

WEST COAST STYLE

MOUNTAIN BIKING INSTRUCTION

BASIC REAR WHEEL LIFT



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BASIC REAR WHEEL LIFT

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Introduction

In this lesson you learn to how to get the rear wheel over obstacles, how to soak your riding buddies with a *puddle stomp* and how to put a *rolling tail-whip* into a tight turn. We show you exactly how to control a rear wheel using techniques such as *unweighting*, *lifting*, *grabbing* and *clawing*. And we look at when and where to use these techniques on the trail.

DON'T HAVE THE VIDEO?

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and download

**"Rear Wheel Lifts and
Tail Whips"**

This lesson is suitable for beginner-intermediate riders. You will not apply the front brake to assist a rear wheel lift. Nor will you be asked to pivot your body weight forward and over the front wheel. Be confident that with correct practice you are not headed over the handlebars.

Our instruction shows you how to control the rear wheel using flat pedals. We encourage you to practice with flat pedals. Your reward is better balance and more control.

**STRONGLY
RECOMMENDED!**

**FLAT PEDALS
SOFT-SOLED SHOES
SHIN PADS**

Did you know?

On flat pedals your riding shoes are not clipped in to the pedals.

With flat pedal riding you develop a natural riding style and feel for the terrain.

You will find it harder to lift the rear wheel with flat pedals than with clipless pedals.

Smooth, soft-soled shoes are your ideal choice for flat-pedal riding.

Your flat-pedal shoes should be placed on each pedal so that the arch of your foot, not the ball of the foot, rests on the pedal. With this placement your shoe is less likely to slip off the pedal, you have greater stability through the ankle and it is easier for you to *grab* and *claw* the pedal.

TERMINOLOGY

Unweighting the rear wheel is taking weight off the wheel while keeping the rear tire in contact with the terrain.

Lifting the rear wheel is raising the wheel up and closer to your hips until there is no longer contact between the rear tire and the terrain.

Where to use unweighting and lifting.

Unweight the rear wheel when you want the wheel to roll lightly over rough terrain or over a small obstacle such as a log or rock. With practice you develop a feel for contact between the tire and the terrain: what traction it provides, how firm or soft, how rough or smooth. As you improve your feel for this contact you add finesse to your riding style.

Lift the rear wheel when you want no contact between the rear tire and the terrain. Once the rear wheel is lifted you have options: hold the wheel in the air, return it to the ground or move it to the side. We cover them all in the later parts of this lesson.



UNWEIGHTING



LIFTING



Take a look at the photos above. The riders' shoes are not clipped in to the pedals and yet the riders are keeping their shoes in firm contact with the pedals as they unweight and lift the rear wheels. The techniques for this are *grabbing* and *clawing*.

How to Unweight and Lift the rear wheel: *Grabbing and Clawing*

Grabbing the pedals is used to unweight the rear wheel, to keep the feet from bouncing off the pedals on rough terrain and to hold the rear wheel so it doesn't fall away from the body when the bike is in the air. Grabbing gives you control over the rear wheel.

Clawing is used to lift the rear wheel off the ground. It is also used to pull the rear wheel closer to the body when the bike is in the air.

Here is how you grab the pedals. With the pedals level and equally weighted you extend both ankles so the feet are in a *toe-down* position. Now push the feet down and back on the pedals. Oppose this force with a forward push of the hands into the handlebars. Feel your feet pressing on the pedals and your body wedged between handlebars and pedals.

To claw the pedals you first grab them and then pull up with the feet until the rear wheel lifts off the ground.



Grabbing the pedals and unweighting the rear wheel



Grabbing and Clawing the pedals for Lifting the rear wheel

Compare the two photos one last time. Look at the rider's legs and you will know if the rider is grabbing or clawing. The rider in the upper photo is grabbing the pedals, moving their weight upwards and extending their legs. This rider has just unweighted the rear wheel. The rider in the lower photo has already grabbed the pedals and is shown clawing the pedals and pulling their feet closer to their hips. We see the knees bent and the wheel lifted over the log.

TERMINOLOGY

Grabbing the rear wheel is used in flat-pedal riding to keep the shoes on the pedals. The rider points their toes down, pushes back on the pedals and opposes this force with a push of the hands into the handlebars. The body feels securely wedged between bars and pedal.

Clawing the pedals is very similar to grabbing. The only difference is that after grabbing the rider pulls their feet up towards their hips. It is this action that lifts the rear wheel.

GOALS

In Goal #1 are two static exercises for *grabbing* and *clawing*. Static exercises will show you the key bike and body movements required for grabbing and clawing without actually riding your bike. Goals #2 - #7 are skills that require grabbing, clawing, unweighting and lifting. In general the difficulty of the skills taught in this lesson increases as you progress through the goals.

Many advanced skills also require a grab and claw of the rear wheel. These skills include the Level Lift, Bunny Hop, Dirt Jumping, Manual Front Wheel Lift, 1/4 Punch Front Wheel Lift and the "Wheelie-drop". There is a separate eBook lesson for each of these skills.

Goal 1: Static exercises for *grabbing* and *clawing* the pedals

Goal 2: Basic Rear Wheel Lift

Goal 3: Getting over small obstacles - *Hee-haw*

Goal 4: Getting over larger obstacles - without pedaling

Goal 5: Getting over larger obstacles - assisted by a pedalstroke

Goal 6: Puddle-stomp

Goal 7: Rolling Tail-whip

Practice the goals in order, at your own pace, and with a lot of repetition.

You need two skills for lifting the front wheel in this lesson. They are:

Basic Front Wheel Lift

Pedaling Front Wheel Lift

For more on these skills refer to the *Dictionary of Skills* and to their eBook lessons.

Goal 1: Static exercises for *grabbing* and *clawing*.

These exercises are highly recommended for beginners and riders new to flat pedals.

(i) Off-bike static exercise

- Stand beside your bike with the bike to the right of your body.
- Use one hand to rotate the the left pedal, until it is back at 3 o'clock, and level with the right pedal.
- Put your hands on the handlebars.
- Lock up your front brake. Do not hold the rear brake.
- Put your right foot on the left pedal.
- Push your toes downward so the pedal angles downward.
- Push back on the pedal. Oppose this force by pushing forward on the handlebars. Feel the pressure between foot and pedal. This is *grabbing*.
- Now pull up on the pedal with your right foot. Maintain the pressure pushing back.
- Pull up hard enough to lift the rear wheel off the ground. This is *clawing*.

(ii) On-bike static exercise

- Have an assistant straddle the front wheel of your bike and take hold of the handlebars close to the stem. This person will stabilize the bike while you get on.
- Stand on the pedals in Ready State. Be sure your pedals are level and equally weighted and that your weight is centered on the bike. You will feel some weight on your hands.
- Lock both brakes to keep the bike from rolling.
- Lift the rear wheel. To do so follow the instructions for the Preload” and Lift movements described for the Basic Rear Wheel Lift on page 7.
- Your assistant can steady the bike, observe your form and help correct your errors.



Goal 2: Basic Rear Wheel Lift

Find a flat, open area for practice. Use the information below to guide you. The boxes on the left show the five phases of a Basic Rear Wheel Lift. Read the key points to the right, beginning with the set-up phase and follow all the key bike and body movements performed during each phase. Move on to the next page when you can lift the rear wheel, with ease and consistency, an inch or two off the ground.

SET UP

- Terrain: dirt, gravel, grass or pavement
- Bike: low saddle, easy gear on mid-ring
- Speed: moderate walking pace
- You: Coasting in Ready State -standing with pedals level and equally weighted.



PRELOAD

Preload movements are performed quickly. If the bike has rear suspension the rear shock should compress.

- drop the hips
- bend the knees
- and feel the increase in pressure on your feet.



LIFT

- Push off with the feet, moving the hips up until your legs are fully extended. Hips go up, not forward.
- Then grab the pedals - point the toes down and push the feet back.
- The rear wheel is now unweighted.
- Now claw the pedals and pull your feet towards your body. The knees bend as the wheel comes off the ground. When the rear wheel lifts you will feel more pressure on the hands and an increase in the load on your arms. Brace with the arms to prevent the elbows from collapsing.



CRITICAL INSTANT

The rear wheel lifts off the ground.

RECOVERY

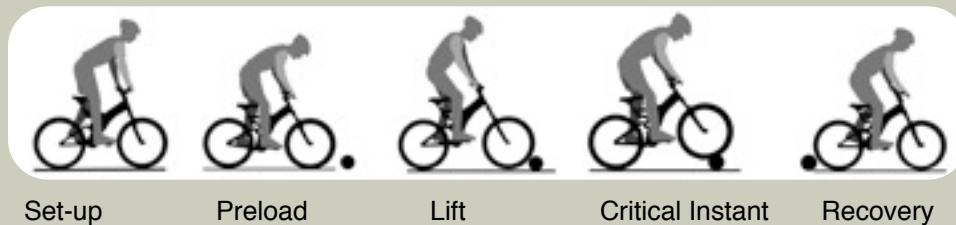
- As the rear wheel returns to the ground use your legs to absorb the impact of landing.
- Ride on in your Ready State



Before you continue with Goal #3 you must know how to lift the front wheel with a *Basic Front Wheel Lift*. The Basic Front Wheel Lift is the easiest of the front wheel lifting techniques. It is a non-pedaling skill, performed while coasting at slow speed, and most often when riding on flat terrain. The most common use of a Basic Front Wheel Lift is to get the front wheel over small obstacles. With adequate momentum and unweighting the rear wheel will also roll over the obstacle.

Summary: Basic Front Wheel Lift (Refer to eBook Lesson #14 for more on this lift).

Set up for the lift by coasting on flat terrain and standing in Ready State. Preload the front wheel by dropping the shoulders. Your elbows will bend and you will feel an increase in pressure on the handlebars and the front tire. Right after the preload explode your shoulders up. Your arms will extend. Immediately pull the handlebars towards your chest. The front wheel will lift. Move to goal #3 when you can lift the front wheel a few inches off the ground, several times in a row.



Goal 3: Getting over very small obstacles - *Hee-Haw*

The *Hee-haw* is a slow-speed skill used to get over very small obstacles. It is a Basic Front Wheel Lift (*hee*) followed by a Basic Rear Wheel Lift (*haw*). Begin by coasting slowly, on flat terrain, pedals level, and in Ready State. Lift the front wheel, recover, and then lift the rear wheel. Do not rush these lifts. If you need to pedal only do so between, not during, the lifts. Add difficulty by repeating the lifts closer together: *hee-----haw*, *hee---haw*, and eventually *hee-haw*. Be sure to keep your speed very slow - a slow walking pace. When successful add timing.

Make a line on the ground and *Hee-haw*, lifting each wheel, over the line. Increase difficulty by putting a water bottle or small stick on the line and lifting each wheel over. On the trail you can *Hee-haw* over small obstacles like slippery sticks and fist-sized rocks. When you are ready for larger obstacles move on to goal #4.

Tips: Keep speed slow. Do not pedal during the Hee-haw. You are not braking during the lifts BUT learn to perform them with a finger on each brake lever.

Goal 4: Getting over larger obstacles - without pedaling.

To get over obstacles larger than a couple of inches, when speed is slow, you can use the Basic Front Wheel Lift and follow it with an **unweighting**, not lifting, of the rear wheel. This is effective for obstacles and logs up to about 8" in diameter. For bigger obstacles you may prefer the Pedaling Front Wheel Lift, explained in goal #5.

Practice:

Coast towards the obstacle at slow speed and in Ready State. Lift the front wheel with the Basic Front Wheel Lift and then **unweight** the rear wheel. To unweight you first preload with the same movements used for the Basic Rear Wheel Lift and then extend the legs and grab the pedals **but** do not lift and claw the pedals. The rear wheel should maintain contact with the log as it rolls over.



Tips:

- If the rear wheel stops or stalls on the obstacle it is not adequately unweighted. Check your body position. Your hips may be too far back, and too low, when you unweight the rear wheel. Extend the legs and move the hips up. You will feel more weight on your hands.
- Sometimes the bike does not have enough momentum to roll over the obstacle. Try this. Lunge the bike forward just after the front wheel clears the obstacle. Do this by pushing the handlebars ahead and extending your arms. If this doesn't work you need to choose a different skill for getting over the obstacle.
- If the rear wheel gets kicked upward instead of rolling over the obstacle, you may be lifting not unweighting. If the rear wheel is lifted, but not so much that it clears the obstacle, it will hit the obstacle and be bumped upwards. On larger obstacles this can be quite unnerving. You could panic, grab the front brake and even endo. The solution is simple - do not claw and lift the rear wheel on obstacles more than a few inches in diameter. Stick with a simple grab and unweighting of the rear wheel.

Goal 5: Getting over larger obstacles - assisted by a pedalstroke.

In this goal we show you how use a Pedaling Front Wheel Lift, and follow it with an unweighting of the rear wheel, to get over larger obstacles. Use these techniques to get the wheels over obstacles up to a foot high on flat terrain, and over obstacles about half that height on a climb.

For a complete lesson on the Pedaling Front Wheel Lift see eBook lesson #21. Below is a short summary of how to perform the lift.

Practice:

1. Coast in Ready State, at a slow walking speed, on flat terrain. Develop your coordination as explained below.
 - Choose a suitable gear: middle ring, and in the 2nd gear down from the largest cog.
 - Set-up for a Pedaling Front Wheel Lift by positioning one pedal at the top of the powerstroke. Lower your shoulders slightly so there is more weight on your hands and front wheel.
 - Now push hard from the top to the bottom of the powerstroke. At the same time push your shoulders away from the bars. The front wheel will lift. The pedalstroke surges the bike forward.
 - Continue to pedal, but with little pressure, through just the top portion of a second pedalstroke. You should **stop** pedaling when this pedal is forward, at 3 o'clock, and both pedals are level. If you used your left foot for the first powerstroke your right foot is now forward. When your pedals reach this level position the rear wheel will have just reached the obstacle. We see this in the photo, below right. Note that this rider used their left foot for the first powerstroke.
 - Unweight the rear wheel:
 - b) extend legs
 - c) move hips up, not forward
 - d) toe-down on the pedals
 - e) push back with the feet to grab the pedals, do not claw the pedals



In this photo the right foot is at the top of the powerstroke.



The right foot has now completed a powerstroke



This rider is unweighting the rear wheel. Their left foot was used for the powerstroke.

2. Add timing.

- On the same flat terrain draw a line on the ground. Approach the line very slowly. Set up with one foot at the top of the powerstroke and pedal hard through the powerstroke just before the front wheel reaches the line. The front wheel should lift over the line. Continue pedaling, a quarter of a revolution, until this pedal is back at a 9 o'clock position. Now unweight the rear wheel as it goes over the line.

3. Progress to a small log, then to bigger logs, to curb heights and higher.

4. Progress to obstacles on a climb. Use a Crouched Climb to approach the obstacle. You should be off the saddle with your shoulders forward and over the handlebars.



Crouched Climb



Tips:

If you find it difficult to position the pedal at the top of the powerstroke with correct timing.

Try coasting a bike length or two before the obstacle and ratchet the pedals back until the foot needed for the powerstroke reaches the correct position.

If your big chain ring is hitting the obstacle. Consider replacing the big ring with a bash guard.

If your rear wheel slides out from under you when it meets the obstacle. The obstacle may be slippery, the rear wheel not adequately unweighted and your lateral balance not good. Stay centred over the bike as you lift the front wheel. Extend the legs to move the hips up for better unweighting of the rear wheel.

If your rear tire spins out when it meets the obstacle. This often happens when you put too much power into the second pedalstroke. The timing of this skill is such that your rear wheel makes contact with the obstacle at the same time as the foot reaches the top of the second powerstroke. To keep the rear wheel from spinning out you must pedal lightly, or not at all, through this stroke. If you need more momentum lunge the bike ahead by extending your arms and pushing the handlebars forward.

If you have not chosen the correct gear. When the correct gear is used the powerstroke moves the bike forward just the right distance and the pedals will be level as the bottom bracket passes over the obstacle. The correct gear is usually the second hardest gear on the mid-ring or one next to this. Use a bit of trial and error.

If you can't decide which foot to use for the powerstroke. Your goal is confidence with the powerstroke using either your right or left foot. Start with the one that feels easier and later practice with the other. Then when an obstacle catches you by surprise you can perform the powerstroke with whichever foot is in the better position for the task. Just make sure you are doing a full powerstroke and continuing to pedal until the power foot is back and the pedals are level. A common error is to *punch* with the power foot through just the top half of the powerstroke and then ratchet the pedal back. This error leaves your power foot forward, not back, with the pedals level.

If you feel unstable after the rear wheel rolls over the obstacle. More experienced riders have a *preferred stance* for riding and are most stable when in their preferred stance. If your preferred stance is *left foot forward* you may feel more confident with this foot forward when you unweight the rear wheel. In this case you must begin the powerstroke with your right foot. Unfortunately, if your preferred stance is left foot forward you will probably prefer to execute the first powerstroke with your left foot. This leaves you **not** in your preferred stance for the unweighting of the rear wheel. This can cause considerable frustration. Try this. Begin your practice with the foot that feels best for the powerstroke. This way you can get the feeling for the coordination and timing of a Pedaling Front Wheel Lift. When successful practice using your other foot for the powerstroke. When you progress to much larger obstacles you will should use the foot that leaves you in your preferred stance for the unweighting of the rear wheel.



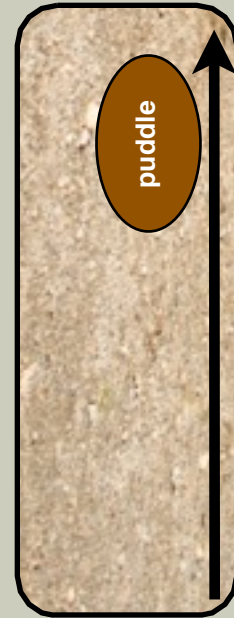
This rider's *preferred stance* is left foot forward.

Goal 6: Puddle-stomp

Use the puddle stomp when riding dirt roads having dips filled with water from a recent rain. Do not use it where stomping puddles adds to the wear on a trail.

Practice:

1. If you are riding with your left foot forward approach so the puddle is on your left.
 - Coast towards the puddle at any speed that is in your comfort zone - slow to moderately fast.
 - When you get close to the puddle you want your wheels very close to the edge of the puddle. Keep the front wheel tracking straight ahead.
 - The movements used during the preload of the rear wheel are the same as those described on page 7. There is an important modification to the lifting moves. Instead of exploding your hips upwards, you must explode the hips up AND TO THE SIDE, towards the puddle. As you claw the pedals the rear wheel lifts up and moves in the same direction as your hips. Time your preload and lift moves so that the rear wheel lands in the puddle.



Safety: Do not use your front brake!

To be effective you want to be riding alongside another rider, with that rider passing on the other side of the puddle. With perfect timing and an element of surprise you'll splash riders within a few feet of your rear wheel.

Tips:

What is your preferred stance? Is it left foot forward? If so you are likely to find it easier to leave the puddle on your left, as shown in the diagram. If you prefer to ride a right-foot-forward stance begin with an approach that leaves the puddle on your right (not shown). **BUT do not change your stance** when you try a puddle-stomp that leaves the puddle on the other side of your bike even though it is harder to move the rear wheel away from the forward foot. The key in this situation is move your shoulders further forward for the preload. There will be more pressure on your hands and you will have better clawing with the forward pedal. You'll find that good clawing on the forward pedal is essential when moving the rear wheel away from the forward foot.

Goal 7: Tail-whip

What it is and where to use it.

A tail-whip is when you lift the rear wheel and move it to the side when the front wheel is turned into a corner. It is a useful skill for corners where you want to change the direction of the bike quickly. It is also useful at any speed - from the slow speeds used to ride tight switchbacks to the high speeds in wide-open corners. You can also use a tail-whip when riding skinny lines with sharp changes in direction. Here the tail-whip repositions the rear wheel when the turn is too tight for both wheels to stay on the line through the direction change. The tail-whip keeps the rear wheel from falling off the edge.



Comparing the set up of the puddle stomp and the tail whip.

When you set up for a tail-whip the front wheel is turned into a corner and the rear wheel is lifted with the front wheel turned. When you set up for a puddle-stomp the front wheel is not turned and the bike is traveling in a straight line. The rider in the photo to the right is doing a tail-whip.

Practice:

1. Begin practice in open area large enough to ride around in small circles. Dirt or pavement is better than loose gravel.
 - Ride slowly in a circle and in a standing ready state. Your front front is turned into the circle. Pedal between, not during the tail-whips. Feel your feet. Your pedals should be equally weighted and level.



Set up



Preload



Lift and move the rear wheel



- If your preferred stance is *left foot forward* you should begin by riding clockwise in the tight circle. If your preferred stance is *right foot forward* ride counterclockwise. The rider in the photos, on the previous page, is using a right foot forward stance.
- Preload and lift the rear wheel as described on page 7 **BUT** with one key difference. When you lift the rear wheel you must explode the hips up and out to the outside of the circle. To keep the front wheel steady move your shoulders forward, placing more weight on your hands and on the front wheel.
- Keep front wheel turned so you are still riding in the circle when the rear wheel returns to the ground.

2. When you can perform several tail-whips successfully turn around and ride the other direction around a circle. You are likely to find this direction more difficult. Do not change your stance.
3. Put the tail whip into slow tight turns that resemble switchbacks. Do this first on flat terrain then progress to a tail-whip in a descending switchback. Keep speed within your comfort zone.
4. As your confidence and skill grows put the trail-whip into more open turns and increase your speed. As speed increases the steering of the front wheel decreases. Eventually you will be doing tail-whips in wide open corners at high speed. Keep your speed well within your comfort zone.



Tips.

On the lift extend the legs and get the hips up high before you grab and claw on the pedals. Use a toe-down position and push both feet back on the pedals.

When the rear wheel lifts you will feel a huge increase in weight on your hands. Don't fight this. The front wheel needs this weight to remain steady. Push your hand onto the handlebars and feel the arms, shoulders, torso and legs firmly wedged between the handlebars and pedals.

With the tail whip it is nice to return the rear wheel to the ground lightly, with finesse, unlike the stomping of the puddle stomp. Do this by extending the legs just before the rear wheel reaches the ground and then using the legs to absorb the impact of the landing.

Note: The tail whip in this lesson is a rolling tail whip: the front brake is not used and the bike is moving forward. In the Rocking lesson we look at the static tail-whip in which the front brake is fully locked and the bike does not move forward.

TRACKING PROGRESS



Basic Rear Wheel Lift: Able to lift the rear wheel a couple of inches off the ground with correct form when coasting on flat terrain.



Hee-haw Lift: Able to lift the front wheel with a Basic Front Wheel Lift and, after the rear wheel returns to the ground, lift it with the Basic Rear Wheel Lift.



Hee-haw Lift: Able to execute the *Hee-haw* over an obstacle no bigger than a water bottle. With correct timing neither wheel touches the obstacle.



Unweighting the rear wheel: Able to get over small obstacles, on flat terrain, lifting the front wheel with a Basic Front Wheel Lift and then unweighting the rear wheel when it reaches the obstacle. With correct timing the rear wheel contacts, and rolls, over the obstacle with very little weight on it.



Unweighting the rear wheel: Able to get over or onto larger obstacles, on flat terrain, lifting the front wheel with a Pedaling Front Wheel Lift and unweighting the rear wheel when it reaches the obstacle.



Unweighting the rear wheel: Able to get over small obstacles, on a climb, by lifting the front wheel with a Pedaling Front Wheel Lift and unweighting the rear wheel when it reaches the obstacle.



Puddle-stomp: Able to lift and move the rear wheel, landing it in a puddle on the left side of your bike.



Puddle-stomp: Able to lift and move the rear wheel, landing it in a puddle on the right side of your bike.



Tail-whip: Able to lift and move the rear wheel to the outside of a right turn at slow-moderate speed.



Tail-whip: Able to lift and move the rear wheel to the outside of a left turn at slow-moderate speed.



Tail-whip: Able to take it to the trail - tight switchbacks and more open corners.