

Chapter 1 : Power Skating Tips - Laura Stamm Power Skating

Key Ice Skating Techniques Once you've mastered the basics of ice skating (not landing on your rear), you may want to try something a bit more technical. This guide outlines some of the main ice skating moves and techniques that are open to all skill levels, including beginners just starting out in the sport.

She is an advice columnist for "Five on Five Magazine," a quarterly periodical for roller-derby players and fans. Quad skates on the road. Each type of skate will give you unique advantages, but if you want stability and vintage appeal, quad roller skates are for you. If you are just picking up quad roller skating, there are basic techniques you need to learn. This is where you pull your feet together with one facing forward and the other perpendicular, pointing to the side, making them look like the letter "T. Angle your right foot sideways so your toes are facing out toward the right, place all four wheels of your right foot on the floor behind the heel of your left foot and drag the wheels on the floor until you stop. At first, you will feel like your right foot is bouncing up and down, but when you are able to keep it under control and come to a complete stop, you will have mastered the T-stop. Getting Some Air Jumping in roller skates is much like jumping in regular shoes. Jumping on quad roller skates is exactly like jumping in your shoes, except that when you land, you will be rolling forward, not standing in one place. The power comes from your legs, and the more you bend your knees and the lower you get before jumping, the higher you will go. Try small jumps at first, and after you get more confident, challenge yourself by trying to go higher and farther, even jumping over objects. When you land, you want both feet on the ground and pointing in the right direction for you to keep rolling forward. Turning with Crossovers The main idea behind a crossover is the same in quad skating as it is in short-track racing. A technique used for picking up speed when making a turn is called a crossover. To do a crossover, you pick up one foot and cross it over the other. When you are first learning, do not worry about whether you are picking up speed. Focus only on the balance of picking up one foot, maybe your right, and bringing it over and in front of your left, so when you put it back on the floor it will be in front and to the left of your left foot. Then, bring your left foot up next to your right and repeat to turn left. After you are comfortable with balance, you can focus on bending your knees and squatting low so you can pick up speed when crossing over. Safety Considerations You will fall down at times when quad roller skating. Be realistic about your abilities and wear protection such as knee pads, wrist guards and a helmet. Despite the risk of injury, many people actively participate in quad sports such as roller derby, roller hockey and jam skating.

Chapter 2 : Cross Country skate ski technique | V2 skate lesson

Proper technique is required for all elements of skating, including forward stride, crossover, backward skating, stops and starts. What is the proper technique? 8 Basic Skating Skill Sets.

So, it only makes sense to concentrate a lot of effort on this skill first in order to build a strong foundation. Proper technique is vital in achieving maximum speed, strength, ability, endurance and most importantly, a fun experience. Shoulders over knees over toes. Back straight and head up. One foot pushes while the other foot glides. Aim your push perpendicular to directly against the inside edge. Push out to the side, not behind you. Top hand only on stick so you can swing your arms forward and backward the way you do when you run. When skating backwards your body posture and positioning are vital. You should feel like you are sitting on a stool with your behind almost parallel to the ice, keeping your back straight and your weight centered directly over the middle of your skates. Positioning your upper body and chest too far forward when going backwards will put too much weight to the front part of the skate and definitely take away from your balance, speed and power. You must consistently work on and practice this very difficult skill, no matter what your level of play, in order to see marked improvement. As well, you are going to need to do your share of falling down when practicing. But do not look on this as a failure, in fact just the opposite, this means that you are getting closer to stopping properly now that you are breaking out of your comfort zone. Keep your eyes forward, your chin up and your back straight. Turn your hips 90 degrees from the direction you were traveling, with both skates turning at the same time. With your blades at a 90 degree angle to the ice, you will slide sideways across the top of the ice. Your feet should be wide and staggered at this point not parallel, with the inside foot in front of the outside foot by a full skate length or more. Your feet should be wide apart from each other at least shoulder distance and also wide as in staggered or uneven. The bodyweight should be distributed with the greater percentage to the outside skate inside edge. If not, and you have too much weight over the inside foot outside edge, then the skates will slide out from under you causing you to fall or lose your balance. Roll your ankles over so the edges of the blades dig into the ice causing you to stop. Be sure to counterbalance the stop with your upper body, by keeping your shoulders parallel to the ice, rather than leaning or dropping the inside shoulder down towards the ice. When performing the hockey stop, it is important that you think of it more as a Hockey Slide first, and a Hockey Stop second. In other words, do not put the cart before the horse. Too many players think they can come to a screeching stop as if they are changing directions on a basketball court, for example. However, when you watch the most skilled stoppers in the N. And finally, when teaching the art of the Hockey Stop, inevitably someone asks the question about why one stopping side is stronger than the other it should be noted that every pro player I have ever worked with has a weaker side, not only when stopping, but turning, etc. The only way we have found to make your bad side stronger is to work harder on it and not to ignore it just because it becomes frustrating. But to take that one step further, really try to focus and concentrate on exactly what it is you do on your good side that allows you to perform the maneuver well. Once you have the steps sorted out in your head, it should then be easier for you to transfer those same techniques to your weaker side, as well. Pick the key points that you feel will most improve your skating and work those skills the hardest.

Chapter 3 : Cross-country skiing - Wikipedia

TECHNIQUE OF SPEED SKATING 42 1 Ice Friction and Air Friction Power lost to ice friction is the product of the ice frictional force and the speed of the skater. In the past the ice frictional force was measured with the help of.

The double push is a subject much written about on the Internet forums. It is surrounded by numerous legends, the obscurity of which we will try to clarify. Even if it proves to be very efficient once mastered, there are several things you should know about that technique. What is the double push? The double push, as the name implies, is made of two pushing phases in the same stride: Cross-overs during bends for example, are a type of double push. There is a short momentum during which the skater simultaneously pushes on the inside edge of his right skate and on the outside edge of his left skate just like on the video with Joey Mantia. When to use the double push? It is also used to regain speed. There are but a few skaters who manage to do it easily enough not to spend too much energy on it. Is that technique hard to get? We can only give you an equivocal answer: Some people already master the technique without knowing it. You can instinctively adopt it by dint of skating and willpower for speed. Writings upon the subject abound, it is not an easy technique to grasp, even with high level skaters. The skaters who manage to use that specific technique with efficiency are few. Many tutorials exist to understand the movement, which is quite easy to comprehend, but assimilating it needs a little more time. Then remains the question of the relevance of its use. As mentioned above, it is an energy-greedy technique if not enough mastered. Dissection The first push is a classic push to the side on the inside edge of the skate The opposite skate follows with a rolling phase The second push starts just before the end of the first one: You need quite an important speed to do the double push. For the double push to be really efficient, you should go through a phase of strong unbalance, during which your center of gravity swings toward the outside of the polygon represented by your skates. Learning to slalom In order to learn to use your edges, there is nothing like slalom! Put a few cones in line 2. At first, try to do the fish with joint feet in order to comprehend the notion of edge shifting 3. Then, once you are better at ease, do the drill again on one foot Once you can feel the weightbearing shifts on both your feet, you can get started on drills dedicated to the double push. And for that, the best is to have a look at the video opposite made by Eddy Matzger! He suggests a whole series of drills to master the DP.

Chapter 4 : How to Roller Skate: 12 Steps (with Pictures) - wikiHow

*The technique of skating [Otto Hägin] on www.nxgvision.com *FREE* shipping on qualifying offers.*

Set down the next foot before the previous leg-push finishes pushing, to minimize any "dead spot" gap in the stroke-cycle, and to support the push of the other foot. The force needed to "try to hold" the next foot net of some across-the-body transmission losses is added to the pushing force through the other foot. Another way to look at it is that having the next foot down already gives the other foot something to push against. If the next foot were not on the ground, more of the work of the other foot would be going into moving the mass of the upper body faster sideways, instead of immediately propulsive. The faster sideways motion can be converted into propulsion in future phase, but there is some power lost in that conversion. Think of the position at the end of the Recovery phase as like just having lifted the second foot after completing the first step the main "cross over" of a cross-over stroke. Then phase ip0 is like the cross-over second foot set-down, and phases U1 and U3 are like the cross-over second push on a curve toward the side of the in-pushing leg toward the outside of the curve, which is toward the inside of the in-pushing leg. But then instead of starting the first step of the next cross-over stroke to keep curving, pivot and push the other way to send the body toward moving straight ahead forward. Foot is started back outward sideways a little just before the foot lands. To generate beneficial reactive side-force in acceleration. Foot swings way outside, away from the other foot. Benefits from this move: The main muscle move which does this is the inward-hip-leg-rotation [see more]. Makes it easy to aim the knee inward, with two main benefits -- see below under aim knee inward. Some skate teachers say "the knees kiss". If land the foot way across the centerline on the other side, miss out on much of the range-of-motion for the hip-extension move -- perhaps the biggest propulsive muscle move available. Normally inline speedskaters doing double-push land the foot a bit inside its hip. Not clear to me if this is just an old tradition from normal-push skating. Seems like could get more range-of-motion in the in-push if landed the foot directly underneath its hip, or even a bit outside its hip. But perhaps the biomechanics do not allow much inward-pushing force to be applied from that configuration. Knee and ankle flexed to bring knee and hip low, with foot landing with heel perhaps behind the hip -- definitely not much in front of the the hip. To prepare for maximum propulsive range-of-motion for knee-extension move in phase U3. Landing configuration is different from the Normal-push set-down: Not aiming toward the same side as the pushing leg is the fundamental hallmark of the in-push. Landing with ankle pronated prepares for maximum propulsive range-of-motion in ankle-supination move on phase U1. Delay any ankle-supination move until after landing. The knee is pointed inward at landing or optionally might be straight in the hip-heel-foot plane -- but the knee is definitely not pointed outward. Benefits from pointing the knee inward: This aims more of the in-push force into immediate propulsion through more direct push backwards, rather than delayed reactive side-force transmitted to future phases. Land the ski the minimum edging needed to transmit force to the snow without the ski edge slipping. This phase goes from the landing of the foot until roughly the completion of any ankle-supination move and start of the knee-extension move.

Chapter 5 : The Easiest Way to Ice Skate - wikiHow

How to Ice Skate. In this Article: Article Summary Selecting the Right Materials Mastering the Basics Using the Right Technique Community Q&A While skating on the ice seems intimidating, with the right equipment and a little patience, you can learn how to skate.

There are two areas that you get speed: They must come in that order. Fast feet without proper technique will not produce speed. Do you want to be a great player? Great Hockey Players are finely tuned athletes with great training and conditioning with sculpted muscles for power, speed, agility, and explosiveness reaching peak performance on command even under fatigue. Their skating has become subconscious as they maneuver down the ice cutting, turning, spinning, hitting, passing, and shooting at high rates of speed. Our brains are wired not to hurt ourselves in any athletic move or event. If you are weak turning in one direction due to weak muscles, then your body will slow down to cautiously turn in that direction. If you are lacking balance, then your body will stiffen and straighten up in traffic, trying to avoid a hit or soften the blow, rather than preparing or giving the hit with confidence and strength. Improve your skating skill and you will be able to do everything else on the ice better! Make your skating subconscious and confident so that your brain now looks for openings and opportunities. A Bulldozer Blade does not move the dirt – the Tracks do! A shoulder does not move someone – the LEGS do, that is where the body has the power! Skating is the fundamental in every part of the game! Body Positioning Posture in skating is as important for athletes as it is in any sport, though very little time is spent teaching correct skating posture. The body lean, knee bend, balance, stride, hip, arm and shoulder movement, with your head up are all key posture attributes for proper skating. The PowerSkater allows you to over emphasize the correct techniques. Through proper repetition you will be able to mentally memorize the correct body position as well as good muscle memory. Just 15 minutes a day, 3 to 4 times a week will dramatically impact your skating skill. Coaches and scouts still look for skaters first. Learn the proper technique in the quiet of your own home or facility. The PowerSkater is not forgiving like the ice, for it forces you into proper form. You can make mistakes on the ice and quickly develop bad habits. Your weight should always be transferred to your forward foot that you are gliding on. As you reach the full extension, your other foot is brought forward transferring the weight for the next glide. When your leg is fully extended, your toes are the last point of contact with your weight shifting midway through the leg drive. Refer to the image for foot rest settings. The foot rest is adjustable with Wing nuts allowing the foot rest to be angled as shown. During the return eccentric phase of the pushing leg, which is under load from the resistance cord, you are challenged to control your movement through this weight transfer. This in turn trains your body to balance and maintain perfect form. Balance is required in all skating moves. The elastic cords under a stretch want to snap back therefore your pushing leg is loaded on the push and the return. Hockey players are strong on the push because forward skating movements strengthens the muscles for the push, but never trains the muscle on the return. The PowerSkater is the only machine in the world that will train the concentric muscle push and the eccentric muscle return. Skating skills are the most important part of hockey and quite often the most neglected due to lack of adequate training or ice time. Proper technique is required for all elements of skating, including forward stride, crossover, backward skating, stops and starts. What is the proper technique?

Chapter 6 : Double-push sequence in skating motion technique -- Roberts

Backward skating is one of the most difficult skating technique to master. To become a fluent backward skater, lots of effort and patience is needed. In a game, a player spends nearly half the time skating backwards, and it is especially important to play a solid defensive game.

For over two years my line of choice has been the Nextcast FallFavorite70 shooting head. This line is easily snake rolled without any water disturbance that gives a very stealthy approach. To simulate steelhead into a feeding frenzy one must mimic the egg-laying pattern of the staking caddis. To properly do this I find that increasing the speed of your fly with a downstream mend is the best way. That coupled with a long tapered shooting head gives you a definite advantage. Once you cast the full length of your head make a mend or roll your line downstream to start the motion. The thick part of the belly will move faster in the current and the tapered tip will start swinging the fly much faster to compensate. Essentially you want your fly swimming at 90 degrees or adjacent to the end of your swing. When your fly is skating you only want to see the side and not just the head of your fly. Thereby increasing the speed of your skated fly the steelhead will most likely panic and crush it giving you some of the greatest hits and pulls of your life. There will also be times when you will see multiple steelhead chasing and fighting each other to have the chance to take your fly. The act of Spey casting with the incorporation of entomology becomes a beautiful art form. It is an art that I truly love. To match the hatch or to understand what fly to use I recommend sitting down on a river bank and looking at the rocks that line the river. The shucking of caddisflies or stoneflies is an indicator of what you should use. If you see a shell you will know that bugs are airborne. If you are boiling fish with every cast without hooking into one, change your fly to fine tune your bugs color by matching the hatch. The trick to becoming a successful dry fly steelhead fisher is timing of the barometric changes. In essence, when the air pressure changes the aquatic bug life changes as well. Bugs move about and fish begin to chase them. These are visual indicators that the air pressure is lifting. You can literally feel the change in the air. Boulder gardens are the perfect breeding ground for skating dry flies. Rivers with large boulders are perfect for housing caddisflies and stoneflies. The boulder gardens are runs with large rocks and within each run the rocks help to create housing units for aquatic bugs. For example, the downstream side of a boulder safely protects caddisflies and stoneflies as they live and grow before their emerging stages. There are many great dry fly rivers, but in my estimation there is none better than the Copper. There are other rivers in the area that are excellent examples like the Bulkley, the Morice, the Dean, the Babine and the Thompson. The Copper River sees many people every season and yet there are a lot of areas of overlooked water. Picking the Copper River as my favorite river was easy due to the size and amount of fish I bring to hand every year. I have spent many years fishing and observing the steelhead runs on the Copper and every year my mind is blown by the sheer number of steelhead that grace my life. It fishes 12 months a year starting from the lower parts in the winter and working my way above the canyon in September. February is the worst month due to dismal winter runs of steelhead. I also like the Bulkley River, which has some exceptional dry fly water. But when pressed to pick my second favorite river, the Morice is a close second. The Morice is like a sexy mistress willing to unleash heart-stopping action every time you visit her. On average the fish are smaller than those found in the Copper, but the sheer numbers make up for lack of size. It also takes a willingness to pass up classic steelhead water for the sake of a pursuing steelhead on a different level than most people are willing to try. But a waste of time?

The mechanics of speed skating, as many other endurance sports, can be described by an energy flow equation. With such an equation the influence of suit, local pressure, altitude, shielding, and body position on speed is predicted.

Cross-country skiing sport Norwegian skiing regiments organized military skiing contests in the 18th century, divided in four classes: In Norwegian, langrenn refers to "competitive skiing where the goal is to complete a specific distance in groomed tracks in the shortest possible time". In Norway, ski touring competitions Norwegian: It became widespread during the s after the success of Bill Koch United States in Cross-country Skiing Championships drew more attention to the skating style. Norwegian skier Ove Aunli started using the technique in , when he found it to be much faster than classic style. While the noun ski originates from the Norwegian language , unlike the English skiing there is no corresponding verb in Norwegian. Nansen referred to the activity of traversing snow on skis as Norwegian: He further noted that in some competitions the skier "is also required to show his skill in turning his ski to one side or the other within given marks" at full speed on a steep hill. Nansen regarded these forms i. Recreation[edit] Ski touring in untracked terrain. Recreational cross-country skiing includes ski touring and groomed-trail skiing, typically at resorts or in parklands. It is an accessible form of recreation for persons with vision and mobility impairments. A related form of recreation is dog skijoring â€”a winter sport where a cross-country skier is assisted by one or more dogs. Ski touring[edit] Ski touring takes place off- piste and outside of ski resorts. Tours may extend over multiple days. Typically, skis , bindings , and boots allow for free movement of the heel to enable a walking pace, as with Nordic disciplines and unlike Alpine skiing. Ski touring can be faster and easier than summer hiking in some terrain, allowing for traverses and ascents that would be harder in the summer. Skis can also be used to access backcountry alpine climbing routes when snow is off the technical route, but still covers the hiking trail. In some countries, organizations maintain a network of huts for use by cross-country skiers in wintertime. For example, the Norwegian Trekking Association maintains over huts stretching across thousands of kilometres of trails which hikers can use in the summer and skiers in the winter. Cross-country skiing trail Groomed ski trails for cross-country in Thuringia , track-set for classic skiing at the sides and groomed for skate skiing in the center. Groomed trail skiing occurs at facilities such as Nordmarka Oslo , Royal Gorge Cross Country Ski Resort and Gatineau Park in Quebec , where trails are laid out and groomed for both classic and skate-skiing. Such grooming and track setting for classic technique requires specialized equipment and techniques that adapt to the condition of the snow. Trail preparation employs snow machines which tow snow-compaction, texturing and track-setting devices. Groomers must adapt such equipment to the condition of the snowâ€”crystal structure, temperature, degree of compaction, moisture content, etc. Depending on the initial condition of the snow, grooming may achieve an increase in density for new-fallen snow or a decrease in density for icy or compacted snow. Cross-country ski facilities may incorporate a course design that meets homologation standards for such organizations as the International Olympic Committee, the International Ski Federation, or national standards. Standards address course distances, degree of difficulty with maximums in elevation difference and steepnessâ€”both up and downhill, plus other factors. Cross-country skiing sport Cross-country ski competition encompasses a variety of formats for races over courses of varying lengths according to rules sanctioned by the International Ski Federation FIS and by national organizations, such as the U. The FIS Nordic World Ski Championships have been held in various numbers and types of events since for men and since for women. Since , the World Championships have been held in odd-numbered years. Other sanctioned competition[edit] Cross-country ski marathons â€”races with distances greater than 40 kilometersâ€”have two cup series, the Ski Classics , which started in , [34] and the Worldloppet. For each shooting round, the biathlete must hit five targets; the skier receives a penalty for each missed target, which varies according to the competition rules. Standard orienteering maps are used, but with special green overprinting of trails and tracks to indicate their navigability in snow ; other symbols indicate whether any roads are snow-covered or clear. Standard skate-skiing equipment is used, along with a map holder attached to the chest. It is one of the four orienteering disciplines recognized by the International Orienteering Federation.

Upper body strength is especially important because of frequent double poling along narrow snow trails. Paralympic cross-country skiing includes standing events, sitting events for wheelchair users, and events for visually impaired athletes under the rules of the International Paralympic Committee. These are divided into several categories for people who are missing limbs, have amputations, are blind, or have any other physical disability, to continue their sport. Cross-country skiing has two basic propulsion techniques, which apply to different surfaces: The classic technique relies on a wax or texture on the ski bottom under the foot for traction on the snow to allow the skier to slide the other ski forward in virgin or tracked snow. With the skate skiing technique a skier slides on alternating skis on a firm snow surface at an angle from each other in a manner similar to ice skating. Both techniques employ poles with baskets that allow the arms to participate in the propulsion. Specialized equipment is adapted to each technique and each type of terrain. Both poles can be used simultaneously "double-poling", or alternating, in classic the alternating technique is most common the "diagonal stride" while in the skating technique double poles are more common. It is also the most usual technique where no tracks have been prepared. With this technique, each ski is pushed forward from the other stationary ski in a striding and gliding motion, alternating foot to foot. With the "diagonal stride" variant the poles are planted alternately on the opposite side of the forward-striding foot; with the "kick-double-pole" variant the poles are planted simultaneously with every other stride. At times, especially with gentle descents, double poling is the sole means of propulsion. Skate-skiing usually involves a coordinated use of poles and the upper body to add impetus, sometimes with a double pole plant each time the ski is extended on a temporarily "dominant" side "V1" or with a double pole plant each time the ski is extended on either side "V2". Skiers climb hills with these techniques by widening the angle of the "V" and by making more frequent, shorter strides and more forceful use of poles. The step turn is used for maintaining speed during descents or out of track on flats. Equipment comprises skis, poles, boots and bindings; these vary according to: Technique, classic vs skate Terrain, which may vary from groomed trails to wilderness Performance level, from recreational use to competition at the elite level [39] Main article: Ski Cross-country ski equipment for skate-skiing left and classic-style skiing right. Ski and pole lengths are different for each. Classic skis have a "grip zone" in the area under the binding. Skis used in cross-country are lighter and narrower than those used in alpine skiing. Ski bottoms are designed to provide a gliding surface and, for classic skis, a traction zone under foot. The base of the gliding surface is a plastic material that is designed both to minimize friction and, in many cases, to accept waxes. Length affects maneuverability; camber affects pressure on the snow beneath the feet of the skier; side-cut affects the ease of turning; width affects forward friction; overall area on the snow affects bearing capacity; and tip geometry affects the ability to penetrate new snow or to stay in a track. Designed for skiing in tracks. Accordingly, these skis are classified as "waxable" or "waxless". Recreational waxless skis generally require little attention and are adapted for casual use. Waxable skis, if prepared correctly, provide better grip and glide. Designed for skiing on groomed surfaces. The entire bottom of each skate ski is a glide zone prepared for maximum glide. Traction comes from the skier pushing away from the edge of the previous ski onto the next ski. Designed for ski touring on natural snow conditions. Recommended lengths are between and centimeters for adult skiers, depending on height and weight of the user. Back country skis are typically heavier and wider than classic and skate skis; they often have metal edges for better grip on hard snow; and their greater sidecut helps to carve turns. Sidecut on Telemark skis promotes turning in forest and rugged terrain. Width and short length aid turning in loose and deep snow. Longer, narrower and more rigid skis with sharp edges are suited for snow that has been compacted by wind or freeze-thaw. Touring ski design may represent a general-purpose compromise among these different ski conditions, plus being acceptable for use in groomed tracks. Traction may come from a textured or waxed grip zone, as with classic skis, or from ski skins, which are applied to the ski bottom for long, steep ascents and have hairs or mechanical texture that prevents sliding backwards. Three classes of glide wax are available, depending on the level of desired performance with higher performance coming at higher cost. Hydrocarbon glide waxes, based on paraffin are common for recreational use. Race waxes comprise a combination of fluorinated hydrocarbon waxes and fluorocarbon overlays. Either combined with the wax or applied after in a spray, powder, or block form, fluorocarbons significantly improve the glide of the ski and are widely used in cross-country ski races.

This comes either from a texture, designed to slide forward but not backwards, that is built into the grip zone of waxless skis, or from applied devices, e. Grip waxes are classified according to their hardness: An incorrect choice of grip wax for the snow conditions encountered may cause ski slippage wax too hard for the conditions or snow sticking to the grip zone wax too soft for the conditions. In these conditions, skiers opt for a stickier substance, called klister. The skier clicks the toe of the boot into the binding and releases with the button in front of the boot. Ski boots are attached to the ski only at the toe, leaving the heel free. Depending on application, boots may be lightweight performance skiing or heavier and more supportive back-country skiing. There are three primary groups of binding systems used in cross-country skiing in descending order of importance: Boots and bindings have an integrated connection, typically a bar across the front end of the sole of the boot, and platform on which the boot rests. Two families of standards prevail: Both systems have variants for skiing on groomed surfaces and in back country. These systems are the most common type of binding. A cable secures the free-moving heel and keeps the toe of the boot pushed into a boot-gripping section, used primarily for back-country and telemark skiing. Ski pole Ski poles are used for balance and propulsion. Modern cross-country ski poles are made from aluminium , fibreglass-reinforced plastic , or carbon fibre , depending on weight, cost and performance parameters. Formerly they were made of wood or bamboo. They feature a foot called a basket near the end of the shaft that provides a pushing platform, as it makes contact with the snow. Racing poles feature smaller, lighter baskets than recreational poles. Poles designed for skating are longer than those designed for classic skiing.

Chapter 8 : Resources for Learning Ski Skating -- cross country skiing -- Roberts

The xc skiing skating technique: the V1 skating on left side. More information about the technique V1 skating on left side please visit: www.nxgvision.com

Skate[edit] An inline speed skate is a specialized shoe version of the inline skate. The lower part of the boot is usually made of carbon fiber and the upper part with leather. This also protects the boot from getting damaged on hitting other boots during a race. It is also quite common to have boots custom-made for improved fit. Skin blisters due to friction can be a problem, and common solutions include: The frame sometimes called the chassis or plate which holds the wheels is made of aircraft-quality aluminum , magnesium, and new developments in technology have allowed Carbon fiber. Frames flex during skating, and the amount of flex can be a personal factor in which one to choose. Very "stiff" frames are usually favoured by heavy skaters. A frame which is too stiff for a particular skater may feel unstable on corners, and a frame that is not stiff enough will be slower. Frame stiffness also works along with boot and wheel stiffness, so there are endless possible variations. A light frame is desirable. Ideal frame length is affected by foot size and wheel size. A slightly shorter frame is often preferred for the tight curves of smaller tracks but is slower. A longer frame is faster but much harder to turn. It may take a skater several days to weeks to test and adjust the frame position of his new skates. The typical Inline mounting is mm, which is different from the ice mounting of mm. The frame usually mounts three, four, or five polyurethane wheels. Five-wheel frames with smaller wheel have lost favor. Each wheel contains two ball bearings with an aluminum spacer, held in place with an axle screwed into the frame. Larger wheels require better skating technique, so skaters generally progress upwards in wheel size as they gain experience. In Powerslide German inline skate company introduced a mm wheel to be used on a 3-wheeled frame varying in sizes from We will be grateful for the spread of this information and we take this opportunity to send you. So, speed skaters tend to select the hardest possible wheels, with the highest polyurethane durometer for their skating condition, limited by either wheel slip or surface roughness. Durometer selection is also affected by skater weight, and temperature. Wheels for indoor use are hardest with a durometer of 88â€” They tend to last well, but can be easily damaged if used outdoors. Wheels for outdoor use are softer with a durometer of 82â€”87, and tend to wear more quickly. Harder outdoor wheels can also be used effectively indoors. Skaters sometimes combine different hardness wheels on the same skate in an attempt to achieve the best combination. Skaters also refer to wheel "rebound". This refers to the relative height to which a dropped wheel rebounds. It is a reasonable comparative indicator of the relative energy absorbed by elastic hysteresis of a wheel during skating. Bearing sizes have been standardized around the popular series. A smaller and lighter series has had limited acceptance. Bearing manufacturing precision generally run from ABEC -1 to ABEC, and some skate bearings are additionally designed to be "loose" to minimize ball rolling friction. Various grades of steel offer better hardness, rust resistance etc. Bearings with ceramic balls and races have been available since the late s, They are lighter and longer lasting, however significantly more expensive. Black silicon nitride ceramic is superior to white zirconium dioxide ceramic, since it is considerably harder and tougher. At the modest rotational speeds encountered in skates, manufacturer data suggests negligible difference in friction performance between the various bearing materials. At these speeds, ball bearing friction tends to be dominated by seals and lubricants. Bearing shields reduce the entry of dirt into the bearing. Metal and rubber non-contact shields are commonly used, of which rubber shields are slightly more effective. Neither shield type is totally effective, often resulting in the need for bearing maintenance. The ball retainer is usually made of either metal, plastic, or glass. Plastic types are preferred since they are quieter. Bearing lubrication is usually either light oil or grease. Synthetic types last longer before breaking down. Grease assists in holding dirt away, and stays in the bearing longer, reducing maintenance and increasing bearing life. The lifetime of bearings used for outdoor speed skating is often quite limited due to damage caused by dirt ingress. These bearings are usually cleaned by soaking them in petrol overnight and then cleaning the dirt. In search of the maximum speed the principal goal is to minimize wind resistance, hence the use of skinsuits, special helmets and techniques. The second issue is elastic hysteresis

energy absorption in the wheel. The distant third is bearing internal friction, a set of bearings in good condition, properly inserted and lubricated is normally enough. Technique and control[edit] Competitors warming up before a race. Mechanically, strokes in speed skating are deeper and faster to a sharper angle, closer to the point of losing traction than recreational skating but not as deep or as fast as in ice speed skating. This is because of the greater frictional forces in the direction of travel and lesser ability to apply friction without slipping of wheels on a hard surface compared to a steel blade on ice. Speedskaters move each foot across the center line of travel, leading to the double push , a method named by United States skater Chad Hedrick this is a normal efficient skate technique that is learned as skater gets comfortable with skates. The technique allows two pushes in each stroke of the skate. However, it can be tiring for inexperienced skaters who have improper technique and they will often save it until needed, such as the latter stages or final sprint of a distance race. With proper execution, the double push is an energy saver. The double push is mostly used in outdoor racing and the straightaways of indoor skating. During Sprints, skaters need to initially push their body with force to get a jump start. For this they tend to take quick and sharp strides. Once they have achieved a good pace, they move to taking comparatively longer strides. Speedskaters also need to take care of their body posture during all of this. They usually bend from their knees to maintain a low posture. This has two advantages. Turning is significantly more difficult with inline speed skates than recreational skates because of more and larger wheels, creating a longer wheelbase. The wheel profile, that is, the cross-section, is parabolic, with a sharper shape than recreational or aggressive wheels, allowing the skater to essentially skate on a smaller, and hence more agile, wheel when leaned over in a turn. Brakes are not generally used on speed skates so various other techniques to slow down are used, such as slaloming skating s-curves or v-plowing or "snow-plowing" , where the heels are pushed outward and the toes inward. The v-plow is often the stop used in situations where there is little lateral and forward room to stop. One technique is the T-stop, essentially dragging one foot perpendicular to and behind the other, however this wears the wheels of that skate quickly. Another stop involves picking up one foot and setting it down quickly and repeatedly somewhat perpendicular to the forward motion while keeping weight on the other foot. Hockey stops are possible on speed skates, but require a very deep lean in order to cause the wheels to lose traction and slide, also the fact that wheels are sliding means that the wheels are also wearing down very quickly. Grass runouts are always a last option, given an adjacent grassy area. An inline speedskater takes much time to stop and often has still fewer options in an emergency, often taking several hundred feet on a level surface to come to a stop at a full, controlled deceleration. Thus, a skater should be familiar with and proficient in stopping techniques before attempting difficult situations such as heavily travelled roads or hills. Training[edit] Inline speed skating requires professional athletes to go through intense physical training. A strict diet and a rigorous training schedule has to be followed. The training schedule is mainly designed to build and maintain strong thighs and calves. But skating, just like swimming, requires the use of the whole body. Therefore, it is critical that the whole schedule is well balanced to attain and maintain a sturdy upper-body too. Also, a flexible upper body is preferred, which could help in maintaining the balance of the body in a better way. A heavy, protein-rich diet is required to be followed. Wheels and bearings used for practice generally require much more efforts to gain some momentum and speed, as compared to the ones used in competitions. Ultra distance training requires years of training, time, and dedication to reach world class levels. Tactics[edit] Tactics in outdoor inline racing are similar to those of marathon ice speed skating and of road bicycle racing. Skaters tend to form packs or "pacelines" also called "pelotons" in which skaters line up behind a lead skater and try to match their strides, thereby saving energy by skating in his draft. Sportsmanship requires that skaters in the paceline share the duty as paceline leader. Those who never "take a pull" at the front will likely find other skaters tactically working together to defeat them. During the course of a race skaters may make "attacks", speeding up the pace in an effort to weed out the weaker and slower competition. These attacks may include "breakaways" and "fliers", in which skaters try to create new smaller and faster packs or else to escape entirely from the other skaters. Depending on the length of the race and the skills and the cooperative effort of the chasers, these breakaways may or may not prove successful. If a skater escapes a pack in order to join a successful breakaway group, it is known as "bridging up". When skaters who are member of teams participate in a race

together, they often have pre-determined roles. One or two would be designated attackers whose role it is to tire out the competition. Another skater may be the designated winner for the team, and he may avoid chasing any breakaways until late in a race, possibly until the final sprint if the lead pack has never broken up. Quad speed skating[edit] Quad roller-skating racing is the precursor to the popularity and acclaim received by competitive racing on in-line skates. Up until all World Championships were held on quad skates.

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