grab the towel, strap or belt with your opposite hand behind your back (as pictured, figure 2). Gently pull the towel downward with your lower hand. The desired stretch will occur in the tricep.

Advanced tip:

Changing the position of your upper arm will change the intensity and location of the stretch within the triceps.



FIGURE 1

FIGURE 2



BONUS STRETCHES

This section illustrates pelvic and core stretches. Athletes should be familiar with their movement limitations according to their disability before attempting pelvic stretching. Those with disabilities such sacral agenesis and paraplegia may have limited or no use for these stretches. Athletes with limited pelvic movement or function will not be able to perform these stretches or achieve the desired stretch. Always consult your physician and therapist before attempting the following stretches.



HIP FLEXORS

The hip flexors are muscles that lift your legs when walking and help flex your trunk (as in a sit-up). Because your hip flexors are attached to your lower back, they also help with core and spine stability. In sledge hockey, the prolonged sitting position causes the hip flexors to become very short and tight. In turn, athletes may experience lower back pain and pelvic or abdominal pain syndromes. Any athlete who can do hip flexor stretches should include the following stretch into their routine.

Place one knee on the ground with the opposite leg ahead of you in a lunge position (as pictured, figure 1). Maintain a tall erect spine. Gently shift your weight forward through your pelvis so that most of your weight is supported by your front leg.

Various Considerations:

- Amputee athletes may have to take caution when stretching the non-amputee leg. Placing the prosthetic leg ahead of you may cause pinching in the hip. If necessary, remove prosthetic leg, and use a chair or bench for support.
- Spina bifida athletes should use this stretch as long as there is no lower back pain. They should also use extra support such as a chair or bench.



FIGURE 1

FIGURE 2



PIRIFORMIS

The piriformis muscle is found deep underneath your glutes. When you are seated, you are sitting on your piriformis muscle. The sciatic nerve that comes from your back and down your leg actually runs underneath the piriformis muscle. Athletes with very tight piriformis muscles may experience sciatic type pain, which may include pain in the glutes, hamstring or calf. Numbing or tingling into the lower leg may also occur. Keeping the piriformis muscle flexible may reduce risk of lower back pain and allow sledge athletes to sit comfortably in their buckets.

While lying on your back, bend both knees to about 90 degrees. Place the ankle and shin of your right leg over your left knee. Gently reach and grab your left leg just above your knee. Keep your right leg relaxed. Use your arms to pull your left leg towards you so that your left foot elevates off the ground. Your right leg will move as well (as pictured, figure 2). The desired stretch will occur in your right piriformis. Hold this position. Keep your back and shoulders flat and relaxed during the stretch.

Various Considerations:

• For amputee athletes, stretching the piriformis on the stump leg may be a challenge, depending if the amputation is above or below the knee. Should the amputation be above the knee, athletes may have to rotate the stump leg outwards and pull it to activate the stretch without the use of the non-amputated leg.





GLUTES

The gluteus maximus or "glute" muscle is the main muscle that we sit on. The glutes are attached to the back of the pelvis and legs. While walking, the glutes are responsible for pelvic support; however in sledge hockey, the glutes help maintain core and sled control.

In a seated position, bring your right foot over your left knee so that it is on the outside of your left knee, which is rested on the ground. While maintaining an erect posture, gently "hug" your right knee. Bring your right knee towards your chest (as pictured, figure 2). The desired stretch will occur in your right glute muscle. Hold this position.

Various Considerations:

• Above-knee amputee athletes should make sure to grab the stump leg when performing this stretch. Removing the prosthetic leg may be beneficial.





EQUIPMENT

Here is a list of a few items which were used in this manual and websites where more information about the product can be obtained. These are intended as guidelines and other companies may manufacture similar items which are of equal quality and usefulness.

THERABAND ELASTIC BANDS

• See www.theraband.com for more information.

WEIGHTED MEDICINE BALL

• See <u>www.power-systems.com</u> for more information.

BOSU TRAINER

• See <u>www.bosu.com</u> for more information.





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