



# The Roller Coaster Ride

## A Mountain Bike Simulation

Created by **Jennifer Sage**

Training Type: **Threshold, HIT, Mountain bike simulation**

Working HR Zones: **Zone 3 to Zone 5b**

Total Class Length: **60 minutes**

### **Profile Description**

This profile is called *The Roller Coaster Ride*. It is a mountain biking simulation of a very fun, twisty-turny, up and down adrenaline-filled single track. The fun single-track however is preceded by a long, hard grind uphill on a jeep trail before we even get to the start of the single track, so there is a large mental component as well. This ride is modeled after many of the single track routes around where I live in the Rocky Mountains, many of which require a very long steady climb anywhere from 30-60 minutes or longer before the “fun” rolling part starts. Of course, not all mountain bike trails have such a long and challenging start like this, but I put it in this profile because it replicates the outdoor challenge so well. It is as much a mental challenge as it is physical, and helps riders appreciate their success so they can enjoy the rolling segments all that much more.

### **Objective and Intensity**

The primary objective is truly to have fun! But the wonderful thing about a ride like this is that buried beneath the fun, roller coaster trail we are riding on, with surges out of the saddle on steep climbs interspersed with some fast flat or rolling segments, is a semi-structured interval ride that is benefiting the rider on many levels. Intensity will vary from just below threshold, to several portions held right at threshold to some very high intensity efforts well into Zone 5b – completely breathless. Because of this high intensity, it is necessary to recovery for a few minutes at lower heart rates every now and then, by imagining being on a plateau or a downhill. This kind of unstructured “intervals” would very closely simulate many of the mountain bike rides I’ve been on. In addition, the long, high cadence climb of increasing difficulty at the beginning requires a concerted mental focus. In a way, this profile has it all!

### **Mountain Bike Technique and Terminology**

There are some differences riding a mountain bike versus a road bike, and these differences have implications in how you coach it indoors. Also, there are some things we do on a mountain bike outdoors that would make no sense to simulate indoors. If you and/or your students are unfamiliar with mountain biking, then you may want to discuss some of the following technique differences in your warm-up and/or in the beginning of the first big climb. There are five things to consider when doing a mountain bike profile. Some of them create great visuals and help inspire students to not back off in their efforts when the going gets tough.

1. Mountain bikes have what is called a “granny gear”. It is a very small gear, a third chain ring in front (a part of the drivetrain on the inside of the right crank). This small ring, or gear, allows riders to pedal up insanely steep sections at a faster cadence. Some road bikes have them as well; it’s referred to as a “triple chain ring”.

But here is our problem indoors: we have one resistance knob or lever that simulates both the *gears* and the *steep hill*. Outdoors, you can shift down to a lower gear, into the granny gear, allowing a higher cadence. There will be less resistance; however, the fact remains that you are still going uphill against gravity, and it will still be challenging and raise the heart rate considerably. Indoors on the other hand, if you simulate shifting down to a lower gear, sure, your cadence can increase, but the resistance necessarily is reduced, taking away your hill. Indoors, we cannot simulate the effects of gravity pulling us downward. For this reason, it is so important to cue a proper resistance that is still *on a hill*. Ignore the fact that outdoors it is possible to pedal uphill at 90-100rpm; for most students indoors, if they are pedaling that fast, they are *most certainly not on a hill*. (\*Note that although a granny gear allows you to pedal quickly up steep hills outdoors, the gear-ratio is so low that the bike does not move forward very fast. Racers or riders intent on speed will use those lower gears very sparingly, and instead will rely on their strength in a higher gear. They also become very technically skilled in using momentum and very fast gear shifting to maintain their speed through quick ups and downs).

The solution: I would keep mountain bike simulations to a “climbing” cadence of up to 85rpm or less, perhaps a little faster for very brief surges. Unless of course, you have a room full of skilled mountain bikers who understand that difference and will keep a good amount of resistance (a “real hill”) even when pedaling faster!

2. A mountain bike has fat tires with knobs that grip the surface of the road/trail. That surface can be loose dirt, sand, mud, hard packed dirt, solid rock, not-so-solid rock, slick rock (famous in Utah), loose gravel, slippery roots, wet leaves, etc. When climbing, your fore-aft body position is important in order to keep the tires in contact with the trail. Standing up is usually not done for very long, and sometimes is impossible depending on the surface. When you stand, the rear wheel is no longer weighted and can lose traction and slip out. Believe me, it is not so fun when that happens! If it does, you have to be skilled enough to sit quickly and regain momentum, or you either fall over or have to quickly unclip from your pedals and put a foot down (and often if it’s really steep, it is very difficult to get going again – see #5).

Use this aspect of mountain biking to inspire students to stay seated for longer periods. That doesn’t mean you can’t stand. On some uphill sections that I’ve described as loose gravel or dirt, I tell my students to visualize a hard packed section of trail and have them stand briefly to give the legs a break. If they need more, we will stand up more often on the flat or slightly rolling segments. But again, uphill standing climbs are limited (unless you are on the slick rock of Utah where tires stick beautifully even on the steepest of uphill sections). Many mountain bikers get their butts out of the saddle for the descents, but we won’t go there indoors!

3. Momentum. On a twisty-turny, up and down trail, riders will use their momentum gained on a downhill to get up the next steep uphill – some of which are too steep if you had to pedal without the momentum. The short rollers are called “whoop-dee-doo” (see, even the names are fun!) They can be as short as 5-10 seconds of up or down. To simulate using momentum indoors, imagine going fast downhill, then as you hit the uphill, coach your riders to load on a good amount of resistance all at once (I’ll even say “slam it on”). Stand up, and let the legs start out very fast, but as you stand the steepness of the hill will slow the legs down over about 5-10

seconds. In a way, you let the legs “absorb” the hill. This is a very realistic way to climb this type of terrain on a mountain bike.

4. Body position. This is very important on a mountain bike and has a lot of implications on what we do indoors. As mentioned earlier, a rider on a mountain bike shifts weight around quite a bit to keep the tires on the ground or to keep them from slipping when climbing; too far forward, and the rear wheel slips; too far back and the front tire lifts off. But it’s also when descending, the rider will move the center of gravity back, by pushing the butt back over the saddle in order to not go “OTB” (over the bars – not a good thing either outdoors or indoors)! She will also move the bike side-to-side underneath her to maneuver between rocks and roots. But guess what? When descending like this, the rider is *not pedaling*. This position, which is essential outdoors, is probably one of the sources of the indoor “hovers” - pushing the butt back over the saddle. However, indoors this position does *not make sense* because you are still pedaling and since gravity isn’t pulling you downhill, there is no need to counter it by moving the hips back. Indoors, riding in this position while pedaling frantically is biomechanically unsound and puts your knee joint at risk (along with other joints). On top of that, if you are a mountain biker it will *not improve* your outdoor descending “hovering” skills. This is one of those skills you have to learn “on the job” so to speak – no indoor drill on a stationary bike will help!

So, indoors, leave any of the maneuvering of the body *out* of your class. Indoors, our bikes *do not move*, and we cannot pretend that they can. Even if you have a bike like a Real Ryder that does move side to side, do not hover, because you are still pedaling a fixed gear bike.

5. If you are pedaling up a very steep hill, if you have to stop for whatever reason (because you physically cannot continue, you lose traction, to take a break, etc) it is very, very difficult to get started up again. You cannot rely on momentum, and the rear tire may lose traction if the surface is loose or slippery, such as dirt, pebbles, or slippery roots. If you are very lucky and skilled maybe you can hold on to a tree and get the bike sideways on the hill to help get started. If this doesn’t work, the rider has to resort to pushing the bike up the rest of that hill. And that hurts! It hurts the lungs, and it burns the legs, back and shoulders; your calves will be screaming. This threat is hanging over your head as you are suffering through a steep section. The possibility of having to stop can be a strong motivator to dig in deep and go as far as you possibly can before it happens.

Sometimes you are lucky and the hill ends before you blow up, other times this is where you push yourself to your maximum level. This is one reason why mountain biking is so much more anaerobic than most road riding. Believe me, this is spoken from the voice of experience! I have never seen my heart rate get so high as on my mountain bike, and it is often when I am trying to avoid having to walk any portion of a steep climb. Sometimes it works....sometimes it doesn’t. The most amazing thing is towards the end of the season when you are able to ride a segment you used to have to walk; that’s when increasing fitness is so in-your-face apparent and exciting!

Indoors, we always have that “way out” with the resistance knob, don’t we? But use creative visuals such as I just described to inspire your riders to dig in deep and push through anaerobic discomfort and not rely on that resistance knob. Indoors, no one will blow-up, no one will have

to dismount or push their bike uphill, but you may take them to heights they've never seen before. And if you do...give them some good recovery afterwards.

Now let's get on our bikes and have some fun on this roller coaster ride!

## The Roller Coaster Ride

### The Warm-up

#### **Song One: Introduction and Initial Warm-up (7 Minutes)**

##### **Final Decree, by Reefer Decree, 7:07**

Get them on a “real” road, where they can feel the resistance underneath their feet, spinning the legs easily, gradually increasing to moderate intensity by the end of the 7 minutes. If you need to explain some of the mountain bike technique differences, this is a good time to do so. Otherwise, simply introduce the ride like this:

*We are about to go on a mountain bike ride in the Rocky Mountains of Colorado! We have a very fun single track ride awaiting us, think of it as an amusement park ride, a roller coaster, with lots of twists and turns and short ups and downs. If you’ve ever ridden a mountain bike, you probably know that you move your body around a lot on the bike to absorb the ups and downs – well, we’re not going to do that indoors, since these bikes don’t move. But we are going to have an adrenaline-filled fun ride! Remember to keep it at your own pace – if you’re ready, willing and able, take it as hard as you want. You can also choose to hold back. This is YOUR ride!*

*You know how roller coasters have to chug up a long section at a slow pace before they reach the fun part? Well... so do we! There is a long 15-minute uphill grind on a jeep road that we have to climb before we even get to the single track. It’s going to challenge you mentally and physically, and it’s going to get increasingly harder and harder. But always remember the reward that awaits you at the top. You can use this for an analogy for a lot of things in your life. **Hard work pays off!***

#### **Song 2: The long grind to the “amusement park”**

##### **2046, by Saafi Brothers, 14:25 (78 bpm)**

This is an amazing song with a consistent fast climbing cadence of 78rpm. If your students are uncomfortable with long songs, this one might change their minds, since it inspires incredible focus, almost like a mantra. When you arrive at the end of the song at the top of the mountain, if your focus has been intense, it is a big surprise that almost 15minutes have gone by! Many have no idea that that much time has passed.

You are going to break the climb into 3 parts. The bottom (5min) is moderately hard, easing into the rhythm and intensity. The middle (5min) is “hard” right around threshold. The final 4 ½ minutes is very hard, several beats over threshold, breathing very hard, but still sustainable. This is the mental challenge, to not let up, to not slow down, to not take the break your body wants, and instead to dig in and make it to the top. The threat of having to walk the bike hangs over your head.

*(The first 5 min) Listen to that rhythm, try to attach yourself to that tempo. Once you do, ease a little more hill underneath you by adjusting that resistance knob. Make sure you feel the hill. Let your intensity rise over the next minute or two to a comfortable challenge. Mother Nature is nice to us right here – she’s allowing this bottom part of this*

*climb to be fairly gentle. It will give you some time to adjust to the climb...because there's a lot more ahead of us.*

(To help them attach to the tempo, I'll hold my hands about 6-8" apart as if they are feet on pedals and move them around to the beat.) *See that? Those are your feet, one/two, one/two, one/two, left/right, left/right, left/right. Got it? You are not going to break from that tempo until we get to the top. Agreed? Make a little pact with yourself. Even if it gets steeper, which it will...latch on to that tempo and do NOT let go.*

Coach as needed, but leave them time to focus on the music, on their pedal strokes, on their cadence, and on their breath. About 4 ½ minutes into it, prepare them for the steeper part ahead:

*Just ahead, it gets steeper. We are all riding up this jeep road at different sections, you might find a section that is hard pack, allowing you to stand up to stretch the legs as needed. But to avoid the risk of your tire slipping out, keep your standing to 20 seconds or less. Let's imagine that right now the road gets steeper, but there aren't as many rocks right here, so we can all stand up. Turn it up (stand for 20 seconds). Now ease back into the saddle and greet this new grade underneath you. Yup, it's going to stay that way for awhile! Your intensity rises to around or just below your threshold. Hold it there – it should be challenging but not overwhelming.*

Again, give them time to focus. A few encouragements over the next 4 minutes, but lots of silence. Just before 10 minutes, get them ready for the steepest part:

*It's no surprise to you that the steepest part is just in front of you, because you knew about it before you started this climb. But often when faced with this kind of challenge, doubt starts to creep in! You know it's going to hurt a little bit. Let's not let that doubt get the better of you. Turn it up and keep your cadence; find a resistance that brings you a couple of beats above your threshold. Yes, this should feel VERY hard, but it should still be something you can hold for 4 minutes, though you will have to talk yourself into it. I'll help you through it.*

(Give them a minute or so to focus) *We have a little more than three minutes to the top. Your legs and lungs should be burning, your mind tells you to stop, your legs tell you to take a break, to slow down, to turn it down. BUT Mother Nature doesn't always listen to us outdoors – **she doesn't turn down the road just because YOU want it to!** She works on her own schedule. Indoors you have that resistance knob so close, so tempting....but do not touch it! I want you to project yourself to a bike outdoors, on a dirt road with loose gravel; if you slow down, your only choice is to stop, or even to fall over...*

***NO! That is not an option.*** *If you have to put your foot down, there will be no starting up again – you will have to push your bike uphill. THAT is EVEN WORSE than this pain!*

*So your only option is to continue. Count that tempo –1/2, 1/2, 1/2, Dig in, you know you can do it. Push through it! I know you didn't come here to quit. It's so close you can taste it.*

(Let them climb in silence until 20-30 seconds left) *You've been so focused, look up, there's the top! Right in front of you! It's steep and rocky here, stay seated, don't fall at the top. Roll it over the summit, and rejoice!*

**Song #3: The top of the climb, and the beginning to the single track  
Gone Daddy Gone, by Gnarl's Barkley, 2:28 (86bpm)**

Here you want to spin the legs easily, recover from the effort you've just put out. Fortunately the harder part of the single track doesn't start right away. Tell them that here they just want to imagine riding onto the narrow path, enjoying the feeling of freedom, and spin the legs easily. We've got two minutes until the rollers start.

**Song #4: First set of "rollers"  
Jiggle of the Sphinx, Hallucinogen, 6:41 (77 bpm)**

The first set of steep rollers. They're going to come in waves. As soon as the song starts, get on a hill, start standing for 15 seconds, then sit. The song picks up in energy at :58, that's when you go downhill.

*Imagine the bike rolling over the top, no plateau to rest on, it immediately goes downhill so you'll start pedaling quickly. Imagine the trail banking left and right, like a roller coaster, it is so fun! You've got to keep your pedaling very smooth.*

Then every minute or so, you'll hit another hill, using your momentum to get up it. Tell them as you approach it:

*Your leg speed is high, we want to carry that momentum into the next uphill. When we hit that hill, it will be steep right from the start – you'll put a good amount of resistance, stand up with fast legs, and let the steepness of the hill slow your legs down over 5-10 seconds. Ready? Here it is – slam it on and stand up!*

Stand for 15 seconds then sit and climb for another 30 seconds. It's a 77bpm song, so the cadence of the climb is fast. Then go "downhill" for about 45 seconds and recover. The song is almost 7 minutes, so you should be able to fit in 4-5 of these short uphill rollers. The song slows at 4:16 which is a good place to start a climb, first out of the saddle, then sit, until 5:07 when the "Irish" sound starts. Use that as the indication to go downhill again.

**Song #5 Moving into a steady climb.  
Right Here Right Now, Fatboy Slim, 5:20 (67 bpm)**

On to some more consistent uphills where we can't use momentum to get us up them – we must rely on strength. These are slower paced (67 rpm) longer climbs. Do them this way: stand for 15 sec, sit for 45sec. Go over the top of a rise, imagine it's a plateau, not really a downhill, and let the legs spin faster for 1 min. Then do it again (alter your timing based on the musical breaks). You can do this three times in this song. For the final one, you'll stand and sit a little bit longer.

Before the next song starts – you will have to introduce it, because it comes hard and fast! Tell them that there will not be a person in the room that doesn't know this song very well.... Whether they like it or not is irrelevant – it will fire EVERYONE to push hard!

**Song #6: Steep climb with “surges” and very short breaks****Black Dog, by Led Zeppelin, 4:55**

Just before the song starts, say,

*Uh Oh! We've got a steep hill where we'll have to stand up and surge the legs over very short steeper parts in the middle of the hill. You'll do it with the music, standing when the guitar screams at you. You'll be alternating standing and sitting more quickly than usual. This one might take you to a pretty high heart rate...so be careful!*

Everyone knows this song goes slow then fast then slow then fast. You are going to use the music to define your terrain. Start seated on a hill, and when the guitar surges, stand up and push, maintaining the beat of the song with your cadence (that's the hard part). Then sit for a few seconds, and then stand again for a few seconds. They come in waves of two short ones, then there is a longer guitar segment where you'll stay standing 30 seconds. You will have to listen to this song and see how you interpret it, and how long you can stay standing on the longer guitar segments. The final guitar lick is much longer – if they're too breathless, have them sit down. My bet is that this segment will take a lot out of them!

Here is how I time my sitting and standing on this song. You might do it differently:

0:00 Sit

0:12 stand

0:17 sit

0:24 stand

0:29 sit

0:35 stand (this time longer – ouch!)

1:04 sit

1:10 stand

1:15 sit

1:21 stand

1:26 sit

1:39 stand (longer...)

2:03 sit

2:09 stand

2:15 sit

2:21 stand

2:26 sit

2:32 stand (longer...)

2:50 sit (otherwise you'll die if you stay standing too long...)

3:07 stand

3:12 sit

3:18 stand

3:23 sit

3:37 stand (as long as you can, but I bet you'll sit before the end!)

**Song #7: On a plateau with mild rollers, a fast and fun twisty segment****Children of the Night, by Juno Reactor, 7:56 (72 bpm)**

Describe this segment as being on a plateau, high above the valley, with great views. There are still some subtle ups and downs that veer left and right, but we will be able to use a bigger gear. Imagine the bike flying through the curves very quickly.

*Instead of digging in hard to get up short steep climbs like we have been, we'll play with some bigger gears on some more subtle rollers. Let yourself recover for a moment, we've got a roller coming up pretty quickly...*

At :50 in the song, it takes off. Gear up and stand up, but no need to take the intensity too high on these - maybe to threshold, then back off. It should be a little easier, but very fun, through this section.

*Gear up and stand – picture your bike moving very quickly, maneuvering through trees, banking right, then left.*

(Note: make sure you do NOT do any actual banking right or left on a stationary bike – it is unsafe and unsound. If you have Real Ryder bikes, this will be very fun to simulate). Stand up for only 30-40 seconds, then sit back down. Keep the cadence at the bpm of the song (72rpm) on the climbs, but let them speed up the legs and instead follow the higher energy of the music for the flats. Get to know this song and use the changes in energy to dictate when you stand – you might do anywhere from 3-6 standing segments in this song depending on how you interpret the energy. (Not too many – they are still suffering from the last one!) Anticipate it, then tell them it's coming:

*Ahead is a short rise, we're going to fly up this roller, ready....Now!*  
(and then hammer up the short hill)

Ah yes, this is why mountain biking is so much fun!

**Song #8 We start downhill, with a few rolling uphill****Infected, The The, 4:51 (93 bpm)**

*You guys should be having so much fun by now! We are getting to the end of this trail. This next segment is mostly downhill, not too steep so we can pedal in a moderate gear at a medium high cadence of 93 rpm. But the trail will sweep uphill a few times, for only 20-30 seconds - we'll use our momentum on those. Know that the intense work is over, but this is not a recovery by any means!*

Go downhill about 90seconds (at 93rpm), then coach them through a 30 second climb, as before, using the momentum and letting the hill slow down the legs. Then back downhill another 90 seconds before the next short uphill. After that, it's all "down". Intensity is middle aerobic zone, peaking higher during the two uphill. Keep the excitement high on this segment!

**Songs #9 and 10 Cool Down and celebrate!****Soul Meets Body, Death Cab for Cutie, 3:51****Resistance, Alaska, 3:54**

*I have a feeling you are all going to want to come back to this amusement park again, even if it means climbing that long grind at the beginning!*

## The Roller Coaster Ride Playlist

Song Title	Time	Artist	Album	Source
The Final Decree	7:07	Reefer Decree	Point of You	eMusic
2046	14:26	Saafi Brothers	Mystic Cigarettes	eMusic
Gone Daddy Gone	2:28	Gnarls Barkley	The Music of Gray's Anatomy	iTunes
Jiggle of the Sphinx	6:41	Hallucinogen	The Lone Deranger	eMusic
Right Here Right Now (Redanka's 66 Voca Mix)	5:20	Fatboy Slim	Thrivemix Vol 3	Amazon Mp3
Black Dog	4:55	Led Zeppelin	Led Zeppelin IV	eMusic (for whole album) or iTunes
Children of the Night	7:56	Juno Reactor	Bible of Dreams	eMusic
Infected	5:39	The The	Soul Mining	Amazon
Soul Meets Body	3:51	Death Cab for Cutie	Catch and Release (Soundtrack)	eMusic
Resistance	3:54	Alaska	Catch and Release (Soundtrack)	eMusic

A few photos of some mountain bike trails in the western US



This is an example of a “long grind” on a jeep trail before the fun stuff starts! It’s steeper than it looks, and gets considerably steeper after this, and goes for several miles.



At the end of the “real fun” roller coaster section, about to go downhill.



Single track in the high desert.



Imagine climbing up this steep trail with loose dirt. Notice how the steepness changes very quickly. If you stand when it's too steep, your tire might slip out. The steep parts might only last a handful of seconds, but it will surely raise your heart rate. Or imagine flying downhill on it while twisting and turning! Mountain biking is such a fun sport to simulate indoors!