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**Safety, Skating & Stopping**

**Safety: Important Warnings**

4.1 Always wear a **Helmet**.

4.2 Always wear **Wrist and Elbow Protection**

4.3 **Maintaining control** or stopping while skating at speed requires skills that are learned through practice and experience. Only skate in environments that are suitable and safe for your skating skills & ability that do not place yourself or others at risk of injury.

4.4 Maximum **Weight** of skater fully clothed with backpack or other luggage is **100kg**. Carbon parts and tyres are only tested and rated to 100kg.

4.5 Always have **wheel-protectors** fitted to your wheels to prevent scratching and wearing through the carbon on the outside of the wheels, if they contact a wall or curbing, or when you fall, particularly at speed on road or paving.

- Carbon fibre although light, stiff and strong has very low wear resistance and similar to charcoal it will scratch and wear very easily.

- There is no warranty coverage for wheels damaged or worn as the result of accidents. When you fall you need to have your wheel-protectors fitted otherwise repeated falls and scraping will wear through and weaken the wheels and replacing them will become an added expense.
4.6 Always have plastic foot protectors fitted to the inside lower edge of your foot supports to prevent damage and scratching when you fall.
- Carbon fibre although light, stiff and strong has very low wear resistance and similar to charcoal it will scratch and wear very easily.

- There is no warranty coverage for damaged or wear as the result of accidents.

4.7 Never skate with flat or partially flat deflated tyres, because it will damage the thread in the side wall of the tyre making them susceptible to blowouts after the next re-inflation. You will know when you start losing tyre pressure because you will lose power/control in that skate; it may feel like something is broken and skating will be more difficult. Stop skating and squeeze tyre to check pressure and if pressure is down, fix the leak and reinflate tyre before continuing.

Example of tyre blow-out, after threads in wall were damaged as a result of skating on flat tyre

4.8 Never use with Worn Tyres: tyres need to be regularly checked and replaced as soon as the threads of the fabric casing start to appear through the worn rubber or if there appears to be damaged or frayed thread in the wall of the tyre.

4.9 Always use tubes with Schrader Valves with rubber casing; never use tubes with Presta Valves or Schrader Valves that do not have rubber casing.

Because the hole in the wheel is designed for Schrader valves with rubber casing; other valves are prone to pull out away from tube because the required retaining nuts cannot be fitted to other types of valves as they need to be positioned so that they avoid hitting the foot-support.
4.10 Always use **Tube Valve Stem Protector Sleeves**: which protect tube’s Valve Stems from fatigue and breaking due to the need to position them out of the way of the foot.

4.11 When fitting a new tube always ensure that the **Tube Valve Stem Protector Sleeves** are correctly positioned so that they align with the shape of the rim.

4.12 Always use **Chariot Skates approved Tyres**: we have developed tyres specifically for wheelskates that have an extra nylon casing that improves strength and reliability characteristics of the side walls to cope with the extra stresses involved during skating which also improve puncture resistance.

4.13 **Beware of Sand**. Wheelskates will skate on most surfaces but they will stop very quickly in soft deep sand. If you are skating along paths or bike tracks that run along beach areas, beware of soft sand that may have blown of spilled across the path as you will have big problems if you hit this at speed: avoid deep sand. A thin layer of sand on the skating surface is OK for skating through but **Wheels will slide** on lose sand or dust, so proceed with caution.

4.14 Never use **Wheelskates for aggressive skating that involves jumps, high impact or grinding**, on or off of ramps or any other structures. Wheelskates are designed for recreatonal use and commuting whereas other types of skates are available that are designed for aggressive skating and grinding.

4.15 Never use if fatigue cracks, fractures or damage by impact is detected, such as from the result of accidents. Skaters will notice if such cracks or fractures are present in the carbon parts because they will flex more, which if significant enough the foot will start hitting the spokes of the wheel: see Assembly Care and Maintenance Instructions 3.13 & 3.14.

4.16 Wheelskates like other high performance products should be treated as **fragile** when in storage or transport/shipping, and heavy objects should not be placed or rested on them or any of the parts.

4.17 Wheelskates and their assorted parts should only be used in conjunction with parts and materials approved by Chariot Skates Ltd.
4.18 Never use steel tyre levers to remove or fit tyres, from or to carbon wheels; use plastic tyre levers supplied.

4.19 Wheelskates and their parts should not be used other than in compliance with the applicable:
- Laws, by-laws, regulations and rules of all kinds
- Chariot Skates Safety Skating and Stopping Instructions
- Chariot Skates Assembly Fitting Care & Maintenance Instructions
5.1 Prior Experience

Although the Wheelskating action and technique is slightly different, it is very similar to Ice-skating and Snow Skiing.
- As in Ice-skating or Roller-skating the skater propels themselves forward by pushing back against the side of the blade or rollers.
- As in Snow Skiing one is able to Slalom down a slope to control speed and slow down.

As with other forms of skating no prior experience is required to learn Wheelskating but it is definitely an advantage to have experience with other forms of skating or skiing.

5.2 Correct Size and Fitting

For optimum performance, ensure that you have the correct size Wheelskates suitably adjusted to your leg length see: Assembly Fitting Car and Maintenance Instructions: 1.4

5.3 Improved Skating Stability

For those who are used to other forms of skates when they first try wheelskates they may get the impression that there is not enough support in front of the large wheel and may feel less stable and inclined to fall forward, but this is not the case for two reasons:

- The Large Wheel comes in contact with the ground under the ball of the skater’s foot, and is designed that way because we instinctively use the ball of the foot to stop ourselves from falling forward and as a pivot point when turning.
- The Large Wheel has its axis of rotation positioned well above the foot which lowers the Centre of gravity increasing stability, as when you lean or fall forward the position at which the wheel comes in contact with the ground moves form under the ball of your foot to in front of your foot, so it is also like having a wheel in front of your foot for support as well.

In this picture the right (front) wheel is touching the ground under ball of foot; but the left (rear) wheel is touching the ground well in front of the left foot providing forward support.

Having the ball of your foot over where the wheel comes in contact with the ground is similar to snow skis, in that the binding on the snow skis is positioned so the ball of the foot in the centre of the running surface of the ski – the sweet spot. So as with skiing the body position and posture that gives you the greatest amount of balance and control in cornering is to be leaning forward with knees bent and your body weight on the balls of your feet.
5.4 Skating: dynamic differences

The basic skating technique with wheelskates is very similar to skating on inline skates but there are some differences worth noting:

- Skating with a large wheel is different to skating with a row of rollers (small wheels) configured in a flat straight line.
- Wheelskates have mechanically hinged leg and foot supports that allow full extension-flex of the foot whilst skating, unlike boots that restrict ankle and foot extension-flex; yet at the same time provide full ankle support and protection, unlike shoes that provide no ankle support or protection.

Ideally when skating with wheelskates you should be leaning forward so that the majority of your weight is on the ball of your foot so you are effectively just skating with the large wheel. As with other forms of skates you move by pushing out and back (striding) one foot at a time using the sideways resistance of the tyre against the road to propel yourself forward. The difference with wheelskates is that because you are skating with one large wheel instead of a flat row of rollers the skating action is more fluid in that as you stride pushing each foot back, lifting the heel and pointing the toe the one large wheel stays in contact with the ground allowing one smooth action throughout that entire stride: whereas inline skaters tend not to lift their heels as much because as you do, all but the front wheel lose contact with the ground, plus most boots restrict them flexing their ankles, so they tend to us a shorter stride with a more rigid foot action.

Warning: Lifting your heel and pointing your toe as you stride not only increases the length of your stride but also avoids scraping the bottom of the striding foot which can happen if you use a more rigid foot action, similar skating on inline skates.

In Summary: the tips here are to lean forward with the majority of your weight on the ball of your feet and to lift your heels and point your toes as you skate.

5.5 Shoulders! Shoulders! Shoulders!

Good Shoulder positioning & movement is important for great control & great turns.

5.5.1 Posture

Although you need to be leaning forward with the majority of your body weight on the balls of your feet you should have your shoulders slightly back with your back arched backwards (rather than hunched forward) with your chin up and looking towards the horizon.

5.5.2 Moving Shoulders or Swinging Arms

Often when you see people skating at speed you will see them swinging their arms in rhythm with their stride. That is, as you stride (push out and back) with your right foot your right arm should swing across the front of your body to the left. When your right foot has reached the full length in its stride the right arm should have reached the full length of its swing across to the left of the body and the left arm or elbow should have swung out to the left of the body as well in time with the right arm. Then obviously when you stride with the left foot the left arm swings to the right side of your body with the same motion.

This is done to maintain balance but another way to do this is to move your shoulders up and down rather than swinging your arms side to side.

When you see good skaters skating they seem very steady and it appears their shoulders and upper body are hardly moving at all but in fact there is quite a lot of upper body movement in relation to their lower body; a good way to maintain control and balance is to move your shoulders up and down in rhythm to your stride rather than swinging your arms. That is, as you stride (push out and back) with your right foot you lower your right shoulder (& lift your left, then as you stride with your left foot you lower your left shoulder and although for the observer
it may appear that your shoulders are not moving, but in fact the greater the stride the greater the arching to the side between upper and lower body and the great the relative lowering and raising movement of your shoulders in relation to your lower body. Which is great exercise because you have this upper body lower body movement thing happening.

When learning you can practice this which will improve you balance and control by thinking or saying to yourself as you stride: right foot, right shoulder down; left foot, left shoulder down, etc. When accelerating or skating fast you may find it beneficial to swing your arms, in which case you could say: right foot swing right arm left; left foot swing left arm right.

5.5.3 Turning – Shoulders first

When turning, whether it is a long sweeping turn or a short tight turn or flipping around into reverse it is important to lead with your shoulders & upper body; turn your shoulders & upper body first, point your shoulders and looking in the direction you want to go and your lower body will follow. The faster and harder you turn your shoulders, the faster and harder you will turn.

5.6 Skating: Double Push

We have talked about the positioning of body weight and the movement of your shoulders during your stride but after the stride is complete you lift that skate off the ground and reposition it under your body again while you stride with the other skate. The best most efficient technique for this is to do what is called the double push, where the skate is placed far enough underneath your body that for awhile you are skating on the outside edge of the wheels that skate. Tips on how to do this can be found here: http://www.nettracing.com/step1.htm or here http://www.inlineplanet.com/08/05/how-to-double-push.html or search Double Push Skating on YouTube.

5.7 Turns

Because the large wheel on Wheelskates comes in contact with the ground under the ball of your foot and the rear wheel is just behind your foot the distance between them (the wheel base) is shorter than the distance between the front and rear wheels of recreational or speed skates and is similar to that of hockey skates, which means they have the same turning ability of hockey skates, yet with more stability on rougher surfaces. Plus the unique thing that you can do with Wheelskates is that you can lift your rear wheels off the ground by lifting your heels and turn or pivot on just the large wheels – the balls of your feet.

5.7.1 Turning Corners

When turning large corners at speed be leaning forward turning your shoulders, upper body and looking in the direction you want to go while lifting your shoulder that’s on the inside of the corner (see first photo below), while applying the majority of your weight to the ball of the foot that is on the outside of the turn: which if you were turning left you would turn your shoulders & upper-body & look left while lifting your left shoulder (lowering your right); imagine your left shoulder leading pulling your upper-body around the corner as you are leaning forward applying the majority of your body weight to the ball of your right foot. You can also lift your left foot (the foot on the inside of the turn) off the ground, ready to stride when you first come out of the corner.
5.7.2 Crossover Turns

Crossovers are done when wanting to accelerate out of a turn rather than just roll around the corner: When leaning into the corner you cross the skate on the outside of the turn over the front of the skate on the inside of the turn, as you push on the outside edge of the inside skate, then push-out with the inside edge of the outside skate as the inside skate is being repositioned under your body on its outside edge to repeat the action.

So if you are turning left (as shown below) your upper body is leaning forward head and shoulders facing left leaning into the corner, you cross your right foot over in front of your left foot as you push/jump with the outside edge of your left skate. Because of the large wheels and the likelihood of them knocking as you crossover it is helpful to push back as far as you can with the inside skate pointing your toe and lifting your heel with the roll of the wheel and even jumping forward slightly as the outside skate crosses over; then as soon as the right skate touches the ground in front of the left skate you then push that skate out to the right as you bring the left skate back to position under your body on its outside edge to repeat the action. Each push with the left or right skate propels you further left into the corner.

Leaning forward head & shoulders turned into corner  Raising outside (right) skate

Raising outside skate as you push with the outside edge of the inside (left) skate
Swinging arms as outside foot is crossed in front of inside foot. Rear wheel of the inside (left) skate comes off the ground as you push back with outside edge of main wheel...

Skates Crossed over as outside (right) skate touches the ground. Inside (left) foot is fully extended with rear wheel well off the ground.
Side view of crossover

Lifting inside (left) skate off ground as arms returning

Front view as inside (left) skate is returned

About to replace inside wheel back on ground. Arms are now swung to the left

On outside edge of inside skate as lifting outside side skate again
It is helpful to swing your arms when doing crossovers to maintain balance and control which if you are turning left as your right foot crosses over to the left in front of your left foot your right arm needs to swing out to the right of your body. Then as you transfer your weight to and push on your right foot your arms swing to the left as you right foot moves out to the right.

You need to take more care when doing a crossover with wheelskates because of the likelihood of the wheels knocking; so to get comfortable with the idea, when first attempting to do so, it may be best to practice crossovers with a broom stick in each hand, Wheelskates fitted, and while not moving forward cross your skates from side to side (maybe on the carpet inside your house) to get a feel for how much you need jump and kick the inside skate back when crossing over with the outside skate. Then once you feel comfortable with the motion you can then practice doing crossovers in a large flat area like a basket ball court and do them in a figure 8 so that you practice them in both left and right turns.

Because Wheelskates are designed for commuting and cruising in big open spaces at reasonably fast speeds and not small confined skating rinks there is less need accelerate out of corners so less need to do crossovers, but it can be done and being able to do so will improve you skating skill in other areas (such as the double push) as you get used to pushing with your outside edges.

5.7.3 Turning with rear wheels off the ground.

Tighter turns can be made lifting both rear wheels off the ground by leaning forward with all your body weight on the balls of both feet and lifting your heals as you turn your shoulders into the corner. This can be done in a sweeping action with the leg on the inside of the turn bent with that foot in front of the straighter outside leg and foot; or you can quickly left both heels and pivot on the balls of your feet a 180° into reverse or if you are going slow enough pivot 360°, 540°, 720° or whatever. The speed and the amount of the turn being determined by how fast or hard you lean and lead with your shoulders.
5.8 Slalom like skiing to control speed

Slalom: a series of turns down a slope, which can be used to maintain and control speed or slow down to a stop. In as much as you use the resistance of the sideways force of the main wheel against the skating surface to propel your way forward, you can use the resistance of the sideways force of the wheels in a series of turns to slow yourself down. With practice by adjusting the position of your body weight and adjusting how sharp you take the turns and thereby how much forward resistance is applied to the wheel you can control how much you slow yourself down.

- The slalom turns are achieved in a similar fashion to regular turns, in that your shoulders lead you into the turns, with the difference being that instead of turning your head with your shoulders you keep your head and eyes facing down the slope in the direction of travel.
- The motion is similar to that of skating and turning at the same time, in that when you skate you stride alternately with left and right leg; except that now those alternate strides are used to initiate turns instead of propelling yourself forward.
- So let’s say you are going down a slope: you turn your shoulders to the left, (instead of a slow turn of your shoulders left it is more a stab or twitch of your right shoulder to the left while at the same time lowering it, to initiate the turn) applying weight to you right skate lowering your right shoulder lifting your left skate off the ground, you lower body is now turning to the left your right skate is on the downhill side of your body applying resistance to the downhill/forward direction. You then lower your left (uphill) skate to the ground in such a way (on its outer edge, sideways to the slope, facing left) that it applies resistance to the downhill/forward direction; you then turn your shoulders to the right lowering your left shoulder and apply your body weight to the left skate putting it into a right turn as you lift your right skate from the ground. Your left skate is now travelling to your right applying downhill/forward resistance to the slope. All the time you are leaning facing downhill/forward resistance to the slope. All the time you are leaning facing the downhill direction of travel: not looking down and not following the shoulders left and right.

- Note if you apply your weight to the ball of your foot and your large wheels your turns will be smoother but will not apply much resistance and slow you down as much as if you apply more even pressure to between the front and rear wheel.
- Also when placing the uphill skate back on the ground after a turn you can place it slowly and lightly drag it like doing a short T-stop before going into the next turn to further control your speed.
- Remember you should be leaning forward facing downhill and the shoulder on the downhill side should be lower than the shoulder on the uphill side. To help with this when you say turn your shoulders to the left you can swing your right arm to the left in a low short arc, reach towards the ground as your right shoulder follows it will stay low and you can also be conscious of keeping your left shoulder up at the same time.
- Although your downhill side shoulder is kept low, your head should be held up toward the horizon, facing the downhill direction of travel: not looking down and not following the shoulders left and right.
- All this will help keep your weight comfortably on the ball of the required foot, and help maintain good posture, balance and control.
- These motions and positions may seem awkward at first, but if you keep them in mind with practice they will become a natural flowing rhythm. You can even practice these motions before going out skating.
5.9 Stopping

As with other forms of skating there are several different stopping techniques that can be used but like other skating skills the different stopping techniques require practice and skill to execute properly. Skaters should only skate in environments that are safe and appropriate for their stopping ability.

5.9.1 Hand-held Brakes

The Hand brakes that Chariot Skates included with your wheelskates which can be attached to most commonly available wrist guards look simple enough to use but there are techniques and skills that need to be learned to stop with them safely and effectively.

- Initially when you first start using them you will need to look down at the wheels to locate them on the surface of the wheels, but with practice you can do this without taking your eyes off the road.
- Apply the front end of the braking surface to the wheel first; then apply the rest of the braking surface by lowering your hand as you lower yourself into a squat.

- The rotating wheels will pull your hands forward and you apply braking pressure by pulling back on your hands as you squat down lowering your backside which counteracts the tendency to fall forward. The lower you squat, the harder and faster you will be able to apply braking and stopping pressure to the wheels.
Initially you will find that if you apply more pressure to one wheel than the other that wheel will slow down faster than the other so you will start to turn, which will make you feel uneasy and out of control. You can overcome this by just applying the hand brake to one of the wheels as you push that wheel slightly forward while balancing mostly on the other wheel consciously steering yourself in a straight line by controlling its direction with that foot/leg etc. You will also find you will stop faster the further you push the wheel that you have applied the break to out in front of you squatting lower as you pull back on the brake.

Once you have gotten good at stopping with just say your right hand and wheel then you can practice with just your left hand and wheel. Then with practice you will feel comfortable controlling direction and stopping with both hand-brakes on both wheels, although as you do you will find it more stable if you balance with most of your weight on your strongest leg as you squat while applying more braking pressure to the wheel on your weaker leg as you push it out in front of you.

You will find that the lower you squat the more braking pressure you can safely apply and the faster you will stop.

To apply extra stopping force you can not only apply downward pressure to the tyre but also when the tyre is within the curve of the braking surface you can twist the surface against the side walls of the tyre by moving your wrists in or out.

Tyre wear with handheld brakes because of the radius inside the braking surface when you apply it to the tyre does not wear the centre of the tyre where most of the wear occurs from normal skating, but rather wears tread on either side of the centre which is a good thing because it helps to maintain a round profile on the tyre rather than developing a flat profile that occurs with normal tyre wear.

5.9.2 T-Stops

With inline skates a lot of them are fitted with a brake stop at the rear of the right skate but you will notice that with the high end skates particularly the speed skates or hockey skates they do not come with brakes fitted: the reason being the experienced skaters can stop without them by doing either a T-Stop or if they are very experienced a hockey stop.

A Hockey stop is not going to work with wheelskates because besides the fact that its rubber tyre is going to grip a lot better than the PU skate wheels that slide well, their configuration is such that when leaning into a hockey stop you would grind out the bottom of the carbon foot.

To learn to do a T-Stop you need to be a reasonably good skater who can balance comfortably on one skate while dragging the other foot/skate sideways behind you. See stopping video on our website. There is a range sites online that have good instructions on learning to T-Stop some include videos.

5.9.3 Comparison and Summary of Stopping Methods

For the experienced skater who can comfortably balance on one skate the T-Stop is a very effective way to stop because it can be initiated quicker without the need to squat down and requires less physical energy to apply. For the not so experienced the Handheld Brakes still requires practice to use effectively but offer a reassuring alternative that requires less skating ability.

It is recommended that beginner and intermediate skaters learn and experiment with both methods and go with which every method they feel most proficient at, but ultimately the experienced skater who is good at T-stops should be able to stop more effectively doing a T-stop.

The benefits of using the handheld brakes are that they will help to maintain a round profile on your tyres and make them lighter as they wear from regular skating plus they offer extra protection for your hands and wrists when you fall.
5.10 Getting up after falling

There are obviously numerous ways to get up after falling but one thing that will help for someone who is not used to Wheelskates is to stop at least one of the large wheels from turning as you get up.

One method is to sit with your backside on the ground and your feet/wheels flat on the ground in front of you. Hold say your right wheel with your right hand to stop it rolling away and then, using your left hand on the ground, push yourself up onto your stable right foot/leg and proceed to stand up. At some point in getting up you may want to transfer your left hand to left wheel to steady that but it is not usually necessary. Of course, left handed people or people with stronger left legs may which to hold and support the left wheel with their left hand to begin with.

If someone offers to give you a hand up it is best to hold one of your wheels with one hand while they pull on your other hand, and if they footed one of your wheels so that you don’t roll into them that would help.

Better skaters that are used to and feel very natural & comfortable with them can get up without holding a wheel, because they can position the wheels and their body weight in such a way that the wheels will not move as they get up, or if they do it is not an issue as they will use the momentum to get mobile again as they are getting up.

Please note: Always wear protective gear. Like snowing, skiing or any form of skating, you will risk falling when riding Chariot Skates. Even after hundreds of hours experience I – the inventor – still occasionally fall. Without protective gear I would have sustained serious injury.