

Ergonomics and Snow Shoveling

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SORE BACK?

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Occupational Health
Clinics for Ontario
Workers Inc



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des travailleurs (ses)
de l'Ontario Inc.

SNOW, SNOW, SNOW



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Background

- **As Canadians, we are accustomed to shoveling snow.**
- **For many of us:**
 - We shovel to get out of the driveway,
 - To keep our driveway clean and safe for pedestrians
- **But, for others:**
 - It is a job requirement



Good and Bad News...

GOOD NEWS

- **15 minutes of shoveling is considered moderate activity**
- **Good way to keep in shape and to burn extra calories**

BAD NEWS

- **There has been an increase in both fatal and non-fatal heart attacks in recent years**
- **People continuously over-exert themselves and are becoming injured**



Who should think twice about shoveling?

- **Elderly People**
- **Anyone who has had a previous heart attack.**
- **People with a history of heart disease, high blood pressure or high cholesterol levels.**
- **Smokers.**
- **People leading a sedentary lifestyle.**
- **People with existing back problems.**



Why not buy a snow blower?

- You do not necessarily have to run out and buy a snow blower.
- Not everyone who shovels snow is going to have a heart attack or get injured.
- Snow shoveling can be good exercise when performed correctly and with safety in mind.



Prior to Shoveling

- **Avoid caffeine and nicotine**
 - Stimulants that place extra stress on the heart (increase heart rate and cause blood vessels to constrict).
- **Avoid eating large meals**
 - Places extra demands on the digestive system (stomach cramps).
- **Drink plenty of water**
 - Dehydration is as much of a problem in the winter as it is in summer.



Prior to Shoveling

- **Dress warmly**
 - The nose, ears, hands and feet need extra attention in cold weather. Wear a turtleneck, sweater, toque, scarf, face protection, wool socks and waterproof boots.
 - Place a scarf or other face protection over the nose and mouth to avoid breathing cold air.
 - Dress in layers so you can remove a layer as needed.
- **Wear proper footwear**
 - Boots with slip-resistant soles can help to minimize the risk of slips and falls.



Prior to Shoveling

- **Warm-up for 5 to 10 minutes to get the joints moving and increase blood circulation.**
 - **Aerobic - march on the spot, climb stairs, or go for a quick walk around the block.**
 - **Stretch - gently stretch the back, arms, shoulders, and legs.**
- **Be weary of your back – it is very vulnerable when you first wake up.**
 - **Back muscles stiffen while you sleep. Avoid exerting yourself shortly after getting out of bed.**



Picking the Right Snow Shovel

The most important features of a shovel include:

- **Weight**
- **Length**
- **Shaft Type**
- **Handle Type**
- **Blade Size & Shape**



Picking the Right Snow Shovel

- **Use a shovel with a smaller blade for throwing snow (10"-14").**
- **Try to avoid shovels with metal edges when shoveling sidewalks, cracked surfaces, etc.**
- **Use cooking oil, or even car wax to keep snow from sticking to the shovel.**



Ergonomic Designs



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More Tools



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Shoveling Rate

- **What is the recommended rate for shoveling?**
 - **CCOHS recommends a rate of 15 scoops per minute.**
 - **Shoveling should not last longer than 15 minutes followed by a 2-3 minute break.**



Shoveling Weight

- **What is the recommended weight to be lifted?**
 - **High rate of shoveling (15 scoops/min), total weight per shovel should not exceed 5-7 kg (10-15 lbs)**
 - **Lower rate of shoveling, maximum of 11 kg (approx. 24 lbs).**



Approximate Snow Weights

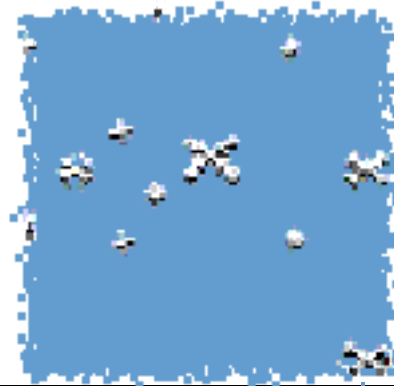
Weight of Snow per Cubic Foot				
	Light/Dry Snow	Wet/Heavy Snow	Compacted Snow	Ice
Snow Density (lb/cu ft)*	<i>3 lb/cu ft</i>	<i>21 lb/cu ft</i>	<i>30 lb/cu ft</i>	<i>57 lb/cu ft</i>

If an individual were to clear a 16ft by 30ft driveway covered in one foot of wet snow, they would be moving approximately four tons of snow!



Throwing Height & Distance

- **The throwing height should not exceed 1.3 meters (approximately 4 feet).**
- **Optimal throwing distance should be no further than 1 meter (approximately 3 feet). The load and shoveling rate should be reduced if the task requires a longer and/or higher throw.**



Shoveling Technique

- Regular Snow Shovel
- Ergonomic Snow Shovel
- Snow Scoop
- Ice Choppers
- Stairs, Decks, etc.
- Clearing rooftops
 - Roof rakes



Heart Attacks

- **Watch for signs of a Heart Attack. Many people die from heart attacks because they did not seek medical attention quickly enough. Be familiar with the signs and symptoms of a heart attack.**
- **If you experience any of the following symptoms, stop shoveling and contact your physician immediately, or call 911.**
- **Shortness of breath and difficulty breathing (#1 sign)**
- **Pain**
 - **Sudden pain or discomfort that does not go away with rest. The pain may feel like: burning, squeezing, heaviness, tightness or pressure**
 - **The pain may be in the chest, neck, jaw, shoulder, arms or back**
 - **Tingling, pain, or numbness in the left arm.**
 - **Chest pain or discomfort that is brought on with exertion and goes away with rest**
 - **In women, pain may be more vague**
- **Nausea**
- **Sweating (i.e. cool, clammy skin)**



Helpful Hints

- **Clear snow early and often.**
 - During a large snowfall, shovel frequently. **DO NOT** wait for all of the snow to fall before shoveling.
 - Fresh snow is fluffy, light, and easier to move than heavily packed or wet snow.
- **Pace yourself.**
 - Start out slowly and take breaks often – **DO NOT** rush to clear all of the snow at once.
 - Try pushing and lifting during large snowfalls in small layers (i.e. shovel an inch or two, rest, and repeat).



Helpful Hints

- **Watch your footing.**
 - Stand with your feet hip width apart for balance and keep the shovel close to your body.
 - Avoid throwing snow too far when it is slippery.
- **Push, rather than lift.**
 - Push snow with a wide blade shovel.
 - When you have to lift, use a small blade shovel.
- **Use your legs.**
 - Half fill the shovel, bend with knees, keep back straight and lift with legs.
 - Walk to where you want to place the snow.



Helpful Hints

- **Avoid awkward throwing postures.**
 - **DO NOT** throw snow over your shoulder or to the side.
 - If you need to move the snow to one side, reposition your feet to face the direction the snow will be moved.
 - Do not reach back to push snow (i.e. walking backwards while pushing or lifting snow).
- **Watch for ice.**
 - Look out for ice patches and uneven surfaces under the snow or on the ground that can cause you to slip and fall (black ice).
 - Take smaller steps in icy conditions.
 - Wear boots that have slip-resistant soles. Anti-slipping cleats or footwear could be used by those who are prone to falling.



Helpful Hints

- **Ask for help.**
 - Ask someone to help you if shoveling snow is a huge job.
- **Listen to your body.**
 - If you feel tightness or pain in your chest, stop right away and call your doctor.
 - If you become sore after shoveling, take a hot bath, get a massage, or take a pain reliever. If you still do not feel well, see your doctor.



Helpful Hints

- **See what you are shoveling.**
 - Do not let a hat or scarf block your vision.
 - Make sure your glasses are not foggy.
- **Think ahead of time.**
 - Try to throw snow far, early in the winter.
 - Avoid pushing all of your snow to the end of the driveway. Make a path down the middle of the driveway and push all of the snow to the sides.
 - Keep the snow banks the same height all the way down the driveway.



Helpful Hints

- **Snow Plow**

- Try and shovel the snow as soon as you see the snowplow pass by.
- The sooner you shovel the slush, snow and ice from the snowplow, the easier it is.
- If you wait, the pile of snow will turn to hard packed ice and will be harder to move.
- This snow is heavy, so lift half-filled shovels and walk to where you want to place it.



Using a Snow Blower

- **Snow blowers are use caution when using them to avoid muscular strains**
- **Keep the snow blower close to the body (i.e. stay between the handles)**
- **When there is a large amount of snow, do not take full passes of snow – take half**
- **Let the snow blower drive itself**
 - That is why we have them – to help us – let it do the work
- **Vibration – avoid long periods of snow blowing – share the job (job rotation)**
- **Gripping**
 - depends on the controls, but some models have a drive train that only run when the lever is pressed – this can be hard on the wrists - take breaks or share the job



Using a Snow Blower

- **Do not lift the snow blower by yourself**
- **Watch for changes in elevation, or features that stick out**
- **Earplugs are recommended**
- **Important Note: A study in Detroit identified 43 heart attacks after a series of snowstorms. These heart attacks were all attributed to physical exertion, and 36 occurred while removing snow. Several of these heart attacks occurred while using a snow blower...**

This helps to illustrate that while snow shoveling can lead to a heart attack, using a snow blower does not eliminate the possibility of suffering a similar fate while removing snow.



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"I'D LIKE TO HELP YOU BUT I'M ERGONOMICALLY CHALLENGED!"

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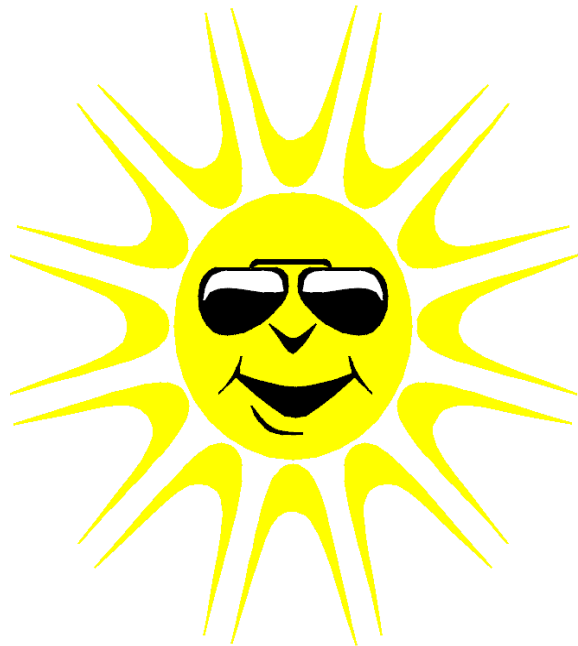
Take Home Message

- **Make sure that you, warm up first, take your time (especially after the first big snowfall), have the proper tools, dress properly, take frequent breaks, stay hydrated, and know when to stop. By planning ahead of time and being prepared for all possible conditions snow removal can be great exercise.**



Thank you for your attention

If you have any questions about ergonomics or any other occupational health concern contact OHCOW at:



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